

COEVOLUTION OF ALLIANCE PORTFOLIO AND ORGANIZATION
OF NEW TECHNOLOGY-BASED FIRMS:
A CASE STUDY OF THE MOBILE INTERNET INDUSTRY

Dissertation

zur Erlangung des akademischen Grades

doctor rerum politicarum

Vorgelegt an der Wirtschafts- und Sozialwissenschaftlichen Fakultät
der Otto Friedrich Universität Bamberg

Tillmann L. von Schroeter

Gutachter:

1. Prof. Dr. Dodo zu Knyphausen-Aufseß
2. Prof. Dr. Peter Witt

Prüfungstermin:

25.11.2004

to my parents

ACKNOWLEDGEMENTS

I want to thank a number of individuals and organizations for their advice and support throughout this research project.

First, I would like to thank my academic advisor Dodo zu Knyphausen-Aufseß who, throughout our joint two years, supported this work in two ways. As regards content, his counsel set the basic direction of my work and strongly influenced the selection of a suitable research methodology; he shaped the overall ‘storyline’ of this research study with his challenging questions. His interest and openness allowed me to develop my own approaches and find “my way”. As regards the academic environment, Dodo zu Knyphausen-Aufseß’s enthusiasm and dedication was a cornerstone in initiating Exist-HighTEPP, an entrepreneurial research program in Bamberg, Germany. Exist-HighTEPP provided an excellent research environment here in Germany and funds for a visiting scholarship at the Wharton School.

In the US, I would like to thank Claus Rerup of the Wharton School for teaching me the necessary academic humility and ambition, and Simone Ferriani from the University of Bologna for the discussions concerning network and resource dependency theory and his thoughts on co-evolution of alliances and organizations. My understanding of strategic management and entrepreneurship has also greatly benefited from the insights I gained through many discussions at Wharton with Sidney Winter, Ian MacMillan, and Lori Rosenkopf. To all five, I would like to express my gratitude for taking the time to discuss my project with me. A special thanks to Ian MacMillan, who invited me to come to Wharton for four months. The exposure to the best research community in the world was inspiring and very helpful.

Concerning my understanding of the Mobile Internet Industry, I would like to thank Claudius Bertheau for four years of engaging discussions on market trends, technologies, and cooperations. These talks were essential for my understanding of business models, value chains, and alliances in this industry. In addition, his company Airweb served as a prototype case that was instrumental in crafting the research tools.

This study would not have been possible without the collaboration of nine mobile Internet companies: 12snap, Airweb, ApollisInteractive, Clever.Tanken, e-hotel, Gate5, Mindmatics, Multichart, and Yellowmap. I am grateful to the many executives for the time they gave to be interviewed, for the knowledge they shared with me, and for the trust they put in my work. I sincerely hope that the results of this study allow them to view their efforts as ‘good investments’. In observance of an old tradition, I acknowledge my full responsibility for the study, its conclusions, and its weaknesses.

I would like to thank my friends and colleagues in the Exist HighTEPP program, Nils Naujok, with whom I shared a room and had multiple discussions about the fundamental questions of alliances in the communication industry, and Sabine von Witzleben – managing assistant of the program – for streamlining my writing and for her élan, with which she introduced us to Frankonian culture. Last but not least I would like to thank Karsten Hoppe, who recruited me for the program and, as compensation for the many hours in front of our PCs, gave me good battles on the badminton court.

I would lastly like to thank my family and friends. A special thanks to my parents for their constant support over the past years and their lobbying for an academic career and to Saskia for the many inspiring hours and for her vitality, which gave me the power to focus on achieving this research project.

Berlin

TILLMANN L. VON SCHROETER

October 2004

TABLE OF CONTENTS

	page
1. INTRODUCTION.....	1
2. RESEARCH METHODOLOGY.....	10
2.1 RESEARCH QUESTION AND METHODOLOGY.....	10
2.1.1 <i>Research strategy.....</i>	<i>10</i>
2.1.2 <i>Spectrum of case study approaches.....</i>	<i>11</i>
2.1.3 <i>Critique on case study research.....</i>	<i>13</i>
2.2 RESEARCH PROCESS.....	16
2.2.1 <i>Preparation.....</i>	<i>16</i>
2.2.2 <i>Selection of cases.....</i>	<i>17</i>
2.2.3 <i>Crafting instruments.....</i>	<i>17</i>
2.2.4 <i>Data collection.....</i>	<i>19</i>
2.2.5 <i>Analyzing data.....</i>	<i>22</i>
2.2.6 <i>Shaping hypothesis.....</i>	<i>26</i>
2.2.7 <i>Enfolding literature.....</i>	<i>27</i>
2.2.8 <i>Reaching closure and validity of data.....</i>	<i>28</i>
3. CASE STUDIES ON ALLIANCE PORTFOLIOS AND ORGANIZATIONAL CHANGE...29	
3.1 BUILDING INDUSTRY CONTEXT: MOBILE INTERNET INDUSTRY.....	30
3.1.1 <i>Industry overview.....</i>	<i>30</i>
3.1.2 <i>The need to partner.....</i>	<i>40</i>
3.1.3 <i>Segment and case selection.....</i>	<i>43</i>
3.2 MOBILE LOCATION SERVICES.....	47
3.2.1 <i>Segment overview.....</i>	<i>47</i>
3.2.2 <i>Case history.....</i>	<i>54</i>
3.2.3 <i>Within segment analysis.....</i>	<i>61</i>
3.2.4 <i>Segment conclusion.....</i>	<i>86</i>
3.3 MOBILE CONTENT SERVICES.....	87
3.3.1 <i>Segment overview.....</i>	<i>87</i>
3.3.2 <i>Case history.....</i>	<i>93</i>
3.3.3 <i>Within segment analysis.....</i>	<i>105</i>
3.3.4 <i>Segment conclusion.....</i>	<i>123</i>
3.4 MOBILE MARKETING SERVICES.....	124
3.4.1 <i>Segment overview.....</i>	<i>124</i>
3.4.2 <i>Case history.....</i>	<i>130</i>
3.4.3 <i>Within segment analysis.....</i>	<i>142</i>
3.4.4 <i>Segment conclusion.....</i>	<i>160</i>

3.5	CROSS-SEGMENT ANALYSIS - BUILDING A SET OF TENTATIVE HYPOTHESES	160
3.5.1	<i>Cross segment analysis</i>	161
3.5.2	<i>Tentative hypotheses</i>	173
4.	THEORETICAL PERSPECTIVES ON ALLIANCE PORTFOLIOS AND ORGANIZATIONAL COEVOLUTION.....	180
4.1	ALLIANCE NETWORKS.....	181
4.1.1	<i>Terminology and basic theoretical concepts</i>	183
4.1.2	<i>Alliance motives and network performance consequences</i>	185
4.1.3	<i>Partner acquisition</i>	192
4.1.4	<i>Alliance management</i>	204
4.1.5	<i>Conclusion on alliances and networks</i>	211
4.2	RESOURCES AND THEIR STRATEGIC IMPORTANCE	212
4.2.1	<i>The Resource-Based View of the firm</i>	213
4.2.2	<i>Relational view</i>	222
4.2.3	<i>Dynamic capabilities</i>	232
4.2.4	<i>Conclusion on resource based theories</i>	247
4.3	ORGANIZATIONAL EVOLUTION AND CHANGE.....	248
4.3.1	<i>Different schools of organizational change</i>	248
4.3.2	<i>Development theory</i>	254
4.3.3	<i>Stage models</i>	266
4.3.4	<i>Conclusion on organizational change</i>	276
5.	CONCLUSION: THE COEVOLUTION FRAMEWORK.....	277
5.1	CONSTRUCTING A COEVOLUTION FRAMEWORK.....	278
5.1.1	<i>Implication of relevant theories on the alliance portfolios</i>	278
5.1.2	<i>Constructing a new approach: the coevolution framework</i>	281
5.2	REVISITING TENTATIVE HYPOTHESES.....	284
5.3	LIMITATIONS AND DIRECTIONS FOR FURTHER RESEARCH.....	288
5.4	IMPLICATIONS AND DIRECTIONS FOR MANAGEMENT	291
6.	REFERENCES	295
7.	APPENDICES	317
7.1	LIST OF INTERVIEWS AND AFFILIATIONS OF INTERVIEWEES	317
7.2	ALLIANCE INTENSITY OF MOBILE INTERNET INDUSTRY SEGMENTS	318
7.3	REVENUE FORECAST FOR MOBILE INTERNET INDUSTRY SEGMENTS.....	318
7.4	INTERVIEW TRANSCRIPTS	318

LIST OF FIGURES

	page
Figure 1 Alliance portfolios in the Mobile Internet industry	4
Figure 2 Structure of research study	8
Figure 3 Case study research process.....	16
Figure 4 Crafting instruments for data collection	18
Figure 5 Alliance database structure	21
Figure 6 Mobile communication value chain.....	31
Figure 7 History of mobile communication	32
Figure 8 Mobile communication sales (Germany).....	33
Figure 9 Usage of mobile standards.....	34
Figure 10 Wireless Data Evolution	35
Figure 11 European mobile service and content revenue forecast.....	36
Figure 12 Mobile Internet value web	37
Figure 13 Market capitalization of important segment players.....	38
Figure 14 Mobile data ARPUs of Vodafone.....	39
Figure 15 Strategic priorities of mobile Internet companies.....	43
Figure 16 Mobile Internet segment portfolio	45
Figure 17 MLS sales forecast 2006.....	49
Figure 18 Segment overview mobile location services.....	53
Figure 19 Company development: Gate 5	56
Figure 20 Business model: Gate5	57
Figure 21 Company development: Yellowmap	59
Figure 22 Business model: YellowMap	61
Figure 23 Company development in the MLS segment.....	64
Figure 24 Resource requirements in the MLS segment	67
Figure 25 Alliance portfolios in the MLS segment.....	75
Figure 26 Allying process	79
Figure 27 Performance of MLS case studies	85
Figure 28 Mobile Content Sales Forecast 2005	89
Figure 29 Segment overview Mobile Content Services.....	92
Figure 30 Company development: Airweb	93
Figure 31 Business model: Airweb.....	95
Figure 32 Company Development: Clever.Tanken.....	96
Figure 33 Business model: Clever.Tanken	98
Figure 34 Company development: e-hotel.....	99
Figure 35 Business model: e-hotel.....	101

Figure 36	Company development: Multichart	102
Figure 37	Business model: Multichart	104
Figure 38	Company development in the Mobile Content Service segment.....	107
Figure 39	Resource requirements in the Mobile Content Service segment	109
Figure 40	Alliance portfolios in the Mobile Content Services segment	113
Figure 41	Case study performance in the Mobile Content segment	122
Figure 42	Mobile marketing sales forecast 2005	126
Figure 43	Segment overview Mobile Marketing	130
Figure 44	Company development: 12snap.....	131
Figure 45	Business model: 12snap.....	133
Figure 46	Company development: ApollisInteractive	135
Figure 47	Business model: ApollisInteractive	137
Figure 48	Company development: Mindmatics	139
Figure 49	Business model: Mindmatics	141
Figure 50	Company development in the mobile marketing segment.....	145
Figure 51	Resource requirements in the mobile marketing segment	148
Figure 52	Alliance portfolios in the mobile marketing segment.....	152
Figure 53	Case study performance in the mobile marketing segment	159
Figure 54	Company developments.....	162
Figure 55	Resource requirements.....	165
Figure 56	Coevolution correlations.....	171
Figure 57	Coevolution of alliance portfolio and organization	174
Figure 58	Hypothesis 2, 3, and 4.....	175
Figure 59	Hypothesis 5 to 9	176
Figure 60	Hypothesis 10 to 14	177
Figure 61	Relevant theories	180
Figure 62	Alliance and network theory.....	182
Figure 63	Relevant resource scope	185
Figure 64	Research fields in strategic management.....	212
Figure 65	RBV framework	218
Figure 66	Determinants of relational rents.....	223
Figure 67	Organizational change models.....	252
Figure 68	Product and process innovation	263
Figure 69	Kazanjian's four stage model of growth in NTBF	272
Figure 70	Coevolution framework.....	282
Figure 71	Allying process	293

LIST OF TABLES

	page
Table 1 Relevant situations for different research strategies	11
Table 2 Characteristics of different case study approaches	12
Table 3 Case study research on alliances	15
Table 4 Interview sample	20
Table 5 Data services and application in the 1990s	33
Table 6 Segment evaluation, author	46
Table 7 Segmentation of mobile location services	48
Table 8 Stage description of companies in the MLS segment	62
Table 9 Alliance networks: vertex size	71
Table 10 Alliance networks: vertex colors	71
Table 11 Alliance networks: link width	72
Table 12 Alliance networks: link color	73
Table 13 Alliance portfolio structure (MLS)	78
Table 14 Company performance scales	84
Table 15 Stage description of companies in the MLS segment	106
Table 16 Alliance portfolio structure (MLS)	118
Table 17 Stage description of companies in the mobile marketing segment	143
Table 18 Alliance portfolio structure (MLS)	155
Table 19 Case study development stages	161
Table 20 Exemplary organizational development	163
Table 21 Resource categories	164
Table 22 Exemplary organizational development	165
Table 23 Alliance types	167
Table 24 Alliance portfolio development	168
Table 25 Resource dependency of alliance networks	169
Table 26 Impact of alliance efficiency on organizational change	170
Table 27 Allying process - steps and capabilities	172
Table 28 Resource types	215
Table 29 Exemplary sources of competitive advantage	216
Table 30 RBV explanation of competitive advantage	221
Table 31 Validity of critique of the RBV	221
Table 32 Differences between the RBV and the relational view	231
Table 33 Basic schools of organizational change (based on Van de Ven, et al., 1995)	249
Table 34 Organizational development models	255
Table 35 Applicability of stage models	269

Table 36	Stage models in organizational science, strategic management, and entrepreneurship ...	271
Table 37	Selection criteria for relevant stage models	271
Table 38	Comparison Kazanjian's and authors's model.....	275
Table 39	Tentative hypotheses.....	286

LIST OF ACRONYMS

A	ABS	Anti-Blocking System
	A-GPS	Assisted global positioning system
	ARPU	Average Revenue per User
	ASP	Application Service Provider
	ATM	Automated teller machine
B	B2B	Business to Business
	B2C	Business to Customer
	B2E	Business to Employee
	Bn.	Billion
C	CAGR	Compound Annual Growth Rate
	CEBIT	Centrum für Büro- und Informationstechnik. World largest annual trade show for information and telecommunications technology
	CEO	Chief Executive Officer
	CFO	Chief Financial Officer
	CFROI	Cash Flow Return on Investment
	CIO	Chief Information Officer
	CMO	Chief Marketing Officer
	COO	Chief Operation Officer
	CPE	Customer Premise Equipment
	CRM	Customer Relationship Management
D	DDMV	Deutscher Digital und Multimedia Verband
	DDV	Deutscher Direct Marketing Verband
E	EDGE	Enhanced Data Rates for GSM Evolution
	EITO	European InformationTechnology Observatory
	EMS	Enhanced Messaging Service
	EOTD	Enhanced observed time difference
	EPOC	Operating system for mobile multimedia devices
	ERP	Entreprise Replenishment Program
F	FL	Free lancer
G	GMS	Global Messaging Service
	GPRS	General Packet Radio Service
	GSM	Global System for Mobile Communication
	GZS	Gesellschaft für Zahlungs-Systeme

H	HSCSD	High Speed Circuit Switched Data
	HTML	HyperText Markup Language
I	IAT	Institut Arbeit und Technik
	IDC	A leading provider of technology intelligence, industry analysis, and market data
	IPO	Initial Public Offering
	ISBN	International Standard Book Number
	IZT	Institut für Zukunftsforschung und Technologiebewertung
J	J2EE	Java 2 Platform, Enterprise Edition
	J2ME	Java 2 Platform, Micro Edition
L	LBS	Location Based Service
	LIF	Location Interoperability Forum
M	MCS	Mobile content services
	Mill.	Million
	MLP	Mobile location protocol
	MLS	Mobile Location Services
	MMA	Mobile Marketing Association
	MMS	Multimedia Messaging Service
	MNO	Mobile Network Operator
N	NTBF	New Technology-Based Firm
O	OGIS	Open Geodata Interoperability Specification
P	P&L	Profit and loss statement
	PC	Personal computer
	PDA	Personal Digital Assistant
	PI	Page impressions
	PMI	Post Merger Integration
	PR	Public relations
	RBV	Resource Based View
R	RWTH	Rheinisch-Westphälische Technische Hochschule

S	SFZ	Sekretariat für Zukunftsforschung
	SID	Sport Informations Dienst
	SIM	Subscriber Identify Module
	SMS	Short message service
	STK	SIM Tool Kit
	SWOT	Strength, weaknesses, opportunities and threats
T	TIMES	Telecommuication, Information Technology, Media, Entertainment, Security
	TV	Television
U	UK	United Kingdom
	UMTS	Universal Mobile Telecommunications System
	US	United States
V	VC	Venture Capitalist
W	WAP	Wireless Application Protocol
	WLAN	Wireless Local Area Network
X	XML	Extensible Markup Language

1. Introduction

Business news tickers announce strategic alliances almost on a daily basis. Only in the Western European mobile communication industry, incumbents formed three substantial alliances within 10 days at the beginning of April 2003:

'Vodafone and Orange invest In U.S. Start-Up to avoid dependence on suppliers' (The Wall Street Journal Europe, 28.3.2003)

Vodafone and Orange aim to lower dependency from *Nokia* and *Intel* in mobile handset software.

'T-Mobile, Telefonica Moviles, and TIM form alliance' (vwd, 7.4.2003)

The three MNOs¹ aim to strengthen their global market position by developing joint products and services, thereby capitalizing on economies of scale based on 162 Mio. subscribers served worldwide.

'Seal set on partnership: Vodafone D2 cooperates with Fujitsu Siemens Computers and Toshiba' (Vodafone, 8.4.2003)

The three companies form a joint marketing initiative *'Connected by Vodafone'* to sell products and services enabling mobile data communication for corporate clients. In the related press release, Vodafone explicitly states that: *'Further partnerships are already planned'* (Vodafone, 2003)

Similar trends can be observed in other high technology industries such as Pharma and Biotech, semi-conductors and software. Windhover (Windhover, 1999; Windhover, 2002) reported 782 newly formed Pharma- and 699 Biotech-alliances in 2001, these numbers grew from 311 new Pharma- and 156 Biotech-alliances in 1991 over 414 and 313 in 1995. A few of these alliances deals reach sizes up to \$ 2.8 bn as Novartis' investment in Roche. *Philips Semiconductors* is exemplary in the semi-conductor industry; for its *Bluetooth* technology it started to form an R&D alliance with *Ericsson* in December 1999 (Philips, 1999), followed by similar strategic cooperations with the communication solution provider *Addvalue*

¹ Mobile Network Operator

Communications from Singapore in May 2000, with the US based *WIDCOMM*—a pioneer in *Bluetooth* software—in October 2000, and with the French Software provider *Inventel Systemes* in December 2000 (Philips, 2000a; Philips, 2000b; Philips, 2000c). In the beginning of 2001, *Philips Semiconductors* started to build up distribution alliances with companies such as the American *Bluetooth* specialist *Stonestreet One* and sourcing alliances with the Swedish *Allagon* (antennas) and the Californian *Tality* (reference modules) (Philips, 2001a; Philips, 2001b; Philips, 2001c). For other products such as mobile handset chipsets (cooperations among others with *Datang Mobile* and *Samsung Electronics*) or platforms for audio and video players (cooperations among other with *Hitachi*, *Moxi Digital*, *NEC*, *STMicroelectronics*, and *TiVo*), *Philips Semiconductors* follows the same alliance strategy (Philips, 2002; RealNetworks, 2002).

These activities are part of a trend, which started already in the nineties. Since then, the formation rate of interfirm collaboration, such as strategic alliances, has increased dramatically (Dyer, et al., 2001), especially in high technology industries. High technology industries, which Eisenhardt (2000) termed high velocity industries, are the arenas in which alliance activity has been most intensive in the recent past (Hagedoorn, 1993). Scholars as Doz and Hamel trace this trend to the fact that:

'...strategic alliances are a logical and timely response to intense and rapid changes in economic activities, technology, and globalization.' (Doz, et al., 1998, p. XIII)

New high technology industries are a special showcase for alliance activities. All three drivers occur in an intense fashion: (1) New industries still have fluctuating structures, therefore, change in economic activities happens frequently. (2) Based on its definition, technological change is high and fast as above-mentioned in Eisenhardt's high velocity notion, and (3) last but not least technological fields as biotechnology, mobile communication, multi-media, or material science, which are perceived as high tech, are global.

Analyzing the reasons to form alliances, Doz and Hamel captured the different motivation in a framework, which they called: Logics of alliance value creation (Doz, et al., 1998, p. 36). Alliances are motivated by (1) the companies' need for: "*Racing for the world*" (getting a foothold in markets) and (2) their need for: "*Racing for the future*" (embracing new technologies). Both needs can be broken down into different drivers. Racing for the World comprises the three drivers building: critical mass; reaching, accessing new markets;

plugging skill gaps. Racing for the future combines: building nodal positions in coalitions, hedging with technological innovations; creating new opportunities; building new competences.

Doz and Hamel's framework is clearly focusing on the output / sales side of an organization (i.e., reaching new markets, building nodal positions, and creating opportunities) and on organizational as well as on technological skills (i.e., plugging skill gaps, building new competencies). In my opinion, the supply side of this organization is missing. So I claim that accessing superior supply is an additional driver for alliances, which can for example be seen in the partnership between DaimlerChrysler and Bosch. This partnership enabled DaimlerChrysler to market innovations such as ABS systems or Common Rail diesel engines, which helped DaimlerChrysler to earn superior returns by building up the brand of Mercedes as a car with superior technology.

In addition to the intense alliance formation, which is motivated by different drivers, firms within new high technology industries (NTBF's)² change their alliance portfolio over time. NTBF's are constantly adding or removing partners over time. They are changing their behavior toward their partners in terms of resource contribution and management. Therefore, the firm's position in the industry network is constantly in flux (Parise, et al., 2001). Exemplary *Sun Microsystems* shifted its alliance portfolio drastically comparing the period from 1990 to mid-1994 with the period from mid-1994 to 1998. The emergence of the Internet in the latter half of the 1990s let *Sun Microsystems* drop-off alliances with competitors and let largely increase alliances with complementors (Parise, et al., 2001). These shifts are consistent with Knoke's et al. (2002) results from analyzing dynamics of strategic alliance networks in the global information sector. They found substantial changes in network size, partner types, alliance types and network intensity.

Figure 1 illustrates these two characteristics in the Mobile Internet industry. The alliance portfolios are large and they change significantly over time.

Without discussing the details—which will follow in chapter 3—the two effects are obvious. Already in their first years NTBFs as *YellowMap* and *12snap* form many alliances, despite their limited size with 20 employees in the case of *YellowMap* and 70 in the case of *12snap*.

² Further referred to as new technology-based firms (NTBF's). The definition of NTBF used in this study is consistent with the definition provided by Yli-Renko and Autio (1998). The term “new technology-based firm” is used to refer to independent entrepreneurial firms, which develop, transfer, and or commercialize advanced technology.

In addition, these alliance portfolios pass through a significant structural change in terms of with whom and in which way NTBFs partner.

Alliance portfolio are intense and rapidly changing

YellowMap's alliance portfolio (02.2003) after 4 years



Source: Author

12snap's alliance history (1999-2002)

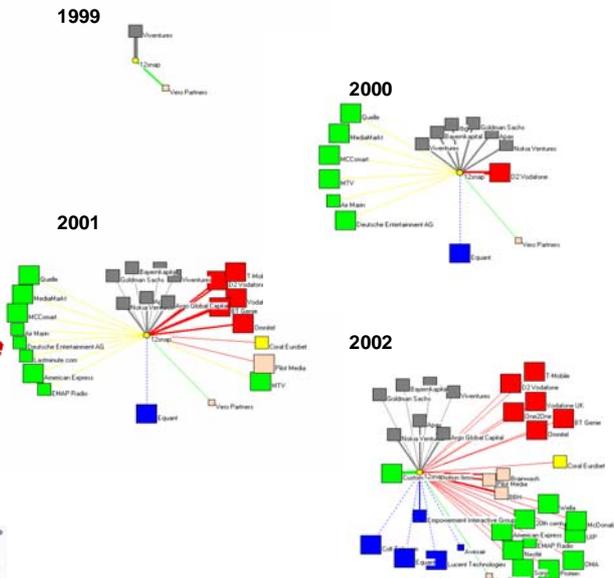


Figure 1 Alliance portfolios in the Mobile Internet industry

At first glance, allying seems to be a strategically important problem, which industry studies (*i.e.* Booz Allen Hamilton, 2001b) confirm. But not a lot is known on the alliance portfolio dynamics. As Gulati stated:

'Important questions remain about the growth and development of interorganizational alliance networks. ... It would be fruitful to assess the performance effects of these [dynamic] networks.' (Gulati, 1998)

As Yli-Renko (2001) states, that this is especially the case for NTBFs. And Knoke (2002) even explicitly asks for further research analyzing the strategic consequences of dynamics in strategic alliances for organizational performances: growth, profits, and innovation. To start a further investigation of the performance implications, the quite broadly discussed term performance first has to be defined and specified.

Performance dimensions and parameters

Different scholars have discussed new venture performance based on various criteria. I.e., Mowery (1996) assessed case study based on their sales and employee growth. Eisenhardt (1990) measured venture profitability and Baum (2000) observed their innovativeness. Up to now, no single performance indicator could demonstrate its superiority. Therefore a multi dimension approach is chosen for this study similar to a balanced scorecard.

Reasons for superior performance are discussed in the field of strategic management under the label of competitive advantage. Different approaches, explaining competitive advantage, have been developed over time. Early strategic economists as Porter (1977; 1980); Scherer and Ross (1990) assessed industry structures. The position of the firm within this structure is a source of competitive advantage. The next group of researchers analyzed structural conditions of industries over time. Industry evolutionists as Rumelt (1984) and Utterback (1975) described this industry development process and critical factors along its line; Klepper (1990; 2000) determined the influence of prior capabilities (pre adaptation). The next school of researchers focused on internal parameters as skill and capabilities (Chandler, 1992; Nelson, et al., 1982) on strategic assets and resources (Barney, 1986; 1991; Dierickx, et al., 1989; Wernerfelt, 1984), and on organizational learning, organizational knowledge and innovation (Adler, 1993; Brown, et al., 1991; Gavetti, et al., 2000; Henderson, et al., 1990). In the 1990s, new cooperation forms gained importance in the discussion on competitive advantage. The impact of organizational boundaries and networks on company performance were discussed in i.e., Williamson (1981; 1999) and Zenger, et al. (1997).

To fill this gap, this study asks: Why do small firms create these intense alliance portfolios, can they create competitive advantage? What are the consequences for growth and organizational development? Which processes support NTBFs to build up and manage these portfolios? What drives alliance portfolio dynamics?

Despite the immense body of literature on alliance and networks—this topic is en vogue since the beginning of the nineties—, which has been summarized by Auster (1994) and Gulati (1998), the literature of alliance portfolio dynamics is rather thin (*see Hite, et al., 2001; Koza, et al., 1998*). Two reasons can be quoted: (1) Analyzing network dynamics requires a longitudinal research design, which is difficult to set-up and time consuming to conduct. (2) Networks are hard to measure, analyze, and compare due to their multi dimensions, and supporting software has just been developed recently.

Different scholars have pointed on this research requirement as (i.e., Baum, et al., 2000; Eisenhardt, et al., 1990; Gulati, 1998; Stuart, 2000; Yli-Renko, et al., 1998; Yli-Renko, et al., 2001). Hite and Hesterly also emphasize the importance of the alliance portfolio dynamics and support the need for further research in this context:

'... future work [has to focus on] the examination of how and why firm networks evolve, particularly in different industries and contexts.' (Hite, et al., 2001)

After setting forth the general necessity for analyzing alliance portfolio changes in high technology industries, two questions arise: (1) Why is it necessary to focus on alliance portfolio issues in the Mobile Internet industry? (2) What contributions can this analysis make to the topic on network dynamics and alliance - organization co-evolution?

The Mobile Internet industry has two decisive features, which predestinates it for this analysis. Its basic technologies were developed in the mid nineties, thus out of the mentioned-above high-technology industries, it is with nano-technology one of the youngest. Consequently, alliance portfolio changes in early stages can be analyzed while they occur. A second issue is its embeddedness in the mobile communication value chain. This structure creates high resource dependencies and interactions with communication industry players, which additionally increases alliance activities. Therefore in an extreme case study setting, dynamic alliance portfolios can be analyzed real-time.

Since very little is known about dynamics in strategic alliance networks and the interdependence between these networks and organizational change in entrepreneurial high velocity industries, a considerably detailed approach gathering a broad area of data over several years is required. Hence, the research approach selected for the purpose of this study is descriptive and longitudinal. However, it is even more than that, because this study is also analytic in nature. It does not only ask 'what' questions, it especially asks 'why' and 'how' questions. Multi case study research—collecting qualitative and quantitative data—is the appropriate research methodology for a study that attempts to extend existing literature on alliance portfolio and organization interdependences by description and analyses of comparative cases (Eisenhardt, 1989). This brief introduction of the methodological foundation may suffice at this point, since Chapter 2 contains a profound discussion of the methodology selection and the application of the comparative case study methodology in a nine-step research process.

Furthermore, one other topic must be considered in the course of this introductory chapter. It is the inevitable topic of terminology, which will be limited to a short, yet concise, explanation of some key terms. In this section, however, neither industry specific terms, nor extensively theoretical terms will be introduced, the relevant definition will be provided in the particular chapters. Instead, this part will now focus on strategic alliances, alliance portfolios, organizational change, and co-evolution.

An alliance is an arrangement between at least two firms to govern an incomplete contract in which each partner has limited control. These arrangements can take different forms – from joint ventures, to joint R&D programs, to cooperative marketing arrangements – but each aims to govern joint decision making among partners. Therefore, alliances are boundary spanning external organizational links in a hybrid form. Between a market based transaction and firm integration, they are characterized through market as well as hierarchy aspects (Gomes-Casseres, 1997; Gulati, 1998).

Alliance networks will be conceived and defined as a set of firms, generally characterized by different preferences and resources, coordinated through a mix of mechanisms not limited to price, exit and background regulation (Grandori, 1999). Therefore, a network is a set of alliances linking more than two companies together.

Often the term network implies a tightly knit form with a strong focal player. In this study, the case study firms did not build up tightly knitted networks, but either participate through links in different networks or had dyadic alliances to different firms. Therefore, the term alliance portfolio characterizes best the kind of loosely knit alliance network, which are analyzed in this study. Also other scholars (i.e., Bamford, et al., 2002; Stuart, 2000) used the term alliance portfolio to describe this kind of alliance network – which frequently occur in high technology settings.

Organizational change comprises processes or sequences of events that unfold changes such as the transitions in individual jobs and careers, group formation and development, and organizational innovation, growth, etc. This change manifests in shifting characteristics as organizational structure, culture, etc. and is induced through changing environments, organizational growth, or further change motors (Van de Ven, et al., 1995).

Co-evolution between alliance portfolio and organization means that the alliance network of emerging firms evolves in response to changing organizational characteristics of the firm, which are induced through organizational change (Koza, et al., 1998).

At this point of the introduction—after having dealt with the most fundamental terminological issues—one might typically expect a section that deals with an overview of

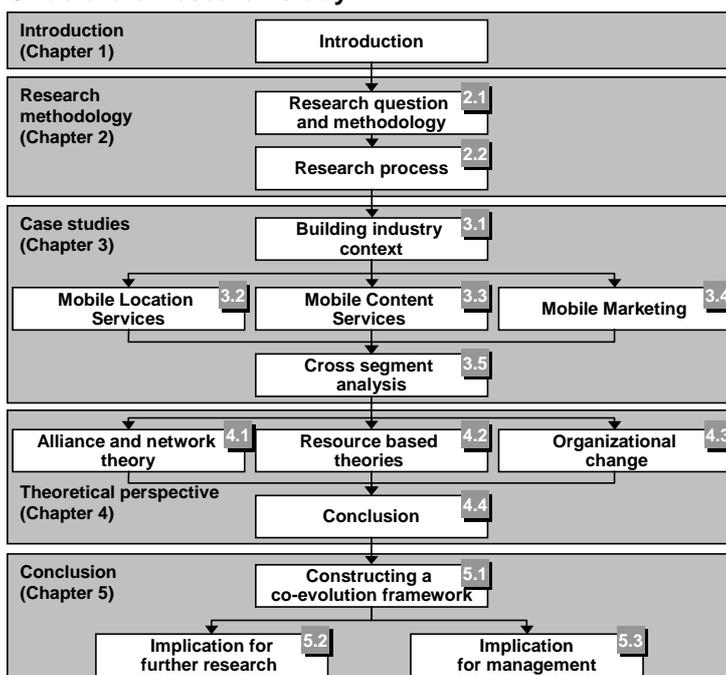
the existing literature. However, in the context of an exploratory study – like this – the recommendations of leading case study methodologists are different. They favor an ideal of theory free research (Eisenhardt, 1989). Due to this recommendation, the subsequent chapter on research methodology leads directly to the description of the Mobile Internet industry, its segments and the nine case studies (chapter 3).

The focus of this study was chosen to better understand why and how NTBFs form so many alliances, what their performance implications are and what the change in alliance portfolio structure steers. Analyzing alliance portfolio and organizational change involves a lot of time and energy, and also requires attention to detail. This study leads to a co-evolution framework between alliance portfolio and organization for NTBFs in high velocity industries and insight into problems concerning processes to manage this dynamic specifically in alliance portfolios.

This study is organized as follows: after this introduction, which has motivated the research project, posed the research question, and defined key terminology, the research methodology is presented and discussed in chapter 2. This discussion is focused around two questions: (1) Which is the best suitable research methodology to answer the research question? And after picking Eisenhardt's (1989) case study methodology, (2) how to proceed step by step to answer the research question (compare figure 2).

Chapter 3 presents the case studies. It starts with an introductory presentation of the industry

Structure of research study



Source: Author

to foster the understanding of the context, in which the case study firm's are embedded. Three within segment analyses follow which introduce the nine case study firms and compares them with their peers. Chapter 3 culminates in a cross segment analysis from which the co-evolution argument between alliance portfolio and organization is derived, and which is broken down into hypothesis.

Figure 2 Structure of research study

These hypotheses are confronted in chapter 4 with extant literature on alliances and networks, resource based theories in strategic management, and models on organizational change. This partly iterative procedure of enfolding literature and confronting case study data will lead to the extension of theory and contribute to the construction of a co-evolution framework for NTBFs in chapter 5. This last chapter closes with the model's limitations and implications for further research and with the implication for management and practitioners.

2. Research methodology

This study analyzes alliance portfolios and organizational change of new technology based firms (NTBF) in the first years after their foundation, with the aim to generate hypotheses, which link and extend theories in the fields of alliance/network theory, organizational development and strategy. Several strict specifications apply to the selection of an appropriate research methodology. In the first part of this chapter (2.1) the case study approach proposed by Eisenhardt (1989) is selected as the most suitable methodology. The selection is based on the research methodology framework of Yin (1984). In the latter part of this chapter (2.2), a detailed description of the research process is given that explains the relevant steps of case study research and the specific activities conducted in this project.

2.1 Research question and methodology

In the current literature on strategic management and organizational theory, different research methods have been discussed and criticized. In this section, it is argued that the case study approach is the most suitable research methodology for this research project. In addition, the spectrum of case study approaches is presented and a precise specification is selected depending on the structure of the analyzed data. This chapter concludes with a discussion of the critique of case study approach and its unique advantages.

2.1.1 Research strategy

The appropriate research methodology is defined by specifications of the observed phenomena. In 1984, Yin designed a framework supporting the selection of one of the five known research methods in social science: experiment, survey, archival analysis, history and case study. Three conditions determine the selection of an appropriate research study methodology (Yin, 1984, chapter 1):

1. The type of research question
2. The control an investigator has over actual behavioral events, and
3. The focus on contemporary as opposed to historical phenomena

Table 1 presents Yin's framework.

Strategy	Form of research question	Requires control over behavioral events?	Focuses on contemporary events?
Experiment	How, why	Yes	Yes
Survey	How, what, where, how many, how much	No	Yes
Archival analysis (i.e., economic study)	How, what, where, how many, how much	No	Yes/no
History	How, why	No	No
Case study	How, why	No	Yes

Table 1 Relevant situations for different research strategies

Applying Yin's framework, the presented study analyzes (1) if and why alliance portfolios can accelerate the growth of NTBFs and how organizational changes shape the alliance portfolio. Thus, why and how questions are included. In the presented study (2) the investigator had no control over actual behavioral events. He could not influence the analyzed developments such as alliance formation and management processes, portfolio dynamics as well as organizational change. Furthermore, many events had already taken place before the study started (3) as most developments took place from 1999 to 2002. Thus, the study is concerned with contemporary events. Based on Yin's (1984) framework, the case study methodology is best suited to analyze the researched phenomena (highlighted in table 1).

2.1.2 Spectrum of case study approaches

The case study approach can be generally characterized as an empirical inquiry that (1) investigates a contemporary phenomenon within a real life context, when (2) the boundaries between phenomenon and context are not evident, and in which (3) multiple sources of evidence are used (Pettigrew, 1990).

Depending on (1) the breadth of the variables to be examined, (2) the extent to which quantification occurs, and (3) the sample size, several different types of case studies can be applied (Rumpf, et al., 1997). Furthermore, case study approaches can be distinguished according to their theoretical foundation before entering the field and the generalizability of their results. Table 2 presents the characteristics of the three most widely applied case study approaches: Single case study (Harvard Business School tradition), Eisenhardt's open multi case study approach, and Yin's theory-based multi case study approach.

Approach \ Characteristics	Single case (Harvard Business School tradition)	Eisenhardt's open multi case study approach	Yin's theory based multi case study approach
Aim	Detecting contiguity	Theory building	Theory enhancing
Number of variables	Many	Several	Limited set
Level of detail	Deep open analysis, mainly qualitative data	Detailed open analysis, qualitative and quantitative data	Specific, focused analysis, qualitative and quantitative data
Number of cases	1	Approximately 4-11	Not specified
Theoretical foundation	Ex ante not existing	Ex ante mostly not existing	Ex ante already analyzed
Generalization	Not feasible	Feasible	Feasible
Researchers	i.e., Dyer (1991), Harvard Business School case tradition	i.e., Eisenhardt (1989), Pettigrew (1990)	i.e., Yin (1984)

Table 2 Characteristics of different case study approaches

Eisenhardt's approach is the most appropriate based on two criteria. First, the analyzed phenomenon was fairly unstructured and the applicability of specific theories could not be easily deduced beforehand; therefore an open approach was required. Second, several other scholars have been working on related topics, which allows for the narrowing down of the amount of relevant variables and of appropriate fields of theory. In this setting, the aim of the research project was to build theory, which allows generalization based on multiple observations.

Of special note is the combination of qualitative with quantitative evidence. Although the terms qualitative and case study are often used interchangeably, case study research can involve either qualitative data only, quantitative data only, or both (Yin, 1984). Moreover, the combination of data types can be highly synergistic. Quantitative evidence can reveal relationships that may not be salient to researchers. It also prevent researchers them from being carried away by vivid, but false, impressions in qualitative data, and it can bolster findings when it corroborates those findings from qualitative evidence. Qualitative data are useful for understanding the rationale or theory underlying relationships revealed in the quantitative data or may suggest directly a theory which can then be strengthened by quantitative support (Jick, 1979). Mintzberg (1979) described these synergies as follows:

'For while systematic data create the foundation for our theories, it is the anecdotal data that enables us to do the building. Theory building seems to require rich description, the richness that comes from anecdotes. We uncover all kinds of relationships in our hard data,

but it is only through the use of this soft data that we are able to explain them.' (Mintzberg, 1979, p. 587)

Another crucial issue is sample size, which means choosing the right number of case studies. According to Eisenhardt (1991), the appropriate number of cases depends upon how much is known and how much new information is likely to be learned from incremental cases (p. 622). In a previous work she stated as a rule of thumb:

'A number of 4 to 10 usually works well. With fewer than 4 cases, it is often difficult to generate theory with much complexity, and its empirical grounding is likely to be unconvincing.' (Eisenhardt, 1989, p. 545)

Thus, in the trade-off between more cases and richer context, the number of cases chosen for this study was influenced by Pettigrew (1990) who emphasized:

'... that only contextual research is capable of capturing the embeddedness and temporal interconnectedness of corporate change processes. Here, context refers to both, outer context, especially the emerging industry-level environment, and to inner context, i.e. the firm level structural and cultural environment.' (Pettigrew, 1990)

Longitudinal research enables us to obtain a sounder understanding of organizations. It puts us in a better position to establish causal relationships, to take into account the most important variables, and to ensure that we do not over-generalize by lumping very different organizations together (Miller, et al., 1982, p. 1014).

Given that the aim of this research project as to develop a comprehensive model on the interdependencies of alliance portfolios and NTBF's organizational development, this research project bases on a longitudinal, multi-case approach, using qualitative and quantitative data. Nine cases representing three segments in the mobile Internet Industry have been chosen.

2.1.3 Critique on case study research

Although the case study is a distinctive form of empirical inquiry, many investigators nevertheless criticize the approach (Yin, 1984). Perhaps the greatest concern has been over

the lack of rigor of case study research. Often, the case study investigator has been sloppy and allowed equivocal evidence or biased views to influence the direction of the findings and conclusions.

A second common concern about case studies is that they provide very little basis for scientific generalization and produce theories that are narrow and idiosyncratic. Another frequent concern is about the efficiency of this methodology. Case studies take too long and result in massive unreadable documents and overly complex theories (Eisenhardt, 1989). A few researchers even doubt its potential to significantly contribute to the set of theories by other than modest advancement of existing theories (i.e., Dyer, et al., 1991, p. 617)

The comparison with other research strategies and improvements of techniques and software tools, such as *QSR NUD*IST*³ used for case study research, relativize these concerns. Bias can also be entered into experiments (see Rosenthal, 1966), in designing surveys (Sudman, et al., 1982), or in historical research (Gottschalk, 1969). In case study research bias has been less frequently documented and addressed (Yin, 1984). Case studies are generalizable to theoretical propositions and not to populations or universes. In this sense, case studies do not represent a sample; the investigator's goal is to expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generalization).

Alternatives to the traditional lengthy narrative way of writing case studies can reduce the amount of documents. And the amount of time spent collecting data depends on the studied phenomenon. Ethnographic studies usually require long periods of time in the field because changes take place gradually. Organizational changes in NTBF can be observed in less time, because changes occur faster and are more radical.

In addition to the relativized concerns, the case study approach has clear strengths. One strength of the case study approach is that it is contextual. Only contextual research is capable of capturing the embeddedness and temporal interconnectedness of corporate change processes, and thereby generate novel theories. Here, context refers to both outer context, especially the emerging industry-level environment, and to inner context, such as the firm level structural and cultural environment (Pettigrew, 1990; Quinn, et al., 1988). A second strength is that the emergent theory is likely to be testable with constructs that can be readily measured and hypotheses that can be proven false (Eisenhardt, 1989). A third strength is that the resultant theory is likely to be empirically valid. The likelihood of a valid

³ *QSR NUD*IST* is the world's leading software for code-based qualitative analysis. It manages non-numerical unstructured data and provides processes as indexing and searching to build theory. More information at www.qsr.com.au

theory is high because the theory-building process is so intimately tied with evidence that it is very likely that the resultant theory will be consistent with empirical observation.

These strength may underly zu Knyphausen-Aufseß's (1995) discussion of a renaissance of case study research. He also provided two reasons why large-sample cross-sectional research is coming under pressure from case study research: (1) increasing awareness that the contingency-based approaches in strategic management need to be mirrored by contingency approaches in empirical research, and (2) because of the influence of 'new' Industrial Organization research with its focus on the firm rather than on the industry.

Given these arguments, it is not surprising that alliance research has been unaffected by the increasing acceptance of case study work in the general disciplines of organizational behavior and strategic management. Case study research has been well-established in the field of alliance research since the middle 1980s. Some prominent examples of case study research on alliances include the following studies shown in table 3. Miles and Huberman (1994) provide additional examples of qualitative research projects.

Study	Author	Content
Alliances of small firms	(Gomes-Casseres, 1997)	Analysis of alliance strategies of small firms based on 4 cases in the US computer industry. Gomes-Casseres found, that small firms tend to use alliances to gain economies of scale, when they are small relative to their rivals and to their market; they avoid alliances, when they are large in relative terms.
Network dyads in entrepreneurial settings: A study of the governance of exchange relations	Larson (1992)	Analysis of social control mechanisms in networks from 7 high-growth entrepreneurial firms in telephone equipment, clothing, computer hardware, and environmental services. According to Larson, the network formation process depends on trust, reciprocity, and mutual interdependence.
Social structure and competition in interfirm networks: The pradox of embeddedness	Uzzi (1997)	Analysis of embeddedness and organization networks of 23 entrepreneurial firms in New York's apparel industry. According to Uzzi, embeddedness shapes organizational and economic outcomes. It promotes economies of time, integrative agreements, Pareto improvements in allocative efficiency, and complex adaptation.
The network embeddedness of new technology-based firms: Developing a systemic evolution model	(Yli-Renko, et al., 1998)	Analysis of interactive relationship between NTBFs and their network environment based on 5 cases in Finish high-tech industries. Yli-Renko and Autio show, how NTBFs become immersed in innovation and manufacturing networks.

Table 3 Case study research on alliances

Although table 3 is not a comprehensive list, it clearly points out that other scholars selected the case study approach as the best suitable methodology for their research on alliances as well.

2.2 Research process

Following the research approach proposed by Eisenhardt (1989), this project comprises eight steps. This section gives a general overview of the proposed procedure as well as of the specific activities conducted in each step. Figure 3 provides an overview of this process.

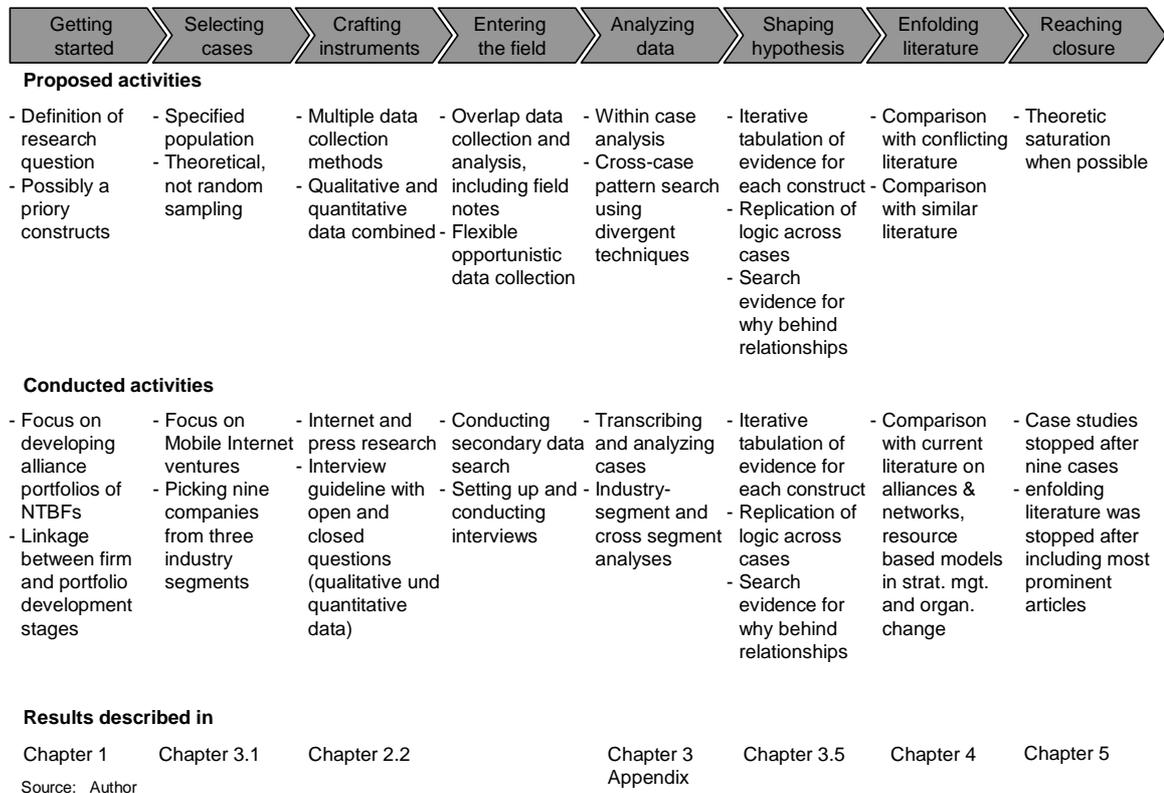


Figure 3 Case study research process

2.2.1 Preparation

The preparation of this research project had two aspects – the first empirical and the second theoretical, which were iteratively interlinked. Thoughts of a research project came up in 1999, when the author took an investment in a mobile Internet venture. Playing an active role by giving feedback on the venture's strategy, the author soon realized the importance of partnerships. Thereby motivated to screen the literature on alliance portfolios, the author realized the lack of studies comprehensively explaining the transition of alliance networks and portfolio as NTBFs develop and grow.

In 2001, the author intensified discussion on alliances in the mobile Internet industry with industry experts (such as network operators and industry consultants). He visited conferences on alliances and the telecommunication industry and intensified the screening of relevant literature on entrepreneurship, strategic management focusing on alliances, and organizational development theories such as life cycle concepts. These preparations led to

the formulation of the stated research project at the end of 2001 and the search for cases to analyze.

2.2.2 Selection of cases

The sampling in case study research is different from those in large-scale empirical research. In large-sample quantitative research, random sampling is used to overcome the problem of bias. In case study research, the population and the sample are deliberately selected through theoretical sampling by researchers in a process best characterized as ‘planned opportunism’ (Glaser, et al., 1967; Pettigrew, 1990). Based on Pettigrew’s (1979) recommendations on case study triangulation, Eisenhardt (1989) advises choosing cases that are extreme situations and polar types in which the process of interest is transparently observable (p. 537). Hence, the objective is to select sites with the highest possible potential for meaningful study of the phenomena of interest.

In selecting nine cases from the mobile Internet industry, an effort has been made to identify industry segments that are well documented and observable and to select—depending on the size and variety within the segment—at least one prospering company and one that was not known for being successful. The two major criteria for segment observability were its age and media coverage. Thus, these segments need to have been in existence since 1999 and investment banks, consulting, and research companies need to have ranked their attractiveness (measured in growth potential) as high and written reports on the segments. Indicators for the company’s success were the prominent reference in segment reports, industry awards, and—in this fairly new industry still important—word of mouth.

This procedure resulted in the selection of three clusters of 2 – 4 companies. Analytical instruments had to be crafted to analyze them. The detailed selection of segments and companies is described in section 3.1.

2.2.3 Crafting instruments

Researchers building theory typically combine multiple data collection methods. While interviews, observations, and archival sources are particularly common, inductive researchers are not confined to these choices. Some investigators only employ a subset of these data collection methods, or they may add others. The rationale is the same as in hypothesis-testing research. That is, the triangulation made possible by multiple data collection methods provides stronger substantiation of constructs and hypotheses (Eisenhardt, 1989).

To have a broader view of the case settings and to capture qualitative as well as quantitative data, a sequential procedure was designed to craft the instruments before entering the field (shown in figure 4).

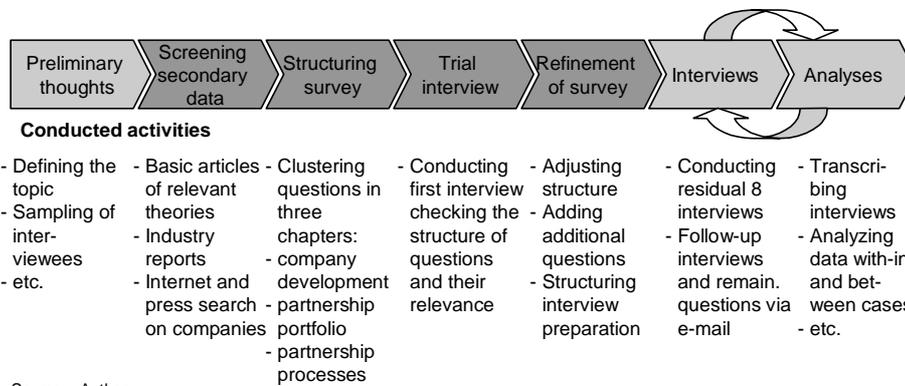


Figure 4 Crafting instruments for data collection

This process started after preliminary thoughts on the research question and the sampling. First, secondary data were studied to see which information was already available. This secondary data included industry reports from research companies (i.e., *Gartner*, *Forrester*, and *Durlacher*) and consulting companies (i.e., *A.T. Kearney*, *BCG*, and *Booz Allen Hamilton*), press clippings from homepages and news services (i.e., *Hoover's*⁴, *Factiva*⁵ and *OneSource*⁶), and annual reports, to name a few. By comparing the information from secondary data with the information requirements of the study, the questions for the survey were derived. Second, these questions were structured into three clusters: questions on (1) the development of the company, (2) the partnership portfolio, and (3) on partnership processes. Third, the questionnaire was tested in a trial interview. Shortcomings, which became obvious during the interview, or which were realized later transcribing the interview and analyzing the data, were noted and used to refine the survey before entering the field. The survey was also enriched by additional questions and two preparational forms that covered the company's business model and its development (including the formation of important alliances) to facilitate the discussion on their development.

With a broad understanding of the industry, a detailed preparation of every case study company and a tailored and tested questionnaire the field was entered.

⁴ *Hoover's* is an information provider that delivers company, industry, and market data. Further information at www.hoovers.com/hoov/about/index.html

⁵ *Factiva* is the newly launched business news and information service of *Reuters* and *Dow Jones*. Further information at: www.factiva.com/about/index.asp

⁶ *OneSource* is a business information provider for sales, marketing, finance, and general management topics. Further information at: www.onesource.com/about/content63.asp

2.2.4 Data collection

A striking feature of research to build theory from case studies is the frequent overlap of data analysis with data collection. For example, Glaser and Strauss (1967) argue for joint collection, coding, and analysis of data. While many researchers do not achieve this degree of overlap, most maintain some overlap, which is also shown in figure 4.

Overlapping data analysis with data collection not only gives the researcher a head start in analysis but, more important, allows researchers to take advantage of flexible data collection. Indeed, a key feature of theory-building case research is the freedom to make adjustments during the data collection process. These adjustments can be the addition of cases to probe particular themes that may emerge.

Additional adjustments can be made to data collection instruments, such as adding questions to an interview protocol or to a questionnaire (Harris, et al., 1986). These adjustments allow researchers to probe emergent themes or to take advantage of special opportunities that may be present in a given situation. In other situations adjustments can include the addition of data sources in selected cases.

These alterations raise an important question: Is it legitimate to alter and even add data collection methods during a study? For theory-building research, the answer is “yes”, because investigators are trying to understand each case individually, and in as much depth as is feasible. The goal is not to produce summary statistics about a set of observations. Thus, if a new data collection opportunity arises or if a new line of thinking emerges during the research, it makes sense to take advantage by altering data collection, if such an alteration is likely to better ground the theory or to provide new theoretical insight. This flexibility is not a license to be unsystematic. Rather, this flexibility is controlled opportunism in which researchers take advantage of the uniqueness of a specific case to improve resultant theory (Eisenhardt, 1989).

This study is based on primary and secondary data. Internet searches were used to gather secondary data (i.e., press clippings, annual reports, and product information). In addition, press search on every case company was conducted within the databases of *Factiva*, *Hoover's* and *OneSource*.

The primary data were gathered by ‘face to face’ interviews (with one exception via telephone), follow-up telephone-calls, and e-mails. Interviewees were searched and selected based on three criteria: they had to be high level to answer the strategic questions; they had to be involved in the alliance activities, and they had to be with the firm for more than two years to be knowledgeable about its development. In addition, the author tried to get more

than one interview where feasible. The final interview sample (a detailed list is enclosed in the appendix) looks as follows:

Position in Firm	CEO	CFO	Business development / managing directors	Marketing and sales
Number of interviewees	5	2	2	2
Thereof founders	4	2	-	-

Table 4 Interview sample

Close to 70% of the interviewees were on a board level and more than 50% were founders of the case study firms. The other interviewees were all second level, thus it was a high level interview panel. In two companies two people were interviewed, two check for consistency. In the other firms only one employee was interviewed. Not being the ideal case, this procedure is justifiable for three reasons. First, the collected data is largely objective. Performance data as revenues, employees etc, alliance data as formation and termination dates and data on the organizational change as the organizational structure or compensation and reward systems are non interpretative. Second, detailed and excellent secondary data sources helped to validate the data. And third, the interviews of the other two case studies were very consistent. In addition, this procedure was ‘as good as it gets’ because in many firms only the CEO was knowledgeable about the alliances, their integration into the corporate strategy, and the processes how the portfolio changed its structure.

The initial interviews usually lasted 2-3 hours and were structured in three sections. The first part covered the general development of the case study firm to understand how the organizational characteristics and the resource requirements changed over time. The second part covered structural aspects of the alliance portfolio enclosing the questions such as with whom, why, when, how intensive. The last part analyzed the alliance process to understand how alliances are formed and managed. Every section started with open question to understand the general settings. The core elements in each section were covered a second time with closed questions to assure that these aspects are enclosed in all case studies and thus comparable. In these closed section the interviewees had to clearly specify the development steps of their firm in terms of date, their characteristics, and resource requirements. The dimension to evaluate the organizational characteristics reached from the organizational structure, over the management focus, the communication style, and the flexibility of strategy, to the compensation and reward systems. These dimensions have been selected by referring to the current practice in organizational theory (i.e., Block, et al., 1985;

Greiner, 1972; Kazanjian, et al., 1989). The seven resource categories, for which requirements were collected, comprised technological know-how, reputation, access to markets and to supply, financial and human resources as well as organizational skills. The selected categories have also been used in other research studies focusing on company resources (i.e., Barney, 1991). To indicate the organizational characteristics and resource requirements four and five point scales were used. The detailed definitions of every category and the scales to measure these categories are provided on the basis of the first case study in section 3.2.

Collection alliance data was an iterative process based on archival data and interviews. Archival data has been used to gather information on the partners and the dyadic relationships. Partners are characterized by their name, the industry they belong to, and their type (start-up, mid-cap, large firms). Foundation date, and contingently termination date, motivation, the governance structure, and the intensity over time describe partnerships. Industry reports, company home pages, and business databases as *Factiva* were used as data sources. The relevant information was stored in a database, which structure is depicted in figure 5.

Alliance database structure

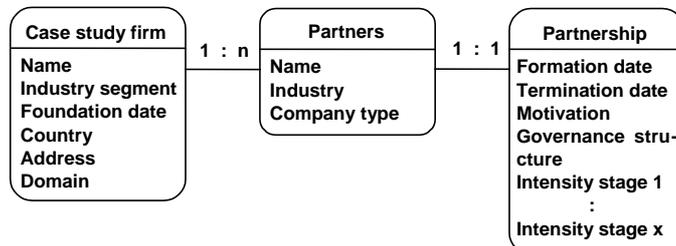


Figure 5 Alliance database structure

Database reports were used to discuss the alliance portfolios with the case studies' management teams, who confirmed or completed the data during the interviews and made changes, where needed. After the interviews, the database was updated. For comprehensibility reasons, the documentation of the networks is explained on the basis of the first case study.

The interviews were taped and fully transcribed and are attached in the appendix. This procedure of full transcription is imperative for reasons of internal validity and reliability. In their authoritative work on the methods of data collection, Bortz and Döring (1995) state:

'If an interview also contains open questions and narrative parts, an audio recording is unavoidable.' (Bortz, et al., 1995, p. 230, 231)⁷

All transcripts are included as part of the case study database. Similar to the well-established Harvard Business School case research approach, all interviewees were granted anonymity, in that nothing they said was attributed to them personally until and unless they approved of the transcript (Leonard-Barton, 1990).⁸

2.2.5 Analyzing data

Analyzing data is the heart of building theory from case studies (Eisenhardt, 1989), but it is the most difficult and the least codified part of the process. Since published studies generally describe research types and data collection methods but give little space to discussion of analysis, a huge chasm often separates data from conclusions. As Miles and Huberman wrote:

'One cannot ordinarily follow how a researcher got from 3600 pages of field notes to the final conclusions, sprinkled with vivid quotes though they may be.' (Miles, et al., 1994, p. 16)

However, a few key features of analysis can be identified. One key step is the within-case analysis; the other is searching for cross-case patterns. Within-case analysis typically involves detailed case study write-ups for each site. These write-ups are often simply pure descriptions, but they are central to the generation of insight (Gersick, 1988; Pettigrew, 1988) because they help researchers to cope with the often enormous volume of data early in the analysis process. However, there is no standard format for such analysis. Different scholars have used different processes. Quinn (1980) developed teaching cases for each.

⁷ In addition to the added rigor and internal validity, one of the main benefits of taping and transcribing interviews is that the interviewer can concentrate on what is being said, rather than being continuously distracted by note-taking.

⁸ Interviewees received copies of the transcripts with requests for approval. If they objected to certain parts of the transcripts they were asked to mark the parts, which were then omitted from the final transcript. This occurred in three instances where a few sentences were omitted by request of the interviewee. Interviewees were also asked to make additions or clarifications, which were then integrated into the final transcript version. Such additions were made in two transcripts. One interviewee submitted a clarification for a single term. With the exception of this clarification, which was transmitted via telephone, the three other requests for changes were transmitted via e-mail and were marked by the interviewees directly in the original transcript data file.

Mintzberg and McHugh (1985) compiled a case history from their set of cases, Leonard-Barton (1988) used tabular displays and graphs of information about each case, and Abbott (1988) suggested using sequence analysis to organize longitudinal data. However, the overall idea is to become intimately familiar with each case as a stand-alone entity. This process allows the unique patterns of each case to emerge before investigators push to generalize patterns across cases. In addition, it gives investigators a rich familiarity with each case, which, in turn, accelerates cross-case comparison.

Coupled with within-case analysis is cross-case search for patterns. The tactics here are driven by the reality that people are notoriously poor processors of information. Different scholars have pointed out their weaknesses:

- leaping to conclusions based on limited data (Kahnemann, et al., 1973)
- being overly influenced by vividness (Nisbett, et al., 1980), or
- by more elite respondents (Miles, et al., 1994)
- ignoring basic statistical properties (Kahnemann, et al., 1973), or
- dropping disconfirming evidence (Nisbett, et al., 1980)

Thus, the key to good cross-case comparison is counteracting these tendencies by looking at the data in many divergent ways. One tactic is to select categories or dimensions, and then to look at within group similarities coupled with intergroup differences. A second tactic is to select pairs of cases and list the similarities and differences between each pair. This tactic forces researchers to look for the subtle similarities and differences between cases. The juxtaposition of seemingly similar cases can break overly simplistic frames. An extension of this tactic is to group cases into threes or fours for comparison (cluster analyses). The third strategy is to divide the data according to data sources. This tactic exploits the unique insights possible from different types of data collection. When a pattern from one data source is corroborated by evidence from another, the finding is stronger and better grounded. When evidence conflicts, the researcher can sometimes reconcile the evidence through deeper probing of the meaning of the differences.

Overall, the idea behind these cross-case searching tactics is to force investigators to go beyond initial impressions by using structured and diverse lenses of accurate and reliable theory—that is, a theory with a close fit to the data. Also, cross-case searching tactics enhance the probability that the investigators will capture novel findings that may exist in the data.

The data analysis in this study is based on three methods: within case analysis, cross-case analysis within the three segments, and cross-segment analysis. The two cross-case analysis

methods build on the within-case analysis framework. This framework is a mixture of the processes proposed by Leonard-Barton (1988) and Abbott (1988). Following the recommendations of Leonard-Barton, the case findings in the three chapters (firm development, alliance portfolio, and alliance processes) were categorized in tabular displays and the quantitative data were graphed. Following the recommendations of Abbott, the longitudinal data were allocated to development stages. These stages were displayed as sequential events.

To note is the network analysis, because the alliance data was broad, more-dimensional, and at the heart of this research study. Starting point for the network analysis was an alliance database, which was filled out during the data collection. This database comprises data on the case study, its partners, and the characteristics of their cooperation over time. Due to the complex data structure, a special software tools was employed. Pajek⁹ (de Nooy, et al., 2003) was the software package of choice for the representation of network dynamics; a selection, other scholars recently did as well (i.e. Powell, et al., 2002; Uzzi, et al., 2002). Pajek allows to analyze extended networks and to identify subsets such as multi-connected component and clusters (White, et al., 2001). In addition, Pajek can expose the network's emergent structure as organizations enter and exist with one another over time (Uzzi, et al., 2002). The visualized networks are presented in chapter 3 to highlight both the process by which new ties and organizations are added to the network and how the network structure evolved. A detailed description how the networks were graphed and which algorithms were used is provided for comprehensibility reasons in section 3.2 together with the first network graphs. This proceeding contradicts the classical division of methodological aspects from the empirical findings but—hopefully—supports the readability of this study through providing methodological details where the subsequent application illustrates the methodology.

Alliances: research methodology, the network analysis is based on two layers. Its general structure is analyzed mainly based on quantitative data as the network size (number of partners), network quality (intensity of links) and its center of gravity (characteristic of partners). Qualitative data—especially narratives on partnerships—help to understand how ties are changing and how the process of partnership formation, intensification, restructuring, and termination work.

⁹ Pajek is a software package for large network analyses. Further information at <http://vlado.fmf.uni-lj.si/pub/networks/pajek/>

This study is based on three different performance dimensions: growth, profitability, and innovation. Several indicators measure these dimensions. These indicators are weighted and integrated into one single balanced performance index, which is depicted in table 14. This sub-section motivates the different dimension and explains the different indicators and its weighting.

All case studies started as technology growth ventures. The archetypes for these companies are *Microsoft*, *Sun Microsystems* and *Cisco Systems*. The value of these companies is determined through their growth. Therefore, growth is a key performance indicator. Growth can refer to organizational growth and economic growth, which are normally strongly correlated. Economic growth is measured in absolute sales of their last fiscal year¹⁰ and the growth rate of the last years, which is used as a short to mid-term growth perspective. The organizational growth is measured analogous in number of employees at the beginning of 2002 and the growth rate of employees. Additionally, reorganizations and lay-offs have been accounted for negatively.

The profitability is the next dimension. Its importance grew constantly over the evolution of that industry. After the capital markets turned bad, all case studies had to focus on internal growth. Profitability secures survival and further growth. The profitability is measured by two indicators: the bottom line profit and the date the break-even point has been reached or is planned to be reached. In finance literature, many profitability measures have been developed. Cash flow based performance measures, as the CFROI¹¹, are more accurate to measure performance, because they are not distorted by depreciation. But they have not been used for simplicity and data availability reasons.

Innovation is the third performance dimension. It measures the distinctiveness of the companies' technology. The case studies' growth perspective mainly depends on their unique technologies and services. The innovation is measured in awards obtained. Relevant awards are multi-media, start-up, and new media awards.

From the within-case analysis plus the two cross-case findings and overall impressions, tentative themes, concepts, and relationships between variables begin to emerge. The next step of this iterative process is to compare systematically the emergent frame with the evidence from each case in order to assess how well or poorly it fits with case data.

¹⁰ In most cases the year 2001

¹¹ Cash flow based return on investment

2.2.6 Shaping hypothesis

The central idea of shaping hypotheses is that researchers constantly compare theory and data—iterating towards a theory that closely fits the data. A close fit is important to build good theory because it takes advantage of the possible insights from the data and yields an empirically valid theory.

One step in shaping hypotheses is the sharpening of constructs. This is a two-part process involving (1) refining the definition of the construct and (2) building evidence in each case. This occurs through constant comparison between data and construct so that accumulating evidence from diverse sources converges on a single, well-defined construct.

This process is similar to developing a single construct measure from multiple indicators in hypothesis testing. That is, researchers use multiple sources of evidence to build construct measures that define the construct and distinguish it from other constructs. In effect, the researcher is attempting to establish construct validity. The difference is that the construct, its definition, and measurement often emerge from the analysis itself, rather than specified a priori. A second difference is that no technique like factor analysis is available to merge multiple indicators into a single construct measure. This is because indicators may vary across cases (i.e., not all cases may have all measures) and because qualitative evidence (which is common in theory-building research) is difficult to collapse. Thus many researchers rely on tables that summarize and tabulate the evidence underlying the construct (Miles, et al., 1994; Sutton, et al., 1987).

A second step in shaping hypotheses is verifying that the emergent relationships between constructs fit with the evidence in each case. Sometimes a relationship is confirmed by the case evidence, while other times it is revised, disconfirmed, or thrown out for insufficient evidence. This verification process is similar to that in traditional hypothesis testing research. The key difference is that each hypothesis is examined for each case, not for the aggregate cases. Thus, the underlying logic is replication. That is, a series of cases is treated as a series of experiments; each case serves to confirm or disconfirm the hypotheses (Yin, 1984). Cases that disconfirm the relationships often can provide an opportunity to refine and extend the theory. At this point, qualitative data are particularly useful for understanding why or why not emergent relationships hold.

Overall, shaping hypotheses in theory building research involves measuring constructs and verifying relationships. These processes are similar to traditional hypothesis-testing research. However, these processes are more judgmental in the theory-building research

because researchers cannot apply statistical tests. The researcher must judge the strength and consistency of relationships within and across cases.

In this research project, the process of shaping hypotheses was highly iterative. Coherent patterns from cross-segment analysis were broken into logical relationships, which were formulated as preliminary hypotheses. In the next step, the tabular displays from the within-case analysis were screened, and relevant quotes were copied into tabular display for each hypothesis. After revising the preliminary hypotheses, all case study interviews were checked for contradicting or supporting quotes, which were also added to the tabular displays. These tables were used to formulate the first draft of tentative hypotheses, which was subsequently sent out and discussed with the managers who were interviewed. After this feedback loop, the final set of tentative hypotheses was formulated.

Confronting these empirical findings with the current body of literature on alliances and networks, theories on competitive advantage, and organizational theory is the next step.

2.2.7 Enfolding literature

An essential feature of theory building is the comparison of the emergent concepts, theory, or hypotheses with the existing literature. This involves looking for similarities and contradictions, and investigating why. A key to this process is to consider a broad range of literature.

Examining literature that conflicts with the emergent theory is important for two reasons. First, if researchers ignore conflicting findings, confidence in the findings is reduced. Second, conflicting literature represents an opportunity. The juxtaposition of conflicting results forces researchers into a more creative, frame-breaking mode of thinking than they might otherwise be able to achieve. The result can be deeper insight into both, the emergent theory and the conflicting literature, as well as a sharpening of the limits to generalizability of the focal research.

Literature discussing similar findings is important as well, because it ties together underlying similarities in phenomena normally not associated with each other. The result is often a theory with stronger internal validity, wider generalizability, and a higher conceptual level.

Overall, tying the emergent theory to existing literature enhances the internal validity, generalizability, and theoretical level of theory building from case study research. While linking results to the literature is important in most research, it is particular for case study research because the findings are often based on a limited number of cases. In this situation,

any further corroboration of internal validity or generalizability is an important improvement (Eisenhardt, 1989).

In this study, three bodies of literature are enfolded. The case studies are compared with writings on alliances and networks, resources and their strategic importance, and on organizational development. In the part covering alliances and networks, articles on social network theory and resource dependency theory were most relevant. Resource aspects are compared with the literature on the Resource Based View and its adaptations as the relational view and dynamic capabilities. Development issues are compared with theories on organizational change and life-cycle models. Due to the immense amount of articles particularly on alliances and networks, only peer reviewed articles and well-known books were included in the literature review.

2.2.8 Reaching closure and validity of data

Two issues are important in reaching closure: when to stop adding cases, and when to stop iterating between theory and data. For the first issue, ideally, researchers should stop adding cases when theoretical saturation is reached (Glaser, et al., 1967). In practice, theoretical saturation is often combined with pragmatic considerations such as the amount of time and money in dictating when case collection ends. In fact, it is not uncommon for researchers to plan the number of cases in advance (Eisenhardt, 1989).

For the second closure issue, when to stop iterating between theory and data, saturation is again the key idea. That is, the iteration process stops when the incremental improvement to theory is minimal. The final product of building theory from case studies may be concepts, a conceptual framework, or propositions, or possibly a midrange theory.

In this study, reaching closure in terms of adding cases was very simple. The number of cases was planned in advance. With nine case studies, this project was on the upper end of the range proposed by Eisenhardt (1989) and, therefore as hoped, on the 'safe side'. The iteration process between theory and data was terminated after the most powerful articles in the above-mentioned areas were included in this study and further articles provided only marginal insight.

Finally, a few remarks on validity are warranted, since the standard criticism confronting case studies usually focuses on validity. Yin (1984) describes four standard tests of validity: construct validity, internal validity, external validity, and reliability. In this study, validity has been addressed in a number of ways. Triangulation, for example, was used to increase construct validity; multiple iterations and follow-ups were conducted during analyses to

increase internal validity; and adhering to the strict documentation and transcription standards heightened reliability and repeatability. The results of this rigorous methodology are summarized in the next chapter—the description of case studies.

3. Case studies on alliance portfolios and organizational change

The objective of this chapter has been outlined in the introduction. At the heart of this chapter are the case studies of nine firms within the Mobile Internet industry taken from three industry segments:

- two provide mobile location services (MLS)¹²,
- four offer mobile content services (MCS), and
- three create and sell mobile marketing campaigns.

The number of case studies corresponds to the size and the diversity of the industry segment. The goal of the case study analyses is to understand the benefits from alliance portfolios, the processes of their formation and management, and their interrelatedness with organizational change. Therefore, a longitudinal research design has been chosen, which analyzes the firm's development (general characteristics and resource needs), changes in the alliance portfolio structure and processes, and the link between alliance portfolio and company performance.

To describe the results of these analyses, this chapter is structured into four sections. The first section (3.1) focuses on the industry context and describes the emerging mobile Internet industry. It contains an industry segmentation and describes the selection of MLS, MCS, and Mobile Marketing as the most promising industry segments from which to pick the case studies. The aim of this section is to provide the appropriate setting to examine the different case studies.

In the next section (3.2), alliance portfolios of MLS firms are described and analyzed. After introducing the industry segment, case-by-case a short company profile is provided, pinpointing the development from its foundation until spring 2002 and its current business model. These profiles are followed by a detailed segment analysis focusing on the common development of these companies and explaining their differences. This segment analysis consists of five parts, describing:

1. Organizational development (organization structure, management style etc.) from foundation on. From this analysis, development stages are derived.

¹² Detailed definition and segment explanations will be given in chapter 3.2-3.4

2. Critical resources for the development stages
3. Alliance portfolio structure and its changes
4. Processes and skills to form and manage the alliance portfolio
5. Firm performance

Within-case and within-segment analyses concludes the segment studies, which can be considered as being one of the most crucial steps in building theory from case studies. The two following segments, mobile content services (3.3) and mobile marketing (3.4), are presented in the same way: descriptions of the segments and their firms are concluded by within-case and within-segment analyses.

Chapter 3 ends with a cross segment analysis (3.5). This analysis aims to find similar and diverging patterns of alliance portfolios, their dynamics, and their processes. Tentative hypotheses are formulated based on these findings. The resulting set of hypotheses, the goal of this longitudinal research study on alliance portfolios, is consolidated in a preliminary model on alliance portfolio dynamics and organizational change.

3.1 Building industry context: Mobile Internet industry

This section will analyze the development of the mobile Internet industry and the role that NTBFs play. The aim is to (1) provide a general overview of the industry, (2) explain the specific industry configuration that make alliances such a common strategic move in this industry, and (3) select the most interesting segments in terms of future relevance and alliance activities, thereby depicting the peculiarities of this industry and its segments. These three steps lay out the basics for understanding the development of the case study companies and for analyzing their alliance portfolios.

3.1.1 Industry overview

Three aspects of the Mobile Internet industry are introduced below. First, the industry and its boundaries are defined; second, the value chain is explained and the different business models are pinpointed; third, recent developments in this industry, which are mainly technology driven, are covered.

Mobile Internet industry and its boundary

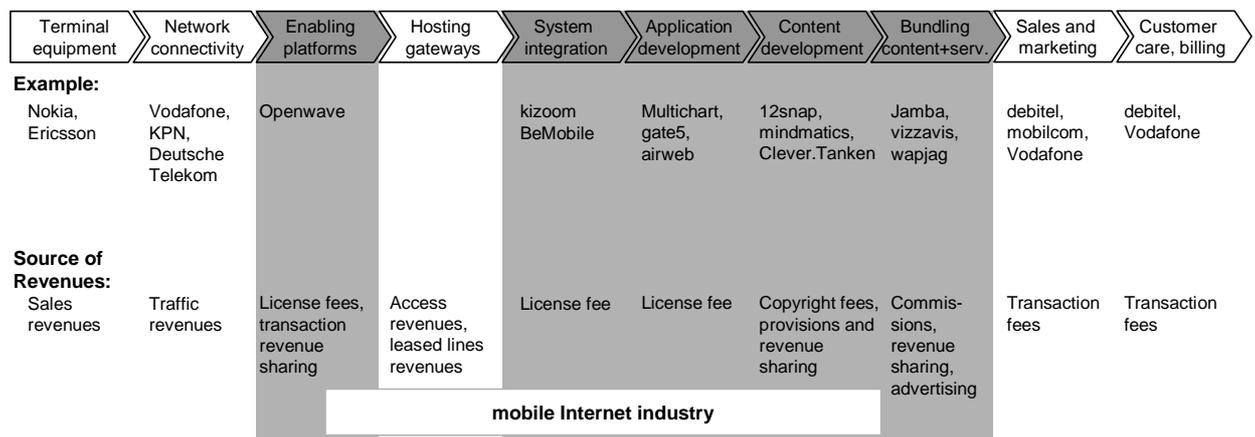
In this study, the mobile Internet industry is defined as all companies developing data-applications and data-services for mobile devices such as cellular phones, personal digital assistants (PDAs) and pocket PCs. The mobile Internet industry is part of the mobile

communication industry, which comprises terminal equipment and customer premise equipment (CPE) manufacturers, as well as network operators and mobile service providers, including customer care and billing companies.

Mobile Internet companies develop solutions for enabling platforms (e.g., WAP-browsers by *Openwave*) and for hosting and gateway provisioning (e.g., the SMS-gateway by *Materna*); they integrate systems and adapt applications to mobile standards (e.g., mobile news portal by *BeMobile*). They develop mobile applications (e.g., a mobile brokerage tool by *Multichart*) and mobile content (e.g., fuel prices of nearby filling stations by *Clever.Tanken*), or they bundle content and service applications (e.g., the mobile general-purpose portal by *Jamba!*).

Figure 6 illustrates the mobile communication value chain and the part that is considered the Mobile Internet industry for this study.

Mobile communication value chain



Source: Author based on Booz Allen Hamilton (2001b)

Figure 6 Mobile communication value chain

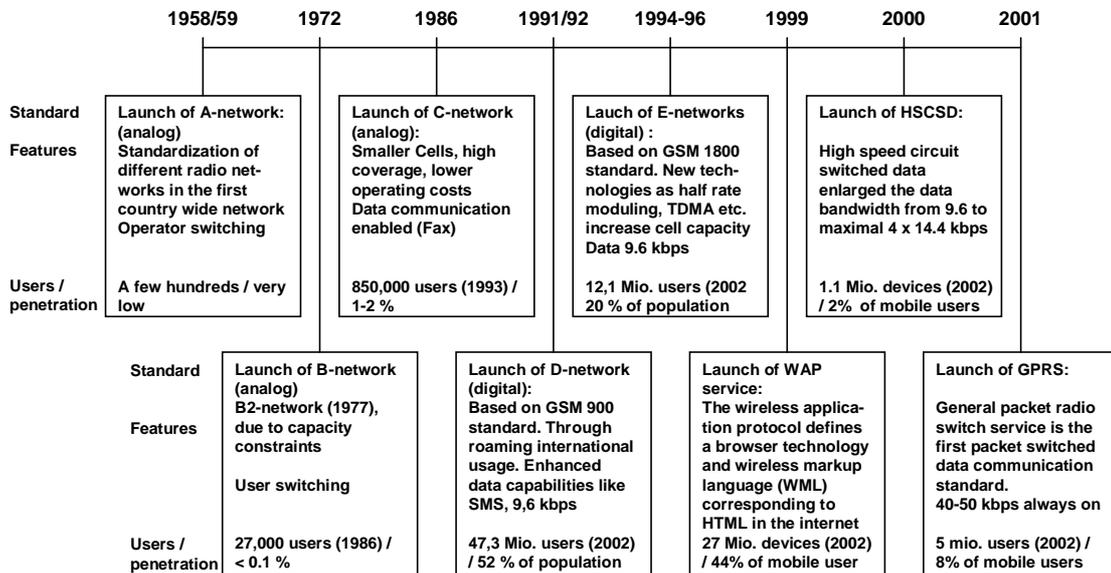
A more detailed documentation of this value chain, a description of the steps, and the underlying business models are provided in the study by Booz Allen Hamilton (2001b).

History

The development of the mobile Internet industry depended and still depends on the development of the mobile communication industry because of its embeddedness in the mobile communication value chain. The mass-market rollout of this industry started in Europe in the mid 1980s when the third generation of mobile analog networks (c-networks) were introduced. For the first time, these networks enabled data communication via faxes. Their coverage went up to approximately 100% of the surface area and several million subscribers signed up this service in Europe (850.000 in Germany in 1993) (Nokia, 2002).

The industry took off with the introduction of digital standards in the beginning of the 1990s (1991-1992). Figure 7 illustrates the development of the mobile communication industry.

Mobile communication industry development (Germany)



Source: Author, based on Nokia (2002) and EITO (2002)

Figure 7 History of mobile communication

In 1991, GSM¹³ 900 was introduced as the first digital mobile communication standard. Due to its bandwidth of 9.6 kbit/s, limited data communication was feasible and a limited amount of services could be transmitted (short message services [SMS], ring tones, logos, etc.).

Business opportunities in the Mobile Internet market arose from the mid 1990s (*Nokia* launched its first SMS compatible phone *Nokia 2110* in 1994) for two reasons, (1) subscriber growth of mobile communication companies and (2) development of data bandwidth, provided by new technologies like WAP, HSCSD, and GPRS. To take advantage of these opportunities, companies invented new applications and services. Table 5 provides an overview of data application and services:

Service / application	Launch date	Description	Companies
SMS	1995	Short message service. Service through which users can send simple text-based messages from one device to another – generally up to 160 characters. (19 cents a message)	All MNO operators and service provider
Ring tones	1998	Sounds and melodies to personalize ring tones of the mobile phones. (0.59-1.99 cents a tone per download)	Operators (e.g., <i>T-mobile</i> , portals (e.g., <i>Jamba!</i>), and startups
Logos	1999	Basic graphics to personalize display of mobile phones (approx. 0.59 cents per download)	Operators (e.g., <i>T-mobile</i> , portals (e.g., <i>Jamba!</i>), and startups

¹³ Global system for mobile communication

Service / application	Launch date	Description	Companies
Information services (WAP)	2000	Weather, traffic, politics etc. information based on WAP standard. (0.50 – 2 € per month for the news service plus approx. 4 cents per usage)	Operator portals (e.g., <i>Vizzavi</i> , news publishers (e.g., <i>kicker</i>), startups (e.g., <i>Airweb</i>)
Transaction (WAP)	2000	The variety of transactions reaches from financial transaction as buying and selling stocks over booking hotel rooms or buying railway tickets to m-commerce transaction as buying Bayern München merchandise. (approx. 1 € per transaction)	Banks (e.g., <i>Deutsche Bank</i>), transportation companies (e.g., <i>Lufthansa</i> , <i>Deutsche Bahn</i>), Hotels, etc.

Table 5 Data services and application in the 1990s

These new services and applications gained a fair amount of the communication industry sales. For example, in Germany, sales in 2002 totaled to €3 bn. This corresponds to a 15% share of the market, with some MNOs¹⁴ generating up to 18% of their sales through data communication. The sales distribution and its forecast are shown in figure 8.

Mobile communication industry sales (IDC, 2002)

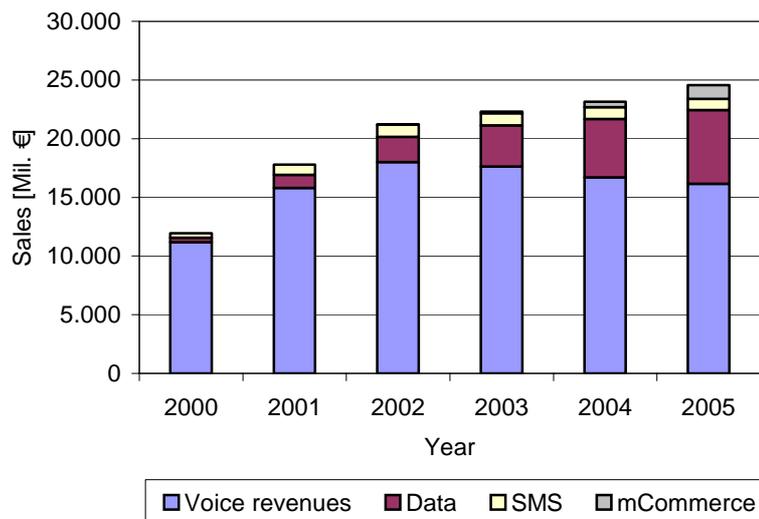


Figure 8 Mobile communication sales (Germany)

Data sales are expected to grow up to a share of 34% in 2005. This further growth is based on two widely accepted propositions. (1) Declining voice sales: the mobile voice communication prices are expected to fall substantially and the limited volume increase in this saturated market cannot compensate for this. (2) Growing data sales: the forecasted growth in data communication assumes that new standards facilitate more sophisticated services. After network operators upgrad their networks, the equipment manufacturers will

¹⁴ Mobile network operator

start to ship handsets based on EDGE technology in 2003, and UMTS technology in late 2003 or early 2004 (EITO, 2002).

Industry experts predict that new technologies will challenge the behavior of mobile communication users (Durlacher, 1999). The number of data users is expected to grow only slightly, because the use of SMS-based data communication is already widely spread in Europe. However, this basic technology is expected to be substituted by more advanced technologies by 2006, which will allow for more advanced services and applications. This trend is shown in figure 9.

Mobile internet users by bearer service (EITO, 2002)

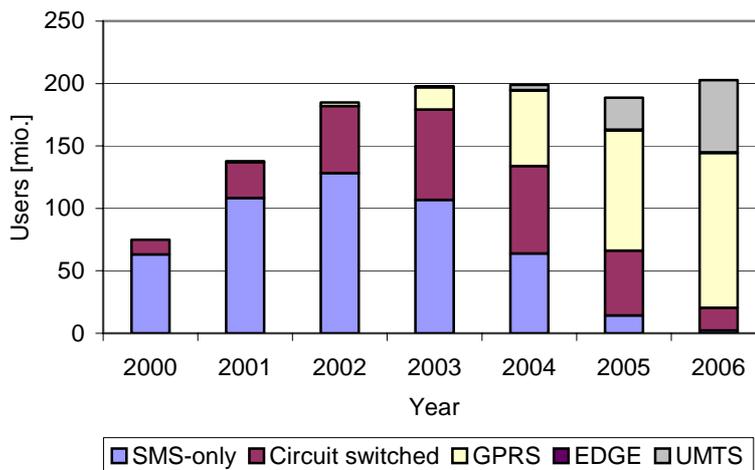


Figure 9 Usage of mobile standards

The new technologies offer more bandwidth for data communication, thereby enabling new and interesting end-user applications and services. The available bandwidth grew from 9.6 kbps for the first handsets in GSM 900 networks to 28.8 to 56 kbps for HSCSD – the most advanced data circuit switch transmission standard. The first package switched standard, GPRS, currently has a bandwidth of between 40 to 50 kbps (Gartner, 2002b) in a separated data channel, which is always on. The next generation of package switched technology, EDGE, is expected to have a bandwidth of 384 kbps and UMTS to offer a bandwidth of up to 2 Mbps depending on the distance from the antenna. Over the last years, equipment manufacturers were capable of providing the mobile communication industry with equipment with a bandwidth that grew annually by 70 % (CAGR).

Service-segments

The increase in bandwidth facilitates the innovation of mobile applications and services. Starting with basic services (described in table 5), the mobile Internet industry developed a number of services and is expected to continue to do so in the future. These services address different consumer needs, from entertainment and information services over advanced

communication applications and mobile commerce solutions to business to consumer (B2C) systems such as mobile CRM and employee services (B2E) as mobile office solutions. Figure 10 gives an overview of the wireless data evolution and the potential service rollout dates.

Wireless data evolution – potential service roll-out

Wireless Data Services	Phase I Launch GPRS	Phase II Expand GPRS/Prepare UMTS	Phase III Launch UMTS
Mobile entertainment	mobile music mobile games entertainment information	lotteries/gambling	mobile video
Mobile information	Location based services e.g. news, guides, directory listings Yellow pages	Still-image transfer	
Mobile communication	e-mail unified messaging	mobile chat mobile instant messaging	video telephony
Mobile commerce	mobile auctions mobile ticketing mobile reservation	mobile shopping mobile banking mobile advertising	
Business to consumer		mobile CRM Mobile medical records	mobile passports
Employee services		mobile office field force automation & fleet mgmt.	
Technological milestones	Launch GPRS 2002	Launch EDGE 2003	Launch UMTS 2004

Source: Author, based on Booz, Allan, Hamilton (2002)

Figure 10 Wireless Data Evolution

Different industry experts such as consultancy companies (i.e., Booz Allen Hamilton, 2001a; Booz Allen Hamilton, 2001b) and research companies (i.e., Gartner, 2002b) have discussed the attractiveness of different services and applications. *Booz Allen Hamilton* (2001a, p.14) provided a framework to rank services based on their market attractiveness (measured in future revenue potential) and their realization complexity. They found that the most interesting applications were (1) communication services such as peer-to-peer SMS, EMS, and MMS; (2) entertainment such as games on demand, music and sport services; (3) business services such as e-mail, yellow-pages, and mobile marketing campaigns; and (4) transaction services such as mobile brokerage and account transactions.

Similar findings are reflected in the mobile communication industry sales forecast of *IDC* (2002), which has been shown above in figure 8, and in the sales forecast for the mobile Internet industry as shown in figure 11.

Mobile service and content revenues (EITO, 2002)

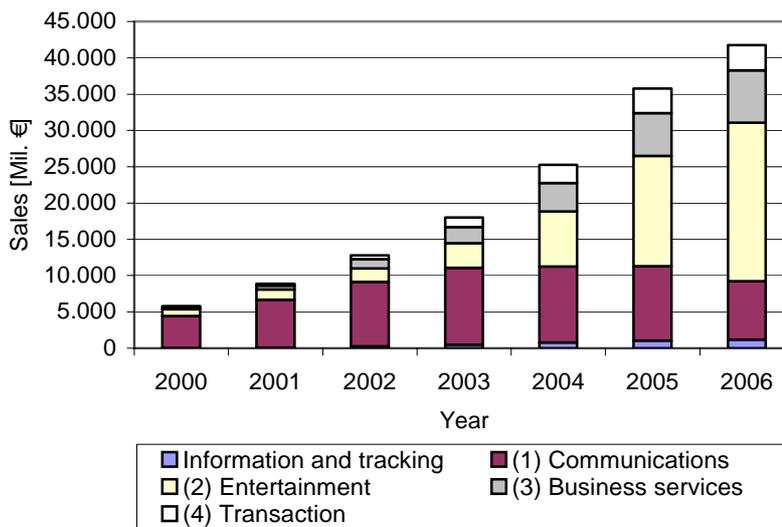


Figure 11 European mobile service and content revenue forecast

In conclusion, the industry is facing an annual growth rate of approximately 50%, which makes it one of the most promising industries in the whole economy. Eisenhardt and Schonhooven (1996) classified this type of industry as high velocity.

Integration of value creation

This significant growth can only be achieved if the promising new applications and services can be integrated throughout the whole value chain (shown in figure 6). The network equipment manufacturers have to develop and test new technologies, based on which they have to design and produce network equipment, which has to be bought and set up by the network operators. Platforms (comparable to an operating system in the PC world) have to be adjusted or updated for the new technology, and application developers and service providers have to redesign or upgrade their products and services so that a bundle consisting of new equipment, new services, and new applications can be marketed and sold.

This described dependency is presented through the integrated mobile communication value chain. However, the complexity of these interactions not only depends on the value chain dependencies but also on the immense time pressure in this industry. This pressure is created through a highly fixed cost structure and short technology life cycles (which can be seen in figure 7 – ‘Wireless data evolution’). The high fixed cost structure is driven by two forces: costly network equipment and even more costly operator licenses. In the case of UMTS technology, these fixed costs can exceed €20 bn per operator the bigger European countries like the UK and Germany (UBS-Warburg, 2002).

This time pressure forces the industry to reduce time to market by integrating technologies in parallel rather than step-by-step throughout the value chain so that, the above-mentioned

bundle of mobile devices, applications, and services can generate revenues as soon as possible. This pressure created an integrated mobile data value net (EITO, 2002), which is shown in figure 12. Its implication on the alliance intensity will be discussed after the next part in sub-section 3.1.2.

Mobile Internet value web

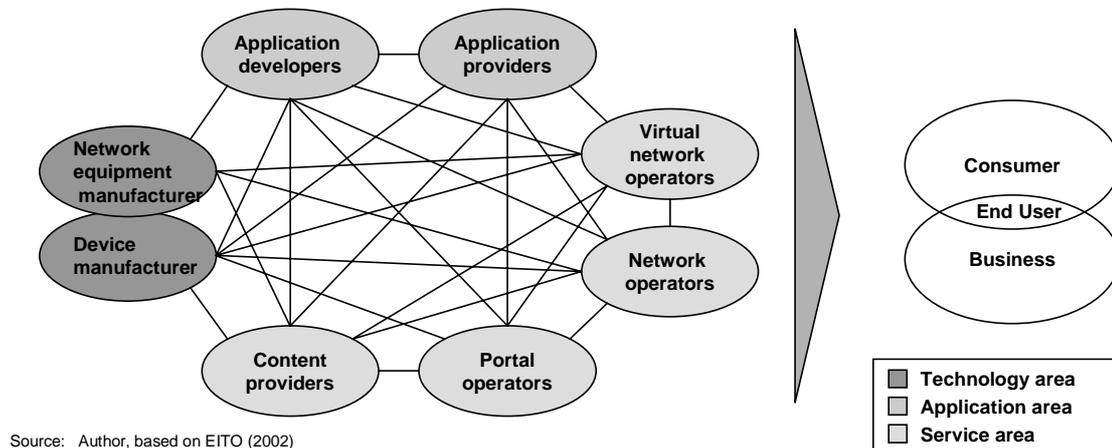


Figure 12 Mobile Internet value web

Pressure on industry

Apart from positive aspects such as interesting growth prospects and an alliance stimulating environment, the mobile Internet industry faces high pressure through: (1) difficult economic perspectives of partners in the mobile communication industry, and (2) limited customer acceptance of new services.

The mobile communication industry suffers from unfulfilled expectations, which were created at the end of the 1990s. The incumbent segments in particular—network equipment manufacturing, CPE manufacturing, and network operating—suffer from failures to meet sales targets or even declines in sales for some. The investors' perspective on the segment outlook has changed dramatically. Figure 13 shows the market capitalization of three representative companies: *Nortel* as a network equipment manufacturer, *Nokia* as a CPE manufacturer¹⁵, and *Vodafone* as a network operator.

¹⁵ *Nokia* earns approx. 80 % of its revenues with mobile devices. *Nokia's* annual report of 2001 stated that over €23 bn. of its total sales of €30 bn. were sales from its mobile phone business.

Market capitalization of representative incumbents (Comdirect, 30.9.2002)



Figure 13 Market capitalization of important segment players

There may be a number of reasons why the market capitalization of these companies declined dramatically. The most commonly cited reason for network equipment manufacturers is unsustainable sales growth, induced by the Internet and the mobile communication boom. Even new technologies like UMTS cannot compensate for the fact that at the end of the 1990s the investments in network infrastructure were extraordinary high.

For CPE manufacturers, the logic is similar. After annual sales increased about 50% from 1994 to 1999, market growth declined to less than 10%. *Nokia* as the market leader grew by 6% in 2001. Despite the fact that *Nokia* reduced its personnel by 10%, its profits declined by 40%.

Network operators did not suffer from a reduction in industry sales. Sales (as shown in figure 5 ‘Mobile communication industry sales’) did grow by 20% in 2001 and by 6% in 2002; and are expected to continue to grow by a CAGR of 7% by 2006 (EITO, 2002, p. 223). Nevertheless, a reduction in ARPU¹⁶ of 17% over the last two years from €39.9 to €33.3 (EITO, 2002, p. 222) is affecting the perspective of network operators as well as causing severe problems in their capital structure. High capital expenditures—affordable due to high stock prices during the industry’s hype—led to a dramatic increase in the debt positions of the industry players.

Most of the money was spent on (1) acquiring companies for a high premium and (2) on licenses. (1) The value of intangible assets for European operators totaled as much as 200% of their equity in the case of *France Telecom* and to approximately 100% for companies such as *KPN*, *Deutsche Telekom*, *Telecom Italia*, and *mmO2* (UBS-Warburg, 2002). (2) European network operators bought UMTS licenses for €109.8 bn (UBS-Warburg, 2002).

¹⁶ Average revenue per user

The reduction in ARPU and the increase in debt had negative implications on the stock price, which had in turn a negative implication on the companies' debt to equity ratios¹⁷. Therefore, credit ratings declined as drastically as in the case of *KPN* from AA in September 1999 to BBB- in September 2002, leaving the companies with very limited financing opportunities, and putting much pressure on increasing their profitability margin and restructuring their businesses.

In addition, the customers did not accept new technologies and services as quickly as the industry expected. For example, *Vodafone* had to revise its mobile data ARPU forecast as shown in figure 14.

Mobile data ARPUs - Vodafone (UBS Warburg, 2002)

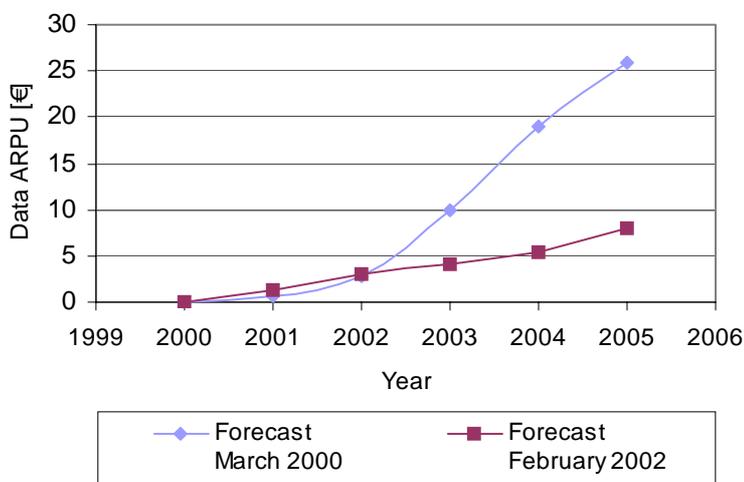


Figure 14 Mobile data ARPUs of Vodafone

In conclusion, mobile Internet companies face interesting opportunities in a fast growing market with high-speed innovation. However, they have to face hard competition for industry earnings and profits due to struggling incumbents in their value chain. In addition, like the whole industry, they have to focus on the end customer by creating customer friendly applications. The success of the new technologies finally depends on their adaptation by the end customer.

Scholars (i.e., Doz, et al., 1998; Eisenhardt, et al., 1996) have shown, that companies often respond to such uncertain industry settings by building up alliances. An intense alliance activity is very apparent in the mobile Internet industry (i.e., Booz Allen Hamilton, 2001b). Therefore, the next section will discuss the main drivers for forming alliances and give some empirical evidence for the importance of alliances in this industry.

¹⁷ Most MNO's hold stocks from publicly traded subsidiaries (*Deutsche Telekom* from *T-online*) or foreign operations (*KPN – eplus* or *France Telekom – Mobilcom*)

3.1.2 The need to partner

In discussing the need to partner, this section addresses the reasons for forming alliances, which have been initially laid out in the introduction. In the first part, the previously introduced and expanded framework of Doz and Hamel (1998) is used to evaluate the alliance intensity and the relevance of specific alliance drivers in the Mobile Internet industry. The second part provides some empirical evidence for the intensity and importance of alliances in this industry.

Relevance of alliance formation drivers

In the introduction, seven reasons to form alliances were presented. Starting with short-term targets such as building critical mass, accessing new markets, and plugging skill gaps over mid-term targets such as building nodal positions in coalitions—hedging with technological innovations, creating new opportunities, and building new competences to the general efficiency target accessing superior supply. These seven alliance formation drivers are subsequently assessed with respect to their importance in the mobile Internet industry. For each evaluation a short reasoning is provided.

(1) Building critical mass is a less important driver. Not a lot of alliances could be observed that focus on higher asset utilization. One reason for that could have been the early stage of the mobile Internet industry, where no clear standards were set. According to the research done by Utterback and Abernathy (1975), in young industries, product innovations are more important than process innovations. Furthermore, as long as clear product or service features are not defined and standardization has not taken place, improvement of production processes will be of minor importance. Building critical mass and capitalizing on economies of scale can be subsumed under this process improvement category.

March's framework on exploration/exploitation (March, 1991) follows a similar logic. Building critical mass to obtain economies of scale is a clear exploitation strategy, which is valuable in later stages of an industry. However, in the early stages of industry, exploration is far more important.

(2) Reaching new markets is of medium importance. To argue this point, the term 'new markets' must be clearly defined. There are two kinds of market entry that can be supported by alliances: internationalization and product diversification.

In this industry, not a lot of product differentiation can be seen. Therefore, alliance activities to support those are very small. Again, one reason for this could be that the industry is at a

relatively early stage. As Rumelt (1981) explains with his model ‘towards a strategic theory of the firm’:

‘Interestingly this perspective provides a theory of firm size that does not depend upon diseconomies of scale or control loss and is only tangentially related to the notion of a fixed entrepreneurial factor. In addition it explains why diversification, which reduces the risk of bankruptcy, is rarely undertaken by those facing the greatest risk – entrepreneurs entering and creating new markets.’ (Rumelt, 1981, p. 566)

Internationalization is a relevant topic (Booz Allen Hamilton, 2001b, p. 28) in this industry and its supporting alliance activities are medium intense. Major drivers for internationalization are global technology standards such as GSM and UMTS, and pan-European players in the mobile communication value chain such as for example *Vodafone* (MNO), *Nokia* (CPE), and *Ericsson* (networks). However, by far not all NTBFs go abroad, usually because they face resource constraints or do not want to bear additional market risks.

(3) The need to plug the skill gaps is one of the most relevant drivers of alliances in the mobile Internet industry. The relevant skills can be divided into product or technological skills and process or organizational skills (this terminology can be referred to in Utterback and Abernathy, (1975). The need for additional technological skills is very high, because the company’s skill base has to be constantly updated and extended as technology standards change (e.g., from enhanced GSM to UMTS) and new technologies arise (e.g., text-to-speech software reaches the sophistication to be commercially utilized). Additionally process or organizational skills are required as well, as the companies grow and industry culture and boundaries shift. The entry of new players into the communication industry (e.g., *Virgin Mobile*) and the back or forward integration of others (e.g., *Vivendi – Universal; Telefonica – Endemol*) are changing the competitive landscape. Yet organizational skills to manage that change are rarely acquired or learned via alliances.

(4) The next driver—building nodal positions in coalitions, hedging with technological innovations—is closely related to driver three and is also of high importance. Its separation is motivated by Doz and Hamel’s (1998) model, which uses two different perspectives – today’s sales and future potential. However, the adaptation of new technologies will remain as important as it is today. Thus, new technological standards (e.g., WLAN, Bluetooth, i-mode, EDGE, UMTS) will create high technological and development risks, which will continue to create the need for intense partnering.

(5) Creating new opportunities is of medium importance, which may be surprising. However, from the perspective of NTBFs, the creation of new opportunities is very similar to a diversification, which is not the most promising strategy (as discussed in point 3). This driver is important when we analyze the reasons, why other industry players partner with NTBFs. In particular, the behavior of MNOs—with their high capital expenditures during the last years—is highly motivated by this driver when they create partnerships with NTBFs to create services and solutions that have the potential to reimburse them.

(6) The need to build new competencies is also high. The reasoning is identical to point 4.

(7) Accessing superior supply is again a crucial driver for the alliance intensity. The reasoning depends on two arguments. First, functioning supply markets are restrained by oligopolistic supply structure, especially in content industries (i.e., in Germany *Bertelsmann*, *Kirch Media*, *Burda*, and *Springer* control the information sector). Second, limited financial resources of NTBFs make cooperative structures as co-development partnerships more attractive. Both drivers make complex cooperation structures (as alliances based on revenue sharing models) more attractive.

In summary, keeping up with technological innovations, and accessing superior supply are the most important drivers in the mobile Internet industry. Industry insiders share this assessment:

'We have three types of partnerships. All partnerships are concerned with our 'whole product'¹⁸. On the one hand we create content partnerships ... The second partnership type are distribution and co-development partnerships, and the third partnership type are technology partnerships' (Michael Halbherr, CEO Gate5, 2002)

Further empirical evidence is provided in the next paragraphs.

Empirical evidence of the alliance intensity

Different researchers have emphasized the attractiveness of NTBFs for analyzing networks. For example, Stuart (2000) and Eisenhardt et al. (1996) examined alliances of NTBFs in the semi-conductor industry; Stuart et al.(1999), Baum et al. (2000) and Powell (Powell, et al., 2002) analyzed bio-technology networks, and Yli-Renko and Autio assessed 180 NTBFs in

¹⁸ The expression 'whole product' is used to differentiate the complete product package, which is marketed to the customer, from 'product', which is only the own value creation.

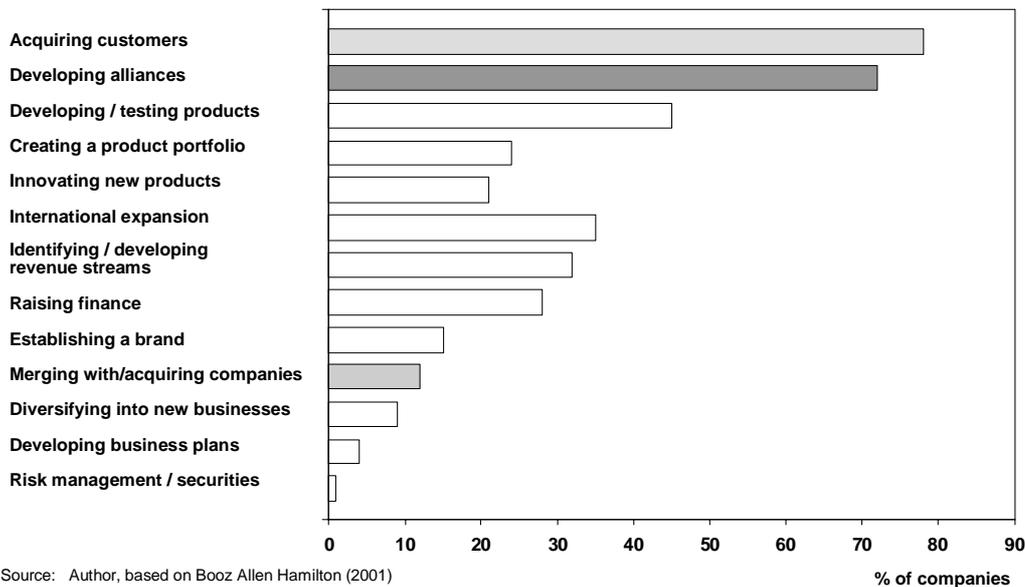
the UK (1998) and 5 cases in Finland (Yli-Renko, et al., 2001, partly in the communication industry). A few of these scholars, namely Gulati and Eisenhardt, recently shifted their industry focus towards the communication industry.

The high importance of alliances is also supported by an industry survey carried out by Booz Allen Hamilton (2001b). Developing alliances is the second most important objective of NTBFs in the mobile Internet industry (75%) (figure 15) after the acquisition of customers (79%). Booz Allen Hamilton (2001b) relates this to the companies' need to establish themselves in a growing industry.

Another obvious result of this survey is, that companies favor looser connections as alliances (75%) over mergers and acquisitions (12%). One of the main reasons for this might be the higher flexibility afforded with alliances. Given the fast innovation cycles and the changing industry structure, alliances might be a more suitable form of cooperation in uncertain industry settings. A detailed analysis of this pattern will follow in the case analyses.

Strategic priorities for mobile Internet companies

What are your four most important strategic priorities?



Source: Author, based on Booz Allen Hamilton (2001)

Figure 15 Strategic priorities of mobile Internet companies

In the next sections, the most suitable industry segments are selected for analyzing alliance activities. This selection is based on the intensity of the underlying drivers mentioned in 3.1.2 and the segment prospects discussed in sub-section 3.1.1.

3.1.3 Segment and case selection

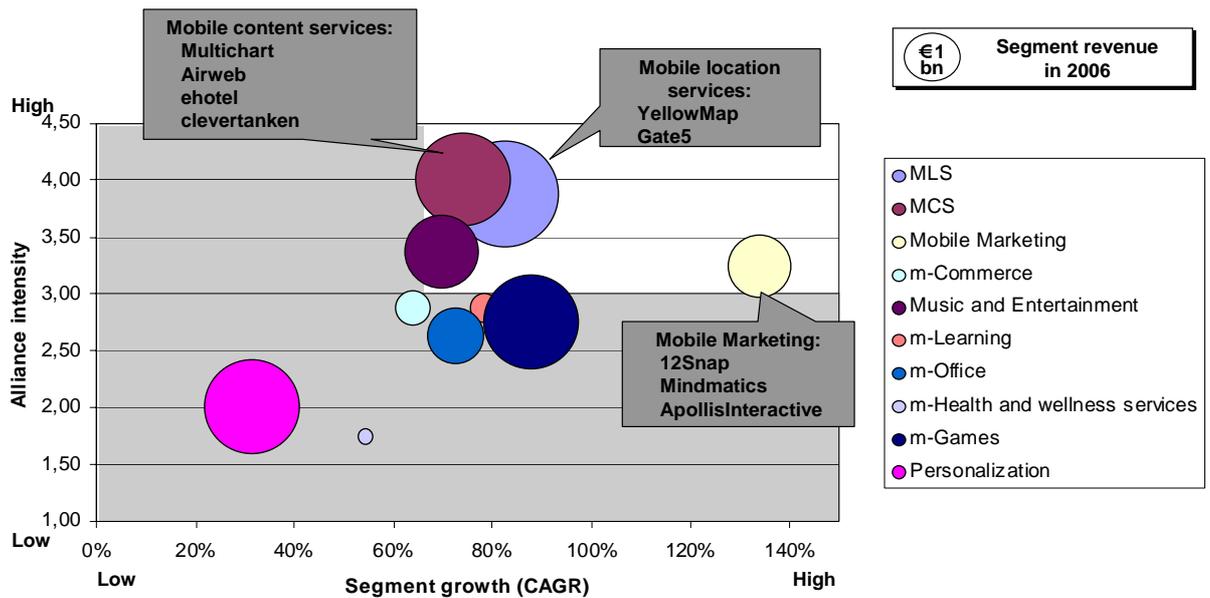
This section discusses (1) the selection of 'mobile location service (MLS)', 'mobile content services', and 'mobile marketing' as the most promising segments for studying alliances. In

addition, it is argued that (2) the selection of nine cases—two cases in the narrow field of MLS and up to four cases in the broad field of mobile information services—is the most reasonable research strategy.

Segment selection

The selection of industry segments is based on two criteria: (1) the alliance activity and (2) the segment attractiveness. The first criterion is motivated by Eisenhardt's argument (1989) that we learn more from extreme settings. As such, alliance portfolios can be better observed in a segment that has a high alliance intensity. When many alliances are developed, the alliance portfolio of every company must be constantly restructured. And given the fact that companies—especially small ones—are only capable of interacting with a limited number of partners at any one time, it necessary follows that many alliances will have to be terminated. The second criterion—segment attractiveness—will affect the generalizability and importance of the study's results. Two different arguments support this criterion. (1) Promising segments will have higher future sales and, therefore, a higher proportion of industry sales in the future. Their characteristics will have a higher impact on the characteristics of the overall industry. (2) Promising segments often are pushed by very promising companies, which are recognized as 'stars' in the industry. Other companies tend to copy the structures and processes of these 'stars' and thereby adapt their own business model to the most popular business model in the promising segment. In other words, other segments will tend to follow the most promising segments. Both arguments lead to the point, that studying the most promising segments has the highest generalizability and importance. Figure 16 shows the industry segments mapped by their alliance activity and their mid-range prospects. The alliance activity is measured in importance of the weighted drivers mentioned in chapter 3.1 (results are shown in appendix 2); the mid-range prospects are measured in revenue growth rates (2002-2005) by adjusting for growth rates of segments, which were nearly irrelevant in 2002. The latter segments were taken out of the sample because no sufficient alliance history could be tracked. The growth results are based on the data provided in figure 11 'European mobile service and content revenue forecast'. A detailed table is provided in appendix 3.

Research attractiveness of different industry segments



Source: Author, based on Booz Allen Hamilton (2001a, 2001b) EITO (2002), Gartner (2002), Frost and Sullivan (2002)

Figure 16 Mobile Internet segment portfolio

Based on this mapping, ‘location-based-service (LBS)’, ‘mobile information services’, and ‘mobile marketing’ are picked as most promising segments. A detailed description of each of the analyzed segments is provided as an introduction in each of the particular sections (sections 3.2 - 3.4).

Case selection

As previously described in the research methodology in sub-section 2.2.3, the selection of the number of cases is based on two criteria: (1) size of the segment and (2) diversity of the segment. In addition, a minimum of two cases is required from each segment.

The argument for the size criterion is similar to the argument for growth in the segment selection and is motivated by the goals of generalization and significance. The size of a segment is measured in forecasted industry sales in 2005. The diversity criterion attempts to control for differences in business models within a segment. Heterogeneous business models are likely to cause differences in performance. Thus, more cases are selected in heterogeneous segments to understand the performance differences created from efficient alliance portfolio management and to distinguish them from performance differences caused by differences in business models—especially due to different value chains. Segment diversity is measured by the variance of business models.

The minimum requirement of two cases per segment was set to facilitate within-segment comparisons. In each segment, a company that is well known and rewarded, and a company

that is not known for being successful have been selected. Table 6 shows the assessment of the target segments.

Segment	Segment size and growth rate	Evaluation of segment diversity	Reasoning ¹⁹
MLS	Large segment, medium high growth	Medium low variety	Only partly established segment, due to technical requirements (location data). No industry association installed yet, but different industry forums as <i>OGIS</i> . Similar value propositions of companies, limited differences in business models.
MCS	Large segment medium high growth	Large variety	Established but diverse segment (many different services as traffic, sports, financial data, etc.), No industry association established. Different value propositions: integrated content creation (such as <i>Clever.Tanken</i> or <i>Airweb</i>) to pure content enabling for stock quotes. Differences in the business model easily observable
Mobile marketing services	Small segment but fast growing	Medium variety	Fast established segment, Industry associations exist. Similar value propositions between <i>YOC</i> , <i>12snap</i> , <i>mindmatics</i> ...etc.. Differences to <i>ApollisInteractive</i> due to the technology employed

Table 6 Segment evaluation, author

Based on this segment evaluation, nine cases were selected with the following distribution:

- two cases in the LBS segment: *Gate5* and *YellowMap*
- four cases in the mobile information service segment: *Airweb*, *Clever.Tanken*, *e-hotel*, and *Multichart*
- three cases in the mobile marketing segment: *12snap*, *mindmatics*, and *ApollisInteractive*

Figure 16 captures the segment and case selection criteria and provides the company names of the selected case studies. The following sections will give an overview of these segments and an introduction to the selected cases. It should be noted that the selection of cases was not made according to the proposed ideal way (Eisenhardt, 1989), that is, by stopping after the incremental learning of the last case study was below a certain threshold. Instead the selection of the number of case studies was based on Eisenhardt's rule of thumb:

'Finally, while there is no ideal number of cases, a number between 4 and 10 cases usually works well.' (Eisenhardt, 1989, p. 545)

Although it is not the ideal procedure, it is a practical one, and is used by many researchers. Eisenhardt (1989) supports this procedure as well.

¹⁹ A more thorough view of the business model complexity is the introduction of the chapter 3.2-3.4

'In practice, theoretical saturation often combines with pragmatic considerations such as time and money to dictate when case collection ends. In fact, it is not uncommon for researchers to plan the number of cases in advance.' (Eisenhardt, 1989, p. 545)

3.2 Mobile Location Services

After providing a general introduction of the Mobile Internet industry and the selection of the most promising segments for this research project, this section begins with the core of the case study analysis. The objective of this segment analysis is to describe and assess the strategic importance of alliance portfolios in the mobile location service industry. To obtain this target, first, a brief general segment overview is provided to explain the overall segment settings. This is followed by the two case profiles of *Gate5* and *YellowMap* with a specific focus on their company development and current business model. Third, the segment analyses will focus on the detailed assessment of the companies' organizational development, their resource requirements and alliance portfolios over time, processes to form and manage the alliances, and, finally, firm performance. The fourth part, within-case and within-segment analyses, conclude this section.

3.2.1 Segment overview

To understand the context of the following two case studies, this section provides basic information on Mobile Location Services. After segmenting the different MLS services, their revenue forecasts are provided. The third part sets the growth prospects in context with existing barriers to mass marketing. The last part closes this section with a discussion of the status quo and future perspective of MLS in Western Europe.

Segmentation

MLS (also known as Location Based Services [LBS]) include different applications and services, which use location information of mobile devices. According to a segmentation provided by Gartner Dataquest (2002a), the market can be divided into the following four segments:

Information services: This is an already established market, with information directory companies such as yellow pages (e.g., *YellowMap*). Up until now, most of these types of

services are either voice activated or require users to dial a service area code or type in a postal code.

Emergency and security: This includes the emergency services plus security-type applications for motorists such as roadside assistance, automatic vehicle location services, navigation, and route guidance.

Tracking: An established, albeit small market, tracking involves the use of GPS devices for mainly vertical market applications, such as mobile workforce and fleet management. Consumer applications include the tracking of people and assets.

Zone-based billing: This form of billing is attractive for mobile operators that want to capture wire-line minutes by offering less-expensive rates (e.g., the *Genion*²⁰ service from *O₂*, former *Viag Interkom*). Zone-based billing can be used to promote off-peak traffic and will benefit from improved accuracy, enabling mobile operators to target subscribers outside regions with the densest cell sites. Zone-based billing offers an additional form of price differentiation. Most opportunities are likely to be in the corporate sector.

The following table summarizes the segmentation:

Segment	Applications	Customers
Information services	Restaurants, ATMs, weather, traffic information, entertainment, and advertising	Business traveler Tourist
Emergency and security	Emergency 112, roadside assistance, automatic vehicle location, automatic crash notification, and navigation, and routing	All
Tracking	Mobile workforce management, elderly, children, friend finding, fleet management, asset tracking, and location-based games	Verticals Consumer
Zone-based billing	Home zone, shared zone (e.g., offices) and other zones (e.g., airports and stadiums)	Corporate Consumer

Source: Gartner (2001)

Table 7 Segmentation of mobile location services

MLS Revenue Forecast

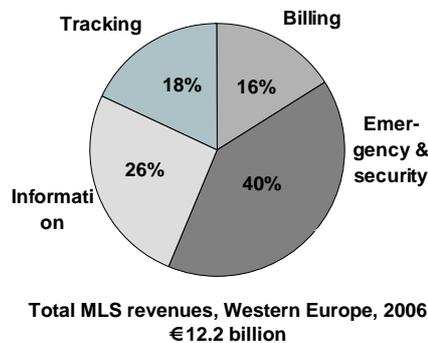
Business analysts forecast approximately 103 million MLS subscribers in Western Europe by the end of 2006, representing a 31% penetration of the mobile subscriber installed base. An MLS subscriber is defined as any mobile subscriber that uses MLS services at least once per month. Revenue from MLS is forecasted to reach €12.2 billion by the end of 2006 (see

²⁰ Home zone tariff from *O₂*

figure 17). The forecast includes both, business and consumer segments. In both segments, the highest revenue segment will be the emergency and security market segment (Gartner, et al., 2002a).

Although the business segment will comprise only approximately 14% of the totally

Western European MLS Revenue, 2006



Source: Gartner (2001a)

Figure 17 MLS sales forecast 2006

Barriers to Mass Marketing

Although the first location-based services were launched in Europe more than two years ago, very few have lived up to expectations. Early services have been limited to local information and mobile workforce management-type services, and are based on SIM Tool Kit (STK) and WAP over circuit-switched data links. During the past year, many of the trials carried out by operators had mixed results and subscriber acquisitions of the few available commercial services have been moderate, if not disappointing (Gartner, et al., 2002a).

Industry analysts believe that many of the prerequisites for mass-market adoption of mobile location services are not yet in place, which will inhibit market growth in Europe for another two to three years. To succeed with MLS, operators must be able to offer a broad portfolio of services with compelling applications and content that is attractively priced. Presently, there is a shortage of applications and content, particularly local and business content, although this should change with the recent release of the Mobile Location Protocol (MLP). MLP established an open application-programming interface and should also result in a reduction of development time for applications.

Apart from applications and content, other factors that will inhibit market growth over the next two to three years include the following:

- Unavailability of terminals: the market for MLS in Europe will not develop until GPRS terminals become widely available. Industry analysts believe that GPRS

handsets will not be available in commercial quantities until the middle of 2003 (EITO, 2002, p. 197). The availability of handsets with large color screens will enhance user experience, for example, through the ability to download color maps. Such handsets have already been available in Japan since mid-2000. A stable, reliable packet data network is also essential. It is the 'always-on' feature that is important, rather than the bandwidth, although many vertical applications will need higher bandwidths.

- Unavailability of high-accuracy terminals capable of providing location accuracy of less than 50 meters: although many services can be offered using basic cell-sector accuracy (approximately 300 meters in city centers), other applications (particularly those involving car navigation and security) will require much higher accuracy. An accuracy of 10 km to 20 km, which is typical for cell-sector in a rural environment, is practically useless for the aforementioned applications. Industry experts believe that EOTD²¹ and A-GPS²² phones will not become available in commercial quantities until the end of 2003 (Gartner, et al., 2002b).
- Lack of ubiquitous service: subscribers will expect to be able to access location-based services wherever they go. In particular, business subscribers are most likely to use location-based services when traveling, that is, while roaming other networks, rather than in the office. As such, operators must solve numerous technical issues concerning the interoperability of location-based services on different networks. Interoperability issues regarding roaming between GPRS and UMTS will also need to be resolved as 3G handsets start to become available in 2004. However, given the fact that the major European MNOs operate in multiple markets, this issue is likely to be resolved.
- High prices: services need to be attractively priced. In general, mobile data services in Europe are more expensive than similar services in Japan. For example, for yellow pages directory-type applications, the cost per request in Europe varies between €0.45 and €1.00 (see table 5) compared with prices from €0.18 to €0.30 in Japan. New terminals will need to be heavily subsidized (Gartner, et al., 2002c).
- Poorly designed applications: applications should be dynamic enough to respond to the needs of the user at different times and locations, and must be easy to use, bearing in mind the limitations of small screens. Subscribers should be able to

²¹ Enhanced observed time difference

²² Assisted global positioning system

request the desired information in a maximum of five ‘clicks’ of their mobile phone, and should receive the requested information from the network within five to seven seconds (Gartner, et al., 2002a).

- Privacy and security concerns: subscribers need to be assured that privacy and security (for m-commerce transactions) are guaranteed. However, industry experts believe that the privacy issue is being exaggerated. This belief is supported by early operator experiences indicating that subscribers are not particularly concerned about the privacy issue. This may change as the accuracy of position determination improves (to less than 10 meters) or if operators start to sell the location information to third parties. Nevertheless, it is believed that subscribers will ultimately want to have full control of the location finding capability, and will prefer to buy handsets where this facility can be switched on or off at will.

Mobile location-based services have great potential to be successful in the future. Location services may help to overcome the greatest limitation of mobile services—the lack of user-friendliness. Depending on the user's geographical location, mobile services can be highly personalized, greatly reducing the need for users to interact with small mobile devices and giving them immediacy of use. The mobile market players are aware of this and have started to develop mobile location services.

Status quo and outlook

More than 50 mobile operators worldwide, with more than 300 million subscribers in total, are offering preliminary MLS or testing deployment in target markets. More than 2 million users are estimated to be using MLS already (Gartner, et al., 2002b). In Europe, commercial testing and trials of MLS have been ongoing since 2000. For example, *E-plus* and *Sonera* are offering informational MLS to their clients, mainly to test market interest and reactions (Gartner, et al., 2002a). In general, all market surveys on MLS performed since 2000 have generated encouraging results concerning the positive attitude of mobile users toward MLS. In 2001, a focus-group survey performed by Gartner (Gartner, et al., 2001) in the United States indicated that more than 30% of all subscribers are willing to receive location-based advertising messages in exchange for coupons or discounts (compare chapter 3.4).

Because of the continuous evolution of wireless technologies, location sensing and awareness are expected to become common capabilities in all future devices, applications, and services. This will enable new processes and businesses and be widely adopted by mobile users.

Mobile devices will acquire the capability to sense geographical location with increasing accuracy. Devices will include not only PCs, mobile phones, and PDAs, but also game consoles, hi-fi devices, home devices, medical monitoring equipment, and on-board car equipment. By 2008, any device enabled for wireless communication will sense location and be traceable within 20 meters.

The number of MLS subscribers is expected to increase during the next few years. Among the 1.5 billions mobile subscriptions predicted worldwide by 2005, almost 40 percent will also include MLS. Location sensing will also spread to many machines and other physical objects with wireless communications capability (Gartner, et al., 2002a).

Thanks to this progressive adoption of location, the emerging 'always on' society will also become a 'location-aware' society. A new generation of location-aware applications and mobile services will appear, improving users' experience and minimizing the inconvenience of interacting with small devices while on the move. The need for location-based services will grow quickly, as soon as more people start using mobile devices to access information and data services. Combining location-aware applications with user preferences, it will be possible to personalize access for end users and optimize user experience.

Many different forces are driving the creation of the MLS market. Some are 'push' drivers, forcing the deployment and adoption of such services; others are 'pull' drivers, arising from the needs of end users or environmental conditions.

Competition: The mobile voice market is approaching saturation. Operators have to reduce prices to decrease 'churn' (the turnover of customers). This lowers the average revenue per user. Differentiation through new compelling services, such as MLS, is vital.

Technology: Mobile networks are evolving to a packet-based paradigm, moving from positioning to pinpointing. Multimedia messaging, Java 2 Micro Edition (J2ME) devices, body-heat batteries, fuel cells, and implants from Digital Angels are emerging. These technologies are basic enablers for the take-off of MLS.

Social trends: Mobile phones have become a mandatory lifestyle accessory in many societies, especially among young people. MLS enables new mobile communication and entertainment styles.

Security: Ongoing threats have increased anxiety about personal safety, as well as the security of personal belongings and corporate assets. For safety, people are willing to restrict privacy boundaries. This is pushing emergency and enhanced surveillance services.

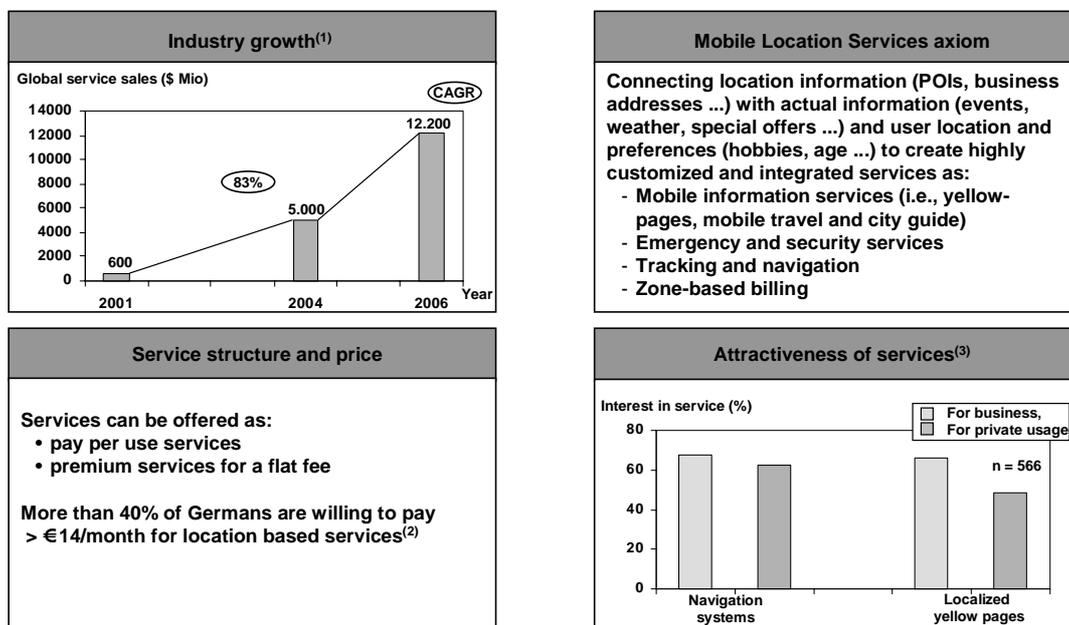
Business: Poor economic conditions and increasing competition force enterprises to seek solutions that increase profitability and service quality, improve customer relationships and business process efficiency, and reduce costs.

In summary, operators will have to solve their international roaming issues if they are to offer high-value services to business travelers, particularly if they own networks in several countries. Enterprises should start examining where opportunities as well as possible threats for their businesses are, in relation to MLS adoption. When planning their mobile strategy, they should definitely include location as medium-term priority, to be tackled by 2004.

The following figure summarizes the key issues of the MLS segment.

INDUSTRY SEGMENT: MOBILE LOCATION SERVICES

Sales, industry rules, deal structure and user penetration



(1) IDC (2002), Gardner (2001a) (2) Mori Polls (2000) (3) IZT et al. (2002)
Source: Author

Figure 18 Segment overview mobile location services

In conclusion, this market segment offers excellent growth opportunities. Despite limited industry sales in the short term and technical obstacles such as the introduction of new communication standards and the limited availability of suitable handsets, barriers to mass marketing are only temporary and can be solved within the next 12 – 24 months. Already high interest in location services of more than 60% should let the market penetration rise up to 40% by 2006 and revenues up to more than €12 billion. This offers an interesting market perspective for the case-study companies, even when they have to cope with technical and sales problems in the short run. How the two case study firms manage these challenges is covered in the next section.

3.2.2 Case history

Following the introduction of the MLS segment, which sets the general settings for both case study firms, this section gives a brief overview over the histories of *Gate5* and *YellowMap* and sketches their business model. Both aspects, which are subsequently presented for each company, are important for understanding the firm's alliance activities. The firm's development depicts when the company did which strategic moves. The business model illustrates the firm's value chain and shows with whom it interacts. This defines with which group of firms the case study firms could possibly ally.

Gate5's development

Gate5 was founded in April 1999 in Berlin, Germany. The founders, technologists formerly employed by an internet start-up (*Arclund.com*), aimed to develop an innovative city portal. The first CEO, Christophe Maire, got managerial support from Andreas Steinhäuser as CTO and Frank Rieger as CIO. In the seed phase, the company was organized in a team structure and was a typical '.com start-up'.

'It was a hybrid between a creative think tank and anarchy!' (Michael Halbherr, CEO *Gate5*, 2002)

Gate5 received its first external financing in October 1999. After an additional eight months of development work, *Europatweb*, a French VC company, invested € 1.5 million in *Gate5*²³. *Tbg* acted as a co-investor by also providing € 1.5 million; the VCs took a 30% share in the company. The investment decision was based mainly on the evaluation of *Gate5*'s business ideas, not on initial revenues from its service. In addition to the financial investment, *Europatweb* provided managerial support and one of its investment managers, Michael Halbherr, joined *Gate5*'s management team.

In the following months, their first service—the innovative, mobile city portal—was completed. The development took longer than expected. Yet *Gate5* faced a more severe problem after the completion—as a small company it could not operate such a complex service. It required too many resources, especially for editing the content.

²³ The deal was discussed with a co-investment from *tbg*. After initial problems, *tbg* was part of the deal and also financed €1.5 Mio. The cash inflow took place 5 months later.

'When we finished the development, we realized, that we couldn't operate this service. We had not spend any thought on what our core competency is—what we want to do in-house and what we have to source from outside vendors.' (Michael Halbherr, CEO Gate5, 2002)

In addition, the economic risks were too high: there were acquisition risks for buying external content, branding risks to market the new service competing with incumbents like city magazines such as *Prince*, *Zitty*, and *Tip*, and technology risks developing mapping engines and routing solutions among others.

After realizing that the initial business model was too broad in scope, *Gate5* started to focus on the development of a mobile location services platform, which then could be used and licensed by multi-access portals or location application providers. A prototype for such a multi-access portal was *Zoomland*, which *Gate5* realized with *T-motion*. *Zoomland* was a mobile enabled city map including points of interest (POI) and a zoom-in functionality.

The platform was a failure commercially as well. The differentiability using WAP-technology was limited and not enough applications that could run on *Gate5*'s platform were available. As a result, *Gate5* enlarged the scope of its business model again by adding the development of applications. A new manager—Christof Hellmis—was hired to guide the application development team.

Starting in summer 2001, *Gate5*'s business model was set up to provide vertical solutions for MLS. Two parallel R&D teams, heavy technology based platform development and business oriented application development, were teamed with a small sales force and administrative staff. In mid-2001, *Gate5* had 60 employees. At that time, basic financial controlling systems were already in place by almost a year and key employees were enrolled in stock option programs.

After setting up this structure in mid 2001, *Gate5* started to build co-development partnerships with companies in its target markets such as *DaimlerChrysler* for in-car systems, *Mair Verlag*²⁴ for mobile city and travel guides, and *Ipublish*²⁵ for event guides. Together with these partners, it developed prototypes for vertical solutions²⁶, which were presented at *CeBIT* 2002. In addition to these products, *Gate5* started to partner with ERP-system developers such as *SAP* and public sector software developer such as *ESRI* to license

²⁴ Publisher of *Merian* and owner of *Falk*

²⁵ Online publishing operation of *AOL Time Warner*, which owns *Prinz*

²⁶ Demo versions of *Gate5* solutions as *city5*, *map5*, or *peoplefinder5* can be seen and tested at <http://www.gate5.de/english/products/demos.html> (11.2002)

its products into the corporate and public MLS market. Understanding this business model is necessary for understanding *Gate5's* alliance activities.

For their innovative products and services, *Gate5* was rewarded as country finalist in the *Super Nova Start-Up Competition*²⁷ 2001, received the *E-economy award*²⁸ 2001 and the *tel.con award*²⁹.

The development of *Gate5* is summarized in a standardized timeline as shown in figure 19, which will be provided subsequently for all case study companies.

GATE5 – COMPANY DEVELOPMENT

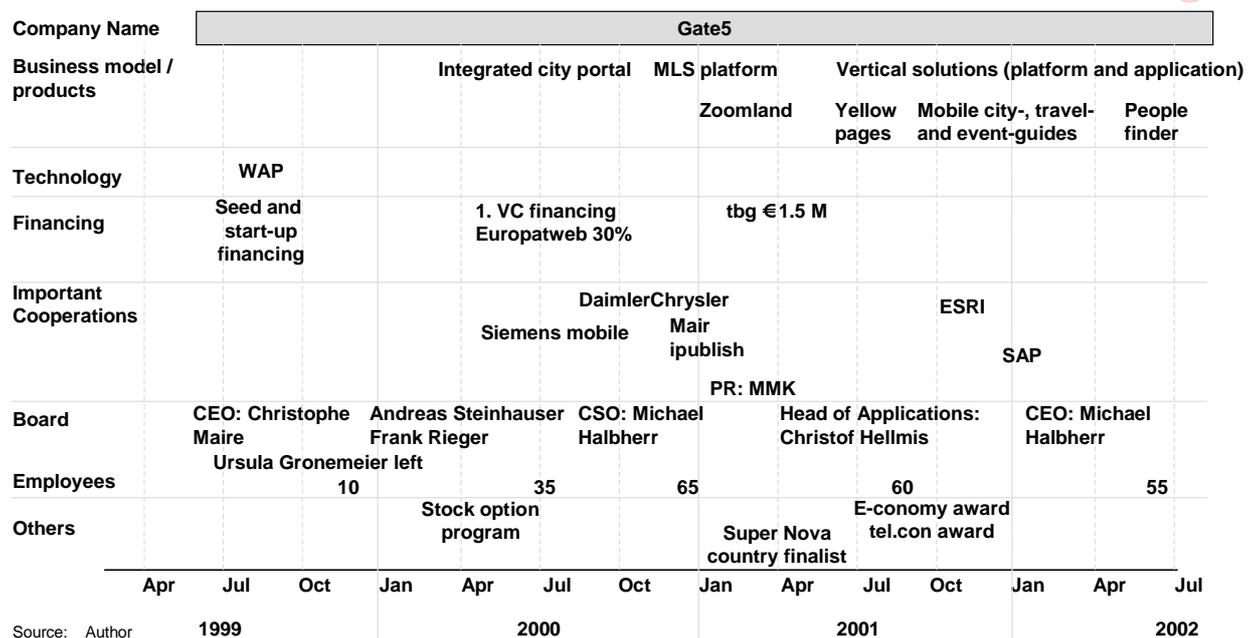


Figure 19 Company development: Gate5

Gate5's business model

As mentioned above, Gate5 develops vertical solutions for MLS; thereby it focuses on five markets: in-car-solutions, yellow pages, travel guides, event and city guides, and MLS solutions for corporations and government agencies.

²⁷ *Tornado inside* annually awards Europe-wide high-tech ventures. Tornado inside is an Amsterdam based media company covering Europe's entrepreneurial economy. It provides industry watchers and information on entrepreneurial Europe with local-country primary research and European technology reviews (further information: <http://www.tornado-insider.com/info/aboutus.asp>).

²⁸ *WirtschaftsWoche* annually confers the 'e-economy'-award in Germany for innovative business ideas in the 'networked economy' (Internet, telecommunications, etc.). In addition to the news magazine, partners for this award are *Concept! AG*, *Deutsche Bank*, *Hanover Matrix International*, *The Boston Consulting Group*, *BBDO Group Germany*, and *Sun Microsystems*.

²⁹ The *Institute for International Research* (IIR; Vienna, Austria) grants the *tel.con award* to successful TIMES services ranging from private messaging solutions, location based or value added services, over customized industry solutions to products securing corporate communication (further information: http://www.iir.at/telcon_award.cfm).

For every market, *Gate5* has teamed up with a development partner, which has access to distribution. In these partnerships, *Gate5* develops showcase solutions and debugs them in a trial phase.

For every market, *Gate5* designs tailored applications like *Yellow5* for the yellow page market and *City5* for the city guide market. These applications are based on *Gate5*'s MLS platform and combine common functionality (such as mapping) with application-unique features (such as a cultural event database for city and event guides or a detailed business database for the yellow page product).

The MLS platform comprises different modules, which are only partly developed in-house. Partners such as *ESRI* and *Location.net* supply other aspects, like billing, mapping, and routing.

Direct competitors of *Gate5* are *Webraska*, a French MLS provider, *MapInfo* and, especially in the yellow page segment, *YellowMap*. In a broader sense, *Gate5* competes against city and mobile portals like *Berlin.de* and *Jamba!*, as well as against the printers and publishers of travel guides, city magazines, and yellow pages. Its business model is summarized in figure 20.

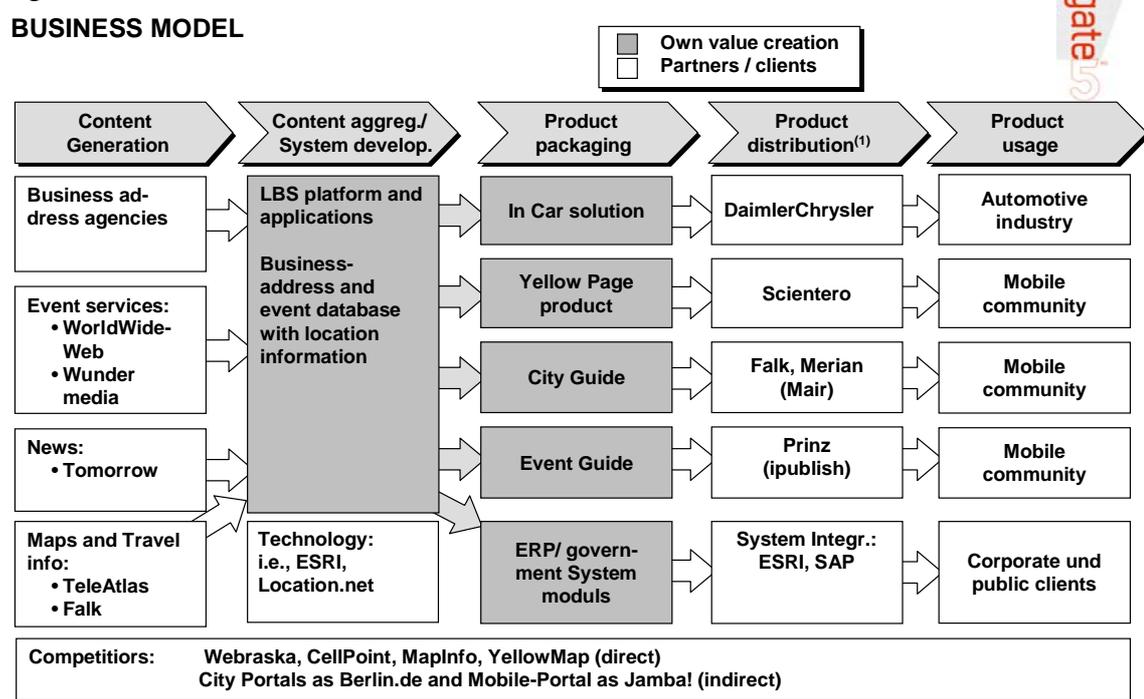


Figure 20 Business model: Gate5

YellowMap

CAS Software, a Karlsruhe, Germany, based software company, founded *YellowMap* in September 1999. This corporate venture was located in Munich. The management team consisted of M. Hubschneider, also CEO of *CAS Software*, and a lateral hire - B. Bauer - ,

who formerly managed a PC-retail business. The initial business idea was to build up a mobile marketing platform. *CAS Software* provided the initial funding.

From the outset, *YellowMap* partnered with *Schober*, a company that provided one of the most substantial German business databases³⁰ and *Map&Guide* which provided digital maps. *YellowMap* developed its MLS platform in Karlsruhe also using some software modules written and developed by *CAS Software*. Administration and distribution was located in Munich.

YellowMap started to expand into the Austrian and Swiss market in the beginning of 2000. In these countries, sales offices were set up. In both countries, *YellowMap* build up partnerships to get access to business databases like the *Wirtschaftskammer Austria* (Austrian Chamber of Commerce) in Vienna. The financial resources for the expansion were provided by *SAP ventures*, which invested in August 2000.

By that time, *YellowMap* had 35 employees (60% in sales) and earned € 1.5 million in revenues (fiscal year 2000). However, it was still unprofitable due to very high sales expenses. In summer 2001, the sales team was restructured and B. Bauer left the management team.

Product-wise, step-by-step the marketing platform was turned into a mobile and online yellow page business, providing roughly 4 million business addresses—segmented by different criteria. The online service was based on standard web-technology and the mobile service was based on WAP. The service attracted a reasonable amount of side traffic (already 538 k PI³¹ per month in mid 2000), and *YellowMap* started to sell premium pages³² in its directory. In addition, the database was enlarged by event data provided by partners like *Bewegungsmelder.de*, *Web to go* and by e- and m-commerce data, including 10,000 online shops and 200,000 used car offers.

Due to ongoing difficulties in the sales organization, *YellowMap* restructured the sales department in 2001 a second time and finally centralized its operations in Karlsruhe. At the beginning of 2002, *YellowMap*'s service had close to 4 million PI a month. The venture employed 20 people and was expected to break even in mid 2002.

³⁰ *Schober Information Group* is Europe's market leader for qualified marketing information for all kinds of business. Qualified consumer and business addresses from all over Europe and the USA are available through them. In Germany for example *Schober* has 3,780,000 business addresses, knows 3,180,000 of its decision makers and 3,430,000 phone numbers (further information: <http://www.schober.de>)

³¹ Page impressions

³² Premium pages are edited entries in the database, which pop up preferred. Depending on the size and the preference, they are sold for up to €200 a year. This business logic is similar to the logic of *Yahoo!* and the traditional yellow page business.

The company development is summarized in figure 21.

YELLOWMAP – COMPANY DEVELOPMENT



Company name	YellowMap																							
Business model / revenues	Marketing platform	Founding operations in Switzerland, Austria						Segment guide Event guide Shopping guide €1.5 M	4 M addresses 50 K events 10 K online shops 200 K used cars															
Technology	WAP																							
Financing	Seed and Start-up financing by CAS-Software						1. VC: SAP ventures																	
Important Cooperations	Schober CAS Map & Guide			Wirtschaftskammer A			Faircar Web.de Msn Meine Stadt.de	Further portals as: Altavista ... Bewegungsmelder Apotheken			Web to go													
Board employees	Hubschneider Bauer			6			18			Porak Exit Bauer			25			40			22			18		
Site traffic				177 K pi			528 K pi									3.405 K pi								
	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul										
	1999			2000			2001			2002														

Figure 21 Company development: Yellowmap

Business model

YellowMap offers location services to corporations and the mobile community. Two different business services are sold, an MLS called *Filialfinder* and premium entries in its database.

The *Filialfinder* is capable of finding the nearest outlet of a company, mapping it, and routing the customer to that place. The software, servers, and mapping technology could have been sold to companies; instead, *YellowMap* acts as ASP³³ and operates this service for companies. Retail companies and financial institutions like banks were among the primary subscriber groups for this service. *Filialfinder* is either sold directly by *YellowMap* or by web design and marketing agencies. Often it is tailored to fit the look and feel of the particular companies.

The selling proposition of the premium pages in the yellow page business is different from that of *Filialfinder*. *YellowMap* sells exposure and companies' addresses. High numbers of page impressions are reached by partnering with different portals. In these partnerships, *YellowMap* provides portals its industry segmentation and the underlying address database and the portals generate the traffic. *YellowMap* partners with different types of portals such

³³ Application service provider

as general purpose portals (i.e., *Altavista*), community and city portals (i.e., *berlin.de*), special purpose portals (i.e., *gesundheitspilot*), and mobile portals (i.e., *Vizzavi*). In addition to these businesses, *YellowMap* is planning to capitalize on their database and capabilities by offering location-based mobile marketing concepts and travel guides.

All services and applications run on *YellowMap*'s location-based services platform, which comprises mapping, routing, and billing functionality. To develop and improve its technology, *YellowMaps* works together with *CAS-Software* and *PTV*³⁴, which provide mapping and routing technology, *Cocomore*, which provides content management, and *Nokia*, which provides new handset technology such as its new operating system EPOC.

YellowMap uses three different types of content as key supplies. The two most important are maps and business address databases. *YellowMap* partners with *Map&Guide* to access updated digital maps. Its business address database is updated with the help of *Schober*, *Wirtschaftskammer Austria*, and different publishers, among others. In addition, *YellowMap* receives event and travel content for its travel and city guide. This content is obtained from companies like *Getgo*, an online ticket box, *Bewegungsmelder*, an online event portal, and the *Varta Führer*³⁵, a hotel and restaurant guide.

YellowMap competes with two company types: other MLS firms and firms offering yellow page products like *Gelbe Seiten Verlag* or *Zebra*. These companies are in the process of digitally enabling their offerings. After developing web front ends, their next step is mobile services. *YellowMap* competes with its products such as mobile travel guide with other MLS firms such as *MapInfo*. Its business model is summarized in figure 22.

³⁴ *PTV*, *CAS Software* and *Map&Guide* are closely related. *Map&Guide*, which provides maps to *YellowMap*, has been a joint venture of *PTV* and *CAS Software*. In a recent restructuring, *CAS Software* swapped its stake in *Map&Guide* with a stake in *PTV*.

³⁵ *CAS Software* and *PTV* also hold a stake in *Varta Führer*, which offers hotel and restaurant reviews and compete with the *Michelin Guide*

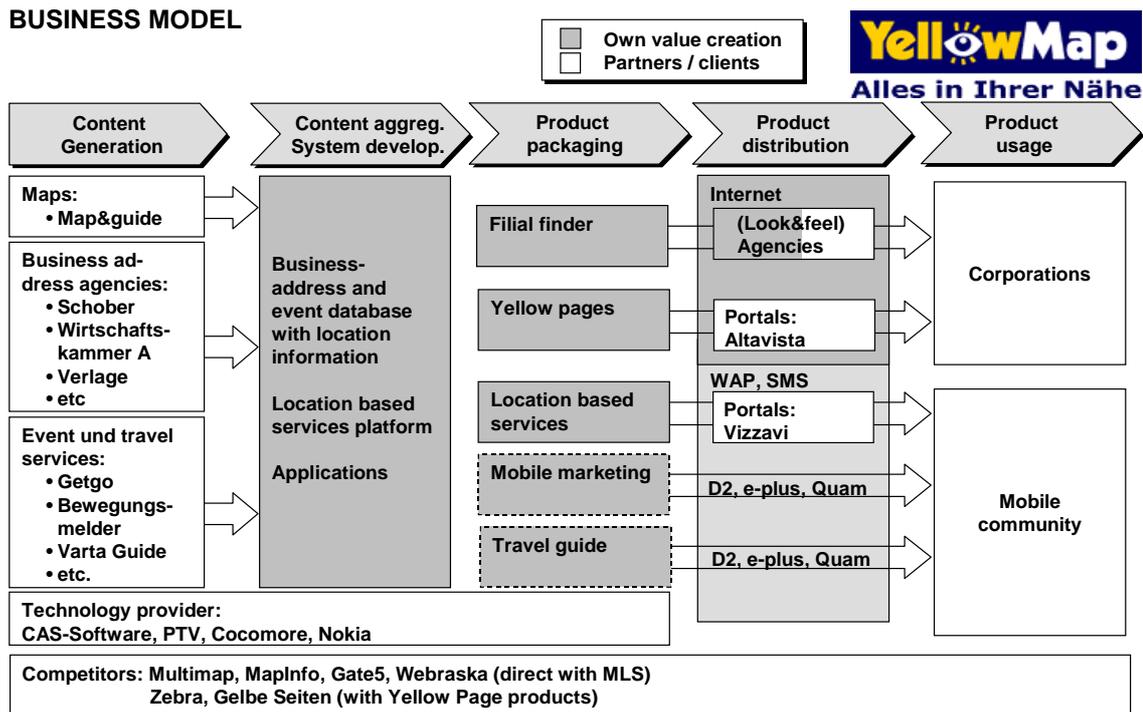


Figure 22 Business model: YellowMap

After providing a short case study introduction, the next section takes an in-depth look into the technological and institutional changes of these organizations and examines the role of alliance portfolios in improving company development and performance.

3.2.3 Within segment analysis

In the previous section, three aspects of the case analysis have been presented. A broad description of the Mobile Internet industry has been followed by a more detailed description of the MLS segment and a detailed characterization of the case study companies. The focus of the subsequent analyses is specifically on the alliance portfolios of the two cases. The intention is to understand how they influence firm performance over time (part 5). Therefore, changes in the alliance portfolio (part 3.) as well as the processes and skills (part 4) that are needed to form and manage those, are tracked over time. To understand the overall development of each case study and the co-evolution between the organization and its alliance network, this section begins with an analysis of its organizational development (part 1) and its resource structure (part 2). The analysis of resource structures and requirements is particularly important because—as discussed in chapter 3.1.2 (The need to partner)—getting access to technologies, superior supply, and distribution channels are crucial in this industry; it is thus these requirements that trigger alliance activities.

The same analysis structure is used for all subsequently analyzed industry segments as well, which are presented in the sections 3.3 and 3.4. The cross-segment analysis (section 3.5) follows this same pattern.

Company development

Two questions are addressed in this sub-section. Do different developmental stages exist? And how can they be characterized? In the first part, the stages are named and classified; in the latter part, different organizational characteristics (e.g., organizational structure and communication style) are described and the developmental stages are characterized accordingly.

Development stages

Both organizations went through four development stages. Every step can be characterized as a period in which the companies developed smoothly, without severe strategic changes or reorganizations. Between these smooth periods, the companies went through reorganizations and strategic changes that were not planned as formulated by *YellowMap's* business developer:

'We went through several periods. I don't think, they were planned, they arose as the company developed.' (Bernhard Kölmel, Chief of Business Development YellowMap, 2002)

The development stages of both organizations are listed in table 8. The interviewed managers provided the period names and durations.

Company	Gate5	YellowMap
Phase 1	Research laboratory 9.1999 – 6.2000	Development of market opportunities 9.1999 – 7.2000
Phase 2	Prototype and platform development 7.2000 – 6.2001	Build up of sales organization 7.2000 – 6.2001
Phase 3	Application development 7.2001 – 3.2002	Consolidation of activities and cost reduction 7.2001 – 2.2002
Phase 4	Product trial phase From 4.2002 on	Centralization and restart in Karlsruhe From 3.2002 on

Table 8 Stage description of companies in the MLS segment

Both organizations started with an exploration stage, in which they built up technological capabilities. As phrased by *YellowMap's* business developer:

'In the beginning, it was all about building up our technology, hence the distribution side was of no importance in the first phase.' (Bernhard Kölmel, Head of Business Development YellowMap, 2002)

In the next two steps the case study firms developed differently. In step two, *Gate5* focused its resources on the development of complex mobile technologies and YellowMap started to push the commercialization of its initial products.

'From phase two on, the importance of sales and distribution grew significantly. From the day we had developed our first prototype, we focused on selling our solutions.' (Bernhard Kölmel, Head of Business Development YellowMap, 2002)

In mid 2001, both organizations realized, that their initial strategies were only partly successful and subsequently adjusted their strategies. *Gate5* enlarged its development scope from pure platform by adding applications. *YellowMap* started to cut back its enormous sales expenses by streamlining its processes.

At the beginning of 2002, both organizations entered a period of financial stabilization and organic growth. *Gate5* earned its first service revenues after launching four prototypes at the *CEBIT* 2002. In a trial phase, *Gate5* had tested its applications and platform together with services partners. *YellowMap* started to build up additional sales capacity after centralizing its business in Karlsruhe.

Organizational dimensions

These four development steps can be analyzed in a more structured way by assessing different characteristics and dimensions of the organizations. Five dimensions have been applied, which have been previously introduced in sub-section 2.2.4 (research methodology). The dimensions are listed and described below:

Management focus: The degree to which management is involved in the technological development of the product and the day-to-day business. The characteristics range from technically or entrepreneurial managers (entirely focused on making and selling a new product [grade 1]) over business managers (focus on running the company [grade 2]) to holding managers (managing by exceptions [grade 3]).

Organizational structure: How the company is organized. The characteristics range from a team structure (grade 1) over a functional organization structure (introduced to separate

development from marketing activities [grade 2]) and business unit organization (introduced to separate different businesses [grade 3]) to matrix organizations [grade 4].

Communication style: The form, information is distributed within the organization. The characteristics range from frequent and informal communication (grade 1) over more formal and impersonal communication as hierarchy of titles and positions grow (grade 2), to infrequent communication from the top, which usually occurs by memos, telephone, or brief visits to business units (grade 3).

Flexibility of management on market changes: Degree to which strategies shift. The characteristics range from decisions highly sensitive to market place feedback, management acts as customer reacts (within 3 month [grade 1]) over mid-term strategy (2 years) with slight short-term adjustments every 6 months (grade 2) up to a clear long-term strategy (3 to 5 years) with rarely any adjustments (grade 3).

Compensation and reward systems: The way employees are reimbursed. The characteristics range from long hours of work, which are rewarded by modest salaries and the promise of ownership benefits (grade 1) over monthly payments with individual bonus (grade 2) and profit sharing or stock options programs (grade 3) up to team compensation (grade 4).

Stage characteristics

This section describes the organizational development of both case studies through their development stages, using the organizational dimensions described above. The results are summarized in figure 23. The different axes correspond to the various dimensions. The grading scale ranges from 1 (simple structure such as team organizations or informal communication) to 4 (complex structure such as matrix organizations or team bonus based reward systems). The different grades are explained in the paragraphs above.

Company development

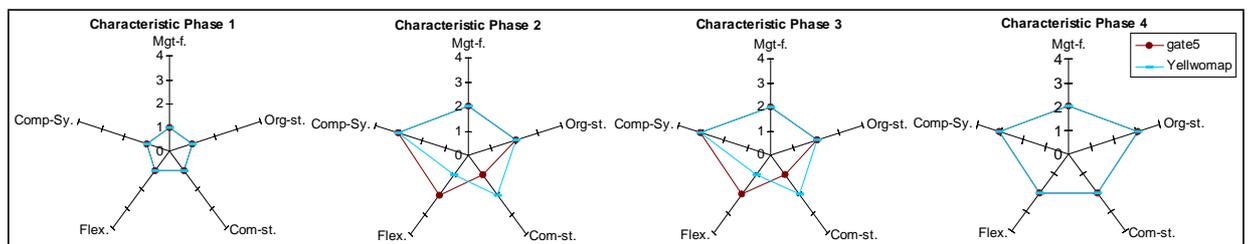


Figure 23 Company development in the MLS segment

First stage: Both organizations started with identical characteristics. An entrepreneurial management led a team of employees. The communication was informal. Strategic shifts due to market developments were frequent. Salaries were modest and key employees had

ownership. In literature and business press, this characteristic is often described as typical for start-up organizations.

Second stage: The organizations gained complexity. The management focus shifted toward managing the business in terms of coordinating and controlling tasks and employees to ensure efficiency. New functions were introduced to cope with the organizational growth. The build-up of new functions like marketing and sales, human resources and finance (in the case of *YellowMap*) led to the build-up of a functional organization. The local separation of functions between Karlsruhe (R&D) and Munich (Marketing and Sales) additionally favored this organizational structure. In contrast, *Gate5* kept a team-based organization because the company was centralized in Berlin and no significant sales function was built up at that point.

There were also slight differences in communication style and planning horizon. *YellowMap* had already slightly formalized its communication in period two. Thereby the separation of functions between Munich and Karlsruhe was a main driver as well, which forced the organization to rely more on written communication. In contrast, *Gate5*'s heavy investment in technology marked the beginning of mid-term planning. Development projects of nearly a year reduced its management's flexibility to respond to market changes. *YellowMaps* planning was still more flexible. Its service development projects were shorter term and its sales force got constant feedback from the market place.

Both organizations built up stock-option programs to motivate and compensate their employees.

Third stage: Both organizations still adhere to the same management style but they updated their organization to a business unit structure. The communication structure, the flexibility of management on market changes and the compensation systems have remained unchanged.

Fourth Stage: Both organizations again have identical characteristics. The management focus is on running the company—internally, by developing the products and increasing efficiency, and externally by, selling the products and building up partnerships. The companies are organized in business units and communicate more formally than in the first days, but still personally. Mid-term strategies (approximately 2 years) are slightly adjusted every 6 months and the incentive and reward systems are based on stock options.

In conclusion, both organizations develop stepwise. New challenges led the case study firms to update their organizations and change their characteristics. The initial, very flexible, entrepreneurial team organizations from stage one were soon no longer suitable to cope with

arising tasks and challenges. Therefore, organizations added complexity in a stepwise manner. Moreover, both firms developed fairly similarly. Their characteristics in two of the four stages are identical and the two firms never differed more than one degree of complexity.

After finding that firms developed almost in parallel from an organizational point of view, the next section asks whether resource requirements evolved within these development steps in parallel as well.

Resource requirements

Resource requirements have been analyzed for every developmental step to understand the relevant drivers for the foundation of alliances. Different resource categories have been used to assess resource requirements. This section (1) defines these categories and (2) analyses the development of the case study companies according to these categories. (3) A conclusion, which discusses which resources types depend on stage developments, terminates this section.

Resource types

Seven different types of resources have been used for this study, which have been explained and justified in the research methodology (sub-section 2.2.4). The resources types can be described as follows:

Reputation: Reputation in the industry, provided by awards, partnerships with well-known companies, well known products or services, for example.

Technological know-how: Technological expertise and skills such as knowledge of different computer languages, proprietary platforms and products³⁶

Access to superior supply: Access to scarce resources of other companies, which were used and transformed in the value creation process of the company, such as news, stock quotes for mobile content service companies, maps and business directories for MLS companies.

Market access: Access to distribution channels and / or directly to a customer base

Human capital: Skills and knowledge of the employees as experience and personal networks in the relevant industry, technological or managerial skills, etc.

³⁶ The protection and the ability to protect know-how would be another resource. But the case studies have shown, that filing patents and other IP protection activities are very uncommon in this industry

Organizational skills: Skills and processes letting the organization work more efficiently like decision making skills, accounting and controlling processes, etc.

Financial resources: External capital to finance growth and assure company's survival

To evaluate the importance of a specific resource, a scale from 1 (low) to 5 (high) has been used. The managers or the management teams of every case study company did the evaluation on their own. They calibrated their evaluation by comparing the importance of one resource type in relation to the importance of others.

Stage characteristics

According to the procedure analyzing organizational characteristics over time, the resource requirements were mapped and analyzed. The evaluations are graphed in figure 24.

Resource requirements

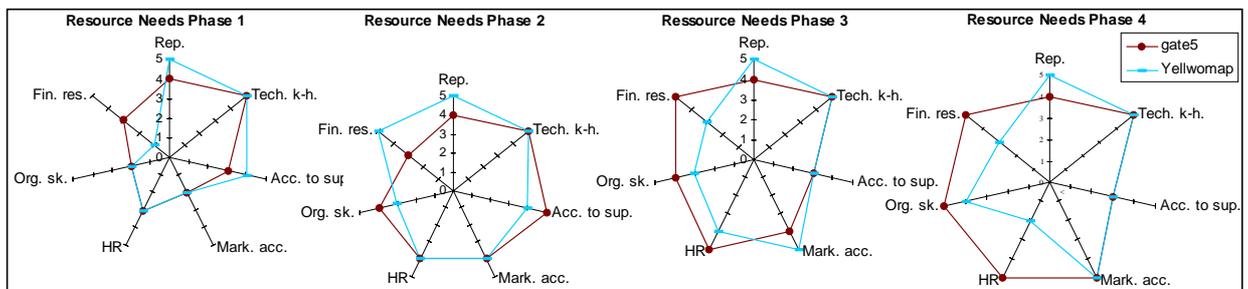


Figure 24 Resource requirements in the MLS segment

Three types of resources can be distinguished: segment dependent resources, development dependent resources, and other resources.

Segment dependent resources: The requirements for two resources depend on the industry segment respectively the firm's business model. Both companies constantly evaluate technological know-how and reputation on a very high level. Technological know-how is crucial for NTBFs in a technologically complex niche market, comprising different complex technologies as mapping, routing, etc. In addition, both companies earn their money by working with large incumbents. To contact and contract with them, reputation is needed as an 'entry ticket'.

Development dependent resources: The second group of resources depends on the development cycle. In this category are the access to superior supply, market access, human resources and organizational skills. For both companies, the access to supply was in the beginning low to medium. But already at the end of the first period, the importance grew when software prototypes had to be linked to location data as maps and other content as business addresses or event data. In period two, the importance of this resource grew very

high as *Gate5* built its city portal and *YellowMap* started to commercialize its products (i.e., *Filialfinder*, electronic yellow pages), which were based on maps and business directories, both sourced by different partners. In period three, these sourcing relationships were standardized and the access to resources slightly lost its importance, which continued in stage four.

Market access gained importance in the degree that access to resources lost it. With almost no direct implication in the prototyping phase, market access gained importance when the first products were marketed in period two. With increasing needs of internal financing, market access became one of the most required resources in the final stages.

The requirement for organizational skills and specific human resources grew over time as well. Both companies had fairly unstructured start-up teams in period one. Over time, organizational growth and tight financial resources increased the need for organization efficiency. Therefore, both organizations reported about problems to build up organizational processes and improve their internal routines and processes as accounting procedures, meeting efficiency and decision making skills. Parallel to this development, the management team increasingly became aware of deficits in human resources. Both organizations started to specifically expand its staff, by hiring employees with more and more defined profiles.

Only *YellowMap's* human resource requirements exhibit an interesting deviation from this trend in period four. By that time, *YellowMap* experienced only small problems to find suitable employees. Its management provided three reasons for this evaluation. (1) The company is located in Karlsruhe close to *Universität Karlsruhe* with one of Germany's best computer science and industrial engineering schools. Due to the fact that many students like to stay in Karlsruhe, *YellowMap* can hire very good technical and sales staff. (2) In addition, *YellowMap* employee-wise grew very limited in the later periods, because its first strategy target was to break even and grow only organically afterwards. (3) And finally, due to the weak economic development in Germany in 2001 and 2002, hiring well-educated and well trained people at large has become easier compared to 1999 and 2000.

Other resources: The requirements for other resources depend on events, which are not directly linked to the stage development. The need of financial resources is the difference between the demand for funds to finance the companies' growth and survival and the available funds. This availability mainly depends on VC financing rounds, which are only indirectly linked to the development stages.

Gate5's need for external financing grew over time. In the first period, it had enough funds through a private start-up financing. In the second phase, new funds were needed to finance

its platform development. *Europatweb* and *tbg* provided the capital. In stage three, new development programs were started, because *Gate5* could not capitalize its platform without available application. Negligibly small internal finance capabilities let the need for financial resources increase. In stage four, internal financing improved by launching prototypes with partners, but additional capital is needed to roll out *Gate5*'s products. Therefore, financial resource requirements are still ranked very high.

YellowMap's financing requirement shifted over time. It did not have financial constraints in the beginning, because it was completely financed by its parent company—*CAS Software*. After developing the first prototypes, *YellowMap* started to sell its products. To build up a sales force and open up offices in Austria and Switzerland, additional funds were required. Therefore the need for financial resources went up. After *SAP Ventures* invested in *YellowMap*, financial resources were available. The need for external financing did not vanish in the unprofitable year 2001. In stage four, the 'nest egg'³⁷ is reduced in comparison to stage three, but better internal financing opportunities kept the need for external financing on the same low level.

Concluding, the most resource requirements shift significantly over time. Moreover for certain resources, these shifts happen step-wise triggered by the occurrence of new organizational problems and new strategies. Thereby, market access and organizational skills steadily gain weight, access to supply gains importance over the first two development stages and loses it again in the later stages. These resource requirement shifts come about parallel in the two analyzed organizations.

As described in chapter 3.1.2 'the need to partner', access to different resources is a main driver for alliances. Therefore, the analytical step is to examine whether similar resource requirements lead to similar structures in the firm's alliance portfolios.

Alliance networks

To examine alliance portfolios and their dynamics, firm networks are analyzed using a longitudinal design. This setup is required to understand network dynamics over time. The aim of this sub-section is to document these portfolios and their changes by using Pajek, analyzing them step-by-step and summarizing the findings in a conclusion.

³⁷ Remaining VC funding

Documentation

Alliance documentation faces two major problems: timing issues and its multiple dimensions. The alliance portfolio is constantly changing over time with the formation of new alliances, the termination of alliances, or shifts in alliance structures and intensities. Therefore, alliance portfolios can only be exactly described at a specific point in time. However, a point-of-time documentation is not practical for two reasons: compatibility with organizational development stages, and data volume due to timing considerations.

Analysis on organizational change provides some evidence that the two organizations develop stage-wise. Longer periods of time follow the same characteristics. These stages are interrupted by crises, during which the company characteristics change significantly. A comparison between the organizational development and the alliance portfolio requires a stage-compatible alliance documentation. This documentation is not trivial, because there is no obvious answer for a specific point in time within every stage that best characterizes the stage alliance portfolio. Some researchers might argue, that the alliance portfolio at the end of the stage is the most characteristic. However, this description excludes all alliances that have been terminated within that period. An alternative would be, to document the alliance portfolio in the beginning, in the middle and at the end. The alliance portfolio could then be analyzed more accurately within every stage, but the data volume would increase by a factor of three.

In this study, a practical solution has been chosen. Alliance portfolios are documented for entire stages. These alliance portfolios contain all alliances that existed in the relevant stage. The indicated alliance intensity is the average intensity over this period. Given the fact that the periods are not too long – on average between one and two years – and that the portfolio is fairly constant within these periods the allowed potential for error is limited.

The second documentation problem is the multidimensionality of alliance data. Alliances differ in numerous dimensions, which are not easy to analyze and document. Recently, researchers have developed specialized software for this task. An often-used software tool is Pajek, which has been introduced earlier in the research methodology (section 2.2).

Pajek draws networks and calculates network measures. For that, networks have to be specified by who participates (characteristic of network vertices) and how it participates (characteristics of links). Pajek offers different dimensions regarding how vertices and links can be adjusted such as the vertex size and color, the link size and color, and the vertex position. The following tables specify each dimension (Brunninge, 2000; Conway, et al.,

1988; Jansen, 1999; Wassermann, et al., 1994a; Wassermann, et al., 1994b). Each characteristic is explained by a definition and an example.

The vertex size corresponds to the size of the companies in the network. This characteristic is important to analyze, whether the alliance portfolio shifts toward bigger partners as large incumbents over the developmental stages or not.

Vertex size	Definition	Example
Large box	Large incumbents, sales > €1Bn	MNOs as <i>T-Mobile</i> and <i>Vodafone</i> Technology provider as <i>Nokia</i> and <i>Siemens</i>
Medium box	Mid-caps; sales > €50 Mio	<i>CAS Software</i> , <i>Quam</i> , <i>Schober</i> , <i>Mairs</i> <i>Geographischer Verlag</i>
Small box	Small start-ups, small enterprises	Internet portals as <i>Firewall</i> , <i>Berlin.de</i>

Table 9 Alliance networks: vertex size

The color of vertices indicates the industry affiliation of each of the companies. This dimension facilitates analyses concerning shifts in the industry structure of the portfolios.

Vertex color	Definition	Example
Blue	Technology provider as network infrastructure or CPE manufacturer, software developer and technology conglomerates	Network infrastructure companies (e.g., <i>Ericsson</i> , <i>Alcatel</i>); CPE manufacturer (e.g., <i>Nokia</i> , <i>Sharp</i>); Software developer (e.g., <i>CAS-Software</i> , <i>SemanticEdge</i> , <i>SAP</i>); Technology conglomerates (e.g., <i>IBM</i> , <i>HP</i> , <i>Siemens</i>)
Yellow	Content provider for news, geographic data such as maps, financial data such as stock quotes, and event data such as concert tours	News providers as <i>DPA</i> and <i>Focus</i> ; Geographic data providers as <i>Map&Guide</i> ; Financial service companies as <i>B.I.S. Börsen-Informationen-Service</i> ; Event Data providers as <i>Getgo</i> , <i>World-Wild-Web</i>
Red	Mobile network operator, mobile virtual network operators and mobile service provider	MNO (e.g., <i>T-mobile</i> , <i>D2 Vodafone</i>); MVNO (e.g., <i>Quam</i> in Germany); mobile service provider (e.g., <i>Debitel</i> and <i>Mobilcom</i>)
Orange	Mobile and online portals offering general purpose or specialized information	Mobile portals (e.g., <i>Jamba!</i> , <i>Wap me</i> and <i>Vizzavi</i>); Online general purpose portals (e.g., <i>Freenet</i> , <i>Web.de</i> , and <i>Dino</i>); Online special purpose portals (e.g., <i>Berlin.de</i> , <i>Docaid</i> , <i>Anwaltssuchservice</i> , and <i>Faircar</i>)
Gray	Financial services companies such as banks, VCs and insurance companies	<i>Sparda Bank</i> , <i>Viventures</i> , <i>Nokia Ventures</i> , <i>Atex</i> , <i>Alliance</i>
White	Trade and industry associations that take care of standardization, PR, and lobbying	<i>DDV</i> , <i>Innitiative Mobiles Netz</i> , <i>Marketing Club</i> , <i>OGIS</i>
Light Orange	Marketing agencies and designers of advertising campaigns, corporate identities, and web pages	Traditional agencies (e.g., <i>BBDO</i> , <i>Grey</i> , <i>BBH</i>) Internet agencies such (e.g., <i>Adlink</i> , <i>Double-click</i>)
Green	Others, which comprises companies that could not be grouped in one of the above categories. Case study firms partner rarely with firms outside of these industries. Therefore, defining specific categories was not worthwhile.	Branded consumer goods (e.g., <i>Wrigley's</i> , <i>DaimlerChrysler</i>) retail (e.g., <i>Karstadt Quelle</i>) Consulting (e.g., <i>McKinsey</i>)

Table 10 Alliance networks: vertex colors

The link width specifies how intensely resources are exchanged. The provided data are based on the assessment of the case study partners. The width indicates their perspective on how crucial each link was for each stage. These assessments most likely do not hold true for the assessment of their partners. This classification is needed because research has shown that intensive relationships, which are nearer to ‘hierarchy’ in the ‘market-hierarchy’ continuum, outperform alternative interfirm linkages in supporting resource exchange and interfirm learning (Mowery, et al., 1996).

Link width	Definition	Example
Thin	Arm’s length cooperation without strategic implications	In the case of <i>YellowMap</i> : <i>YellowMap</i> swaps location data and maps for event data of entertainment portals as <i>WildWildWeb</i> , which is no market transaction. The event data is strategically not crucial for <i>YellowMap</i> and the maps are not crucial for <i>WildWildWeb</i> .
Medium	Important partnership, with exchange of medium crucial resource such as alliances with technology partner for subsystems or second tire distribution partner	In the case of <i>Gate5</i> : <i>Gate5</i> ’s applications are voice enabled. This feature is developed in partnership with <i>SemanticEdge</i> . Due to the fact, that this feature is an add-on and that other providers can also deliver voice-enabling software, this partnership is of medium important for <i>Gate5</i> and not crucial.
Thick	Key strategic alliance as sourcing of critical content, co-development of products or crucial distribution channel	In the case of <i>Airweb</i> : <i>Airweb</i> launches all new services in France with Orange; in addition it generates >80% of its French revenues through this alliance. In the case of <i>YellowMap</i> : <i>YellowMap</i> ’s product is based on a comprehensive business directory and good maps. <i>YellowMap</i> does not have the internal resources to build up this content; in addition, only a few companies own this content. Therefore, the alliances with <i>Schober</i> and <i>Map&Guide</i> , who provided a business directory and maps, are crucial.

Table 11 Alliance networks: link width

The link color represents the kind of resources that are exchanged. The color indicates the motivation of the case study companies to form an alliance. This dimension facilitates the analysis, if the exchanged resource mix shifts over time.

Link color	Definition	Example
Blue	Access to technology. The case study companies assess through these links software systems such as billing engines or routing machines, handset specifications such as screen design, operation systems, and other technology specifications, or updates of technology standards	In the case of <i>Gate5</i> : <i>Gate5</i> cooperates with <i>ESRI</i> to access routing capabilities In the Case of <i>Airweb</i> : <i>Airweb</i> cooperates with <i>Dialogic</i> to enable its platform for voice services. In the case of <i>Multichart</i> : <i>Multichart</i> cooperates with Motorola to preferably access new specs of handsets to customize its applications.
Yellow	Access to content. The case studies access information such as political or sport news (including pictures); maps; stock quotes; etc. through these links	In the case of <i>Clever.Tanken</i> : <i>Clever.Tanken</i> obtains fuel prices from 15,000 filling stations through the link to its fuel price pilots. In the case of <i>e-hotel</i> : <i>e-hotel</i> accesses cheap hotel room contingents through its connection to <i>Radius</i>
Red	Access to markets. The case study companies access distribution channels. They link themselves to mobile portals; in-car computers companies; software system integrators; etc.	In the case of <i>Gate5</i> : <i>Gate5</i> enters the in car MLS market through its cooperation with <i>DaimlerChrysler</i> . In the case of <i>12snap</i> : <i>12snap</i> leverages its knowledge of designing and delivering mobile ad campaigns through its cooperation with marketing agencies such as <i>BBDO</i> .
Gray	Access to financial resources. Through these links, the case study companies receive external financing.	In the case of <i>Mindmatics</i> : <i>Mindmatics</i> received external financing in their first round by Best Practice Venture and in their second round by <i>T-ventures</i> , <i>Holtzbrinck Networxs</i> , and <i>WestLB</i>
Black	Reputation. Through these links, the case study companies attain recognition and reputation.	In the case of <i>ApollisInteractive</i> : <i>Apollis-Interactive</i> receives reputation through its link to well-regarded industry associations such as the German direct marketing association (<i>DDV</i>), where it actively participates in working groups.

Table 12 Alliance networks: link color

Each case study is positioned in the middle of its networks as focal company because the network is strictly analyzed from the case study perspective. The position of partners depends on (1) link intensity, (2) links to other partners, and (3) affiliation to industry sectors.

(1) The more intense the link between the case study company and its partner, the closer to the center it is located. To illustrate, thick links are shorter than medium links, and medium links are shorter than thin links.

(2) Partners who work together are co-located, because a link ties them together. These links are included in the data set (i.e., the close cooperation between the *Tour de France* and the *UCI*—the *International Cycling Union*—in *Airweb*'s network), but, for clarity reasons, are not graphed in the networks.

(3) Partners within one industry are clustered together. These clusters are based on both textual and practical considerations. These companies tend to have at least weak ties. For

example, they work together on industry standards, are members in the same industry associations, and attend the same conferences. In addition, the network graphs are easier to read when similar companies are co-located on the network charts.

Energy level calculation based on Kamada and Kawai's (1989)³⁸ layout algorithm comprises all three factors. This calculation determines the network position of every partner. Additionally, the author slightly edited the graphs to improve their clarity and readability.

Analytical steps

As described in the research methodology, the network analysis is based on two layers. Its general structure is analyzed based mainly on quantitative data as the network size (number of partners), network quality (intensity of links), and its center of gravity (characteristic of partners). Qualitative data—particularly narratives about partnerships—help to understand how ties change and how the process of partnership formation, intensification, restructuring, and termination works.

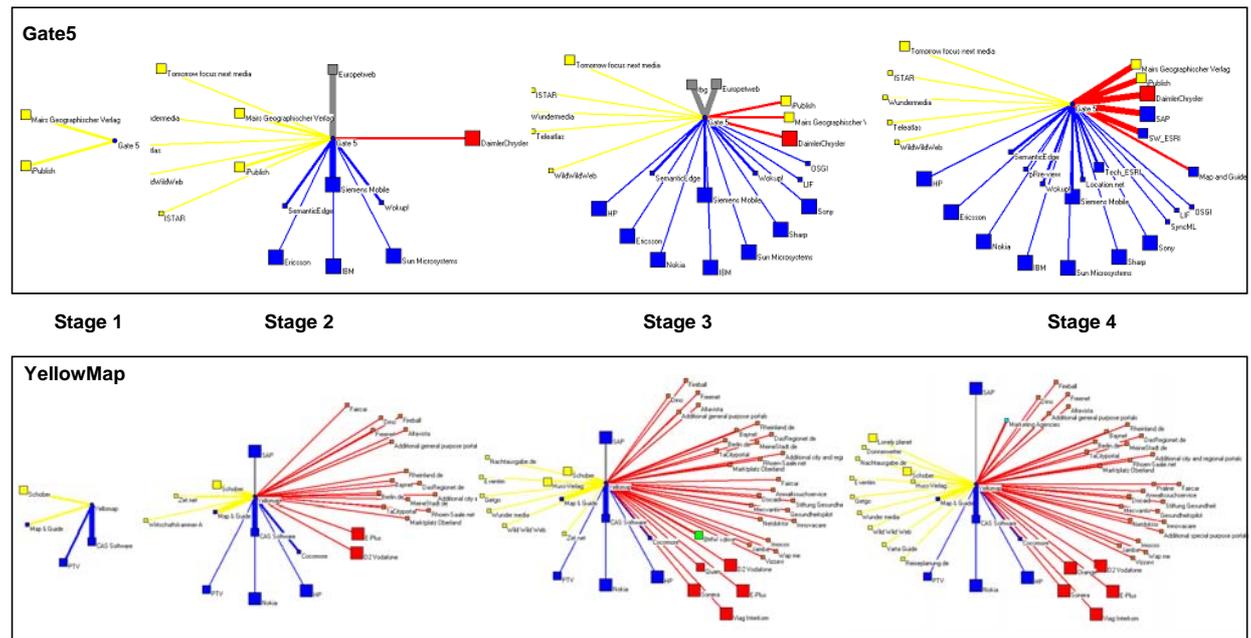
The alliance analysis is an iterative process. For every case, alliance networks are mapped for every development stage using Pajek. These stage alliance portfolios are confronted with each other, and structural patterns are worked out. In a next step, these structural quantitative patterns are confronted with the interview write-ups and the tabular displays of the case study results. This richer qualitative data was particularly helpful for understanding the alliance portfolio change processes.

Stage portfolios

The alliance portfolios of *Gate5* and *YellowMap* have been drawn for every developmental stage according the structure described above. Figure 25 depicts all graphs.

³⁸ Kamada and Kawai's (1989) layout algorithm combines the vertices, their distance is reciprocally proportional to their partnership intensity

Alliance portfolios



Source: Author, based on case study results

Figure 25 Alliance portfolios in the MLS segment

Stage one: Both companies have small networks in their start-up period with five or less partners. The networks are focused on the exchange of content and technology. In their first stage, both companies develop prototypes and partner with two content providers to ‘feed’ their applications. These content providers are important, but not crucial for the case studies, because they only support the ventures to develop showcase applications. Neither *Gate5* nor *YellowMap* sell their applications and services in this stage.

In addition to its content partnerships (accessing a business directory and maps), *YellowMap* also has technology partnerships. Its mother—*CAS Software*—and *PTV* supported *YellowMap* to build up its technology (mapping, routing, etc). In comparison to *Gate5*, it was easier for *YellowMap* to build up those technology partnerships, because they were embedded through ownership rights and personal contacts of former *CAS Software* employees. The risk of losing its core technology by partnering was very limited.

Stage two: The partnership networks grew drastically in period two. In both cases, the number of partners rose by a factor of approximately seven. Both companies attained external financing through a venture capitalist (*Europatweb* and *SAP Ventures*) and used the funds to build up their application and service. The content and technology partnerships were built up and intensified.

Gate5's key product in stage two was its mobile city portal. *Gate5* acquired the required content through partnerships. Therefore, it intensified its cooperation with the two

publishing houses *Mairs* and *Ipublish*³⁹. In addition, it built new partnerships with event portals such as *WildWildWeb* and news providers such as *Tomorrow – Focus*. Most of the content providers were mid-caps or small start-ups.

In terms of technology, *Gate5* started to build up two different types of partnerships. Common software projects were developed in medium-intense partnerships, such as the adaptation of *SemanticEdge*'s voice software and the cooperation with *Siemens* concerning mobile technologies as J2EE. *Gate5* built up weak ties with CPE manufacturers, to adapt its software to their handsets and systems. *Gate5* did not sell any services in stage two. Its only sales activity was to create a partnership with *DaimlerChrysler*. The two companies set up a project to develop a solution for the mobile community. Similar talks with *Falk* started at the end of this period.

YellowMap's partnership approach towards content and technology partners was similar. It intensified its content cooperation with *Schober* and *Map&Guide*, built up partnerships with *Zet.net*⁴⁰ (content) and specialized software developers such as *Cocomore*⁴¹, and entered into weak ties with CPE manufacturers such as *Nokia* and *HP*. However, it pushed its sales activities much more. *YellowMap* started to market its yellow page service toward online portals. It could attract general-purpose portals such as *Freenet* and *Altavista* and regional portals such as *Berlin.de* and *Baynet*. These portals increased the usage of *YellowMap*'s services, which made every directory entry more valuable. In addition, their partners sold entries in *YellowMap*'s business directory on a provision basis⁴². Besides the portals, *YellowMap* started to contract with MNOs for distributing its mobile yellow page application.

Stage three: Period three is characterized by an intensified build up of sales activities. Both companies neither added critical content nor technology partners. *Gate5* just added weak ties to additional CPE manufacturers for whom it customized the applications (*HP*, *Ericsson*, *Sharp*, and *Sony*) and it started to participate in industry associations like *OGIS*⁴³ and *LIF*⁴⁴ to work on industry standards. *YellowMap* added weak ties to event portals and swapped location versus event data, which is useful for mobile city guide applications. Additionally,

³⁹ *IPublish* was the electronic publishing division of *AOL Time Warner*, which published city journals like *Prinz* etc.

⁴⁰ *Zet.net* has been a cooperative project of the Bavarian newspaper publisher. *Zet.net* filed for chapter 11 in April 2002.

⁴¹ *Cocomore* develops content management systems

⁴² Share your profit principle (also called *Yahoo!* principle); up to 50% of the subscription fee is earned by the sales organization.

⁴³ Open Geodata Interoperability Specification project to standardize geo-data formats

⁴⁴ Location Interoperability Forum (<http://www.openmobilealliance.org/lif>)

it started to diversify its business directory sourcing to reduce its dependency on *Schober*. A milestone was the alliance with the publisher *Huss Verlag*. *Huss* publishes magazines targeted to mechanics and craftsmen, where it has a very high coverage. Through this link, *YellowMap* got access to *Huss*' client directories.

On the sales side *Gate5* allied with three strong partners to build up pilot application based on its MLS platform. It intensified its cooperation with *DaimlerChrysler* and started to cooperate with its former content partners *Mairs* and *Ipublish*, with whom it developed mobile travel, city and event guides.

YellowMap continued with its sales strategy based on numerous weak ties. Besides its links to general-purpose and regional portals, it intensified its cooperation with MNOs by building up alliances with *Viag Interkom*, *Sonera*, and *Quam*. Additionally, it built up partnerships with two new groups: mobile portals and special purpose online portals. The special purpose portals had two additional advantages. Apart from increasing the number of requests on *YellowMap*'s business directory database, they were good at selling directory entries to its homogenous community and its client database was good at for updating the addresses of its members (similar to the partnership with the *Huss Verlag*).

Stage four: The alliance portfolios in stage four can only be analyzed preliminary. Both companies had just entered this stage when the data were collected. This stage is far from being terminated. Therefore, the alliance portfolios are very similar to the portfolios at the end of period three.

Besides minor changes, because a few partners went out of business as *Quam* and *Zet.net*, both companies added a new distribution channel. *YellowMap* partnered with marketing and web agencies, which started to integrate its new service *Filialfinder*⁴⁵ into client web pages. *Gate5* began to cooperate with software system developers and system integrators like *SAP* and *ESRI*. Projects were set up to integrate *Gate5*'s applications in corporate ERP-systems from *SAP* or in huge governmental systems from *ESRI*.

The structure of the alliance portfolios is summarized in table 13.

⁴⁵ The Filialfinder service locates the next company outlet, maps it and routes the user to this location

		Gate5		YellowMap	
	Alliance category	Alliance portfolio	Reasoning	Alliance portfolio	Reasoning
Stage 1	Technology	↓↓	No ties	↑	1 strong, 1 medium tie
	Supply	↓	2 weak ties	•	2 medium ties
	Markets	↓↓	No tie	↓↓	No tie
Stage 2	Technology	↑	1 strong, 2 medium, and 3 weak ties	↑↑	1 strong, 1 medium, 3 weak ties•
	Supply	↑	2 medium, 5 weak ties	↑↑	2 strong, 2 weak ties
	Markets	↓	2 medium ties	•	4 groups with 16 weak ties
Stage 3	Technology	↑↑	3 medium ties, 7 (+2) weak ties	↑	1 strong, 1 medium, 3 weak ties
	Supply	↓	5 weak ties	↑	2 strong, 1 medium, 6 weak ties
	Markets	•	3 medium ties	↑↑	5 groups with five or more ties per group
Stage 4	Technology	↑↑	2 strong ties, 4 medium ties, 7 (+3) weak ties	↑	1 strong, 1 medium, 3 weak ties
	Supply	↓	5 weak ties	•	1 strong, 3 medium, 8 weak ties
	Markets	↑↑	5 strong ties 1 medium tie	↑↑	5 groups with five or more ties per group
Legend	↑↑ Strong	↑ Medium strong	• Medium	↓ Medium weak	↓↓ Weak

Table 13 Alliance portfolio structure (MLS)

In the first stage, the firms started to build alliances with content providers to link their prototypes with information and maps. *YellowMap* even managed to build its first technology partnerships, benefiting from its parent company *CAS Software*. In the first stage, when the alliance activities started, an alliance portfolio was not yet in place.

In stage two, the firms intensified their existing content partnerships and added new partners. In addition, both firms started to add technology alliances and formed the first weak distribution partnerships. Both alliance portfolios were supply and technology focused. In stage three, distribution partnerships gained importance. Whereas sourcing partnerships were decentralized to reduce dependencies, and technology partnerships were, for the most part, stable, both firms added new distribution partners. *Gate5* built up co-development partnerships with *DaimlerChrysler*, *Mair*, and *Ipublish*; *YellowMap* started to cooperate with different portals and MNOs.

In stage 4, the trends of stage three continued. The alliance portfolio drifted more towards the sales side. New distribution channels were added and cooperation to existing partners and groups intensified by embedding the link or by adding partners to each group. In contrast, sourcing alliances were further decentralized or kept stable and technology partnership were only very selectively formed.

Underlying processes support these structural changes. This process layer comprises activities such as the partner search and selection, partnership contracting, and alliance controlling. These processes are described and analyzed in the next section.

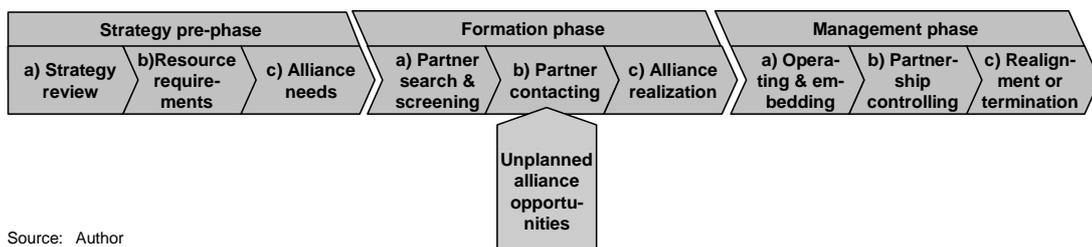
Alliance processes

In response to questions about the alliance process, both companies reported a three-step procedure, which is structured fairly similarly within the two case study companies. In a strategic pre-phase, alliance needs are derived from corporate strategy. In the next step, the alliances are formed. The final step covers the alliance management as formulated by *YellowMap*'s business developer:

'We have a process with a strategic phase, a formation phase and an operative phase. In addition, business opportunities get around, which cannot be planned for.' (Bernhard Kölmel, Head of Business Development YellowMap, 2002)

The companies only differ in the tasks performed in each step, but not in particular steps or their sequence. The matching alliance process is depicted in figure 26.

Allying process



Source: Author

Figure 26 Allying process

Strategic pre-phase: Most alliance activities are kicked off by corporate strategy. In strategic reviews, corporate strategies are decided upon or adjusted. These strategy changes cause resource requirements to change. In a next step the firms decide on how to source these resources. Either they produce them in-house, access them from outside vendors when efficient markets exist, or build up more complex interfirm relations such as strategic

alliances. This last decision defines the alliance needs, specifying which type of company should provide which kind of resource, and how the resource exchange should be structured. **Formation phase:** The alliance formation phase can also be broken down into three steps: search and screening, partner contacting, and alliance realization. In the first steps, potential partners are sought out according to the requirement specified in the alliance needs and screened with respect to how beneficial a partnership would be. The result of this step is a shortlist of potential partners. On this point, *YellowMap* reports of a very structured approach:

'We proceed very structured. To select fitting partners, we use market reviews and reports from analysts and research companies. Based on these data, we position the potential firms in the market and prioritize them...

We definitely evaluate the strategic fit. We analyze, whether the potential partner cooperates with competitors. In addition, we use a few other criteria, but excluding competitors and firms linked to competitors is most important' (Bernhard Kölmel, Head of Business Development YellowMap, 2002)

Contacting the potential partners is the second step. Getting access to incumbents is a particularly difficult challenge. *Gate5* thereby stresses the importance of agents for contacting potential partners, as its CEO stated:

'Directorates are extremely important for contacting potential partners. Our board members are today Hagen Hultzsch, ex-CTO of Deutsche Telekom; Charles Franklin, head of M-Commerce from Vodafone; Hans Huber, CEO of Lucent Europe; Greg Papadopoulos, CTO of Sun; Knut Voekler from Microsoft Networks; and Prodomschef from Sat1. This is an excellent board. We try to recruit two additional members, a top manager from the automobile industry and someone from the media industry in UK.

You can imagine how helpful these people are. Hagen Hultzsch opens us any door at Deutsche Telekom. I have to say, Hagen Hultzsch is extremely good. He helps me a lot. We e-mail almost every day ...' (Michael Halbherr, CEO Gate5, 2002)

Contacting can also be initiated via unplanned alliance opportunities. The number of these opportunities is very small in the beginning as long as the firms are unknown and have no partners. However, in the later periods, when reputation and existing partnership portfolio

increased, opportunities arose. *Gate5's* entry into the business and government software market provides a good example as *Gate5's* CEO reports:

'These alliances [with SAP and ESRI] came much earlier than we thought. We set a course in the consumer market. But in the business market, the partners came to us and were impressed. SAP came to us and not vice versa.' (Michael Halbherr, CEO Gate5, 2002)

When mutual interest exists, the deal is negotiated, structured, and closed in the realization step. The period beginning from the strategic considerations, through searching, evaluating, and contacting the partner, and up to structuring the alliance takes 6 weeks in the case of Gate5. *YellowMap* completes the process over a somewhat longer time period; for important alliances, the process requires approximately 3 months.

Management phase: The last phase also comprises three steps: operating and embedding partnerships, partnership controlling, and partnership restructuring (i.e., realignment or termination).

In the operating phase, communication is very important to embed and intensify the cooperation and to build trust. The CEO of Gate5 phrased the importance of engaging communication as follows:

'... alliances are people business, which requires communication skills. You have to be capable to communicate clearly, in partnership (partnerschaftlich) and strategic. When you do so, your partnership is working.' (Michael Halbherr, CEO Gate5, 2002)

The next step is alliance controlling. In particular, in the dynamic industry setting of the Mobile Internet industry, firms must evaluate whether their resource input into different alliances is worthwhile. In addition, this analysis reduces and even discourages abuse in alliances. *YellowMap* devotes a fair amount of time to monitor its alliances, as its business developer reports:

'We analyze our alliance portfolio every three months. The alliance managers report how things are going. After that, we set new targets and agree on critical issues for the next few months. This takes place in a 2-3 day workshop' (Bernhard Kölmel, Head of Business Development *YellowMap*, 2002)

In cases where the alliance performance for the case study firm is not sufficient, options are discussed as to how alliances can be rearranged. Hence, flexible alliance contracts are important to maintain mutually beneficial arrangements. In cases, where alliances cannot be rearranged or the parties cannot agree on a new arrangement, the partnerships are terminated.

In summary, both case study firms have set up a structured alliance process. These two processes are very similar and comprise a strategic pre-phase, an alliance formation phase, and an alliance management phase. Each phase can be broken down into three steps. In the alliance formation step, supportive agents such as high-level directorates and firm reputation are especially useful. In the alliance management phase, communication skills for intensifying and maintaining the partnership and evaluation skills are required.

The next step examines if and how this process and the structural changes of the alliance portfolio influence the firms' performance.

Performance

The link between different influencing factors and the performance of a company is very complex and difficult to establish. Different reasons determine this complexity, such as the multiple dimensions of performance and its numerous parameters. Nevertheless, it is crucial for research in strategic entrepreneurship⁴⁶. Hence, this study accounts for different performance dimensions. First, it describes the different performance dimensions and their underlying drivers, which are aggregated to a balanced score card. Second, the case data of *Gate5* and *YellowMap* are presented and discussed. The results are summarized in the third part, the conclusion.

Performance criteria

As presented in the introduction (chapter 1), this study is based on three different performance dimensions: growth, profitability, and innovation. Several indicators measure these dimensions. These indicators are weighted and integrated into one single balanced performance index, which is depicted in table 14. This sub-section gives reasons for the different dimension and explains the different indicators and their weighting.

All case studies started as technology growth ventures. The archetypes for these companies are *Microsoft*, *Sun Microsystems*, and *Cisco Systems*. The value of these companies is determined through their growth. Therefore, growth is a key performance indicator. Growth

⁴⁶ Strategic entrepreneurship is the integration of entrepreneurial and strategic perspectives to examine entrepreneurial strategies and wealth (Hite, et al., 2001)

can refer to organizational growth and economic growth, which are usually strongly correlated. Economic growth is measured in absolute sales of the last fiscal year⁴⁷ and the growth rate of the past years, which is used as a short- to mid-term growth perspective. The organizational growth measures are the number of employees at the beginning of 2002 and the growth rate of employees. Additionally, reorganizations and lay-offs have been accounted for negatively.

Profitability is the next dimension. Its importance grew constantly over the evolution of the industry. After the capital markets turned bad, all case study companies had to focus on internal growth. Profitability secures survival and further growth. Profitability is measured by two indicators: the bottom line profit and the date the break-even point has been reached or is expected to be reached. Many profitability measures have been developed in the finance literature. Cash flow based performance measures, such as the CFROI⁴⁸, measure performance more accurately because they are not distorted by depreciation. However, for simplicity and data availability reasons, they have not been applied.

Innovation is the third performance dimension. It measures the distinctiveness of the companies' technology. The growth perspective of the case study companies mainly depends on their unique technologies and services. The innovation is measured in awards obtained. Relevant awards are multi-media, start-up, and new media awards.

Every case study is ranked along these indicators. The scales for applied grades range from 1 (worst) to 5 (best) and are shown in table 14. The scale is the same as in resource evaluation. The borders and intermediate stages have been chosen so that the case study companies differ along every dimension. The indicators are weighted to allow a simple comparison. Based on industry interviews, entrepreneurial research, and the author's industry assesment, growth is weighted 50%, profitability is weighted 40% and innovation is weighted 10%. The relatively low weight on innovation is due to its fuzzy measurability. Awards are not a very precise indicator. The detailed weights are provided with the scales in table 14.

⁴⁷ In most cases the year 2001

⁴⁸ Cash flow based return on investment

Grades	1	2	3	4	5	Relative weight	Absolut weight
Growth						50%	
Revenues						35%	
Sum 2001 [000 €]	100	500	1.000	3.000	5.000	80%	28%
Growth rate [CAGR]	-10%	20%	50%	100%	200%	20%	7%
Employees						15%	
Sum 2001	5	10	15	35	75	40%	6%
Growth rate [CAGR]	-10%	20%	50%	100%	200%	40%	6%
emp. laid off	yes				no	20%	3%
Profitability						40%	
Sum 2001 [000 €]	-2.000	-1.000	-500	0	1.000	40%	16%
Break even	Apr 04	Aug 03	Dez 02	Dez 01	Dez 00	60%	24%
Innovation						10%	
Awards	no		1		>1	100%	10%
						100%	100%

Table 14 Company performance scales

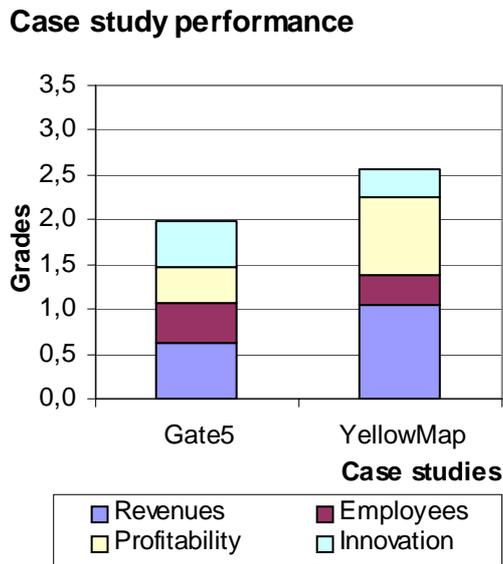
As described previously in the research methodology (sub-section 2.2.4), the relevant data were gathered through different sources, such as secondary data and interviews. Basic information was gathered through archival data such as the number of awards won, the number of employees, and, in some occasions, sales data such as yearly sales or number of campaigns sold. This data set was verified and completed during the interviews, where questions specifically addressing the development of sales, employees, profits figures, and the time to break even were asked. Not every question was answered due to company regulations or confidentiality agreements with VC's, which restrict the public reporting of these companies. However, all companies indicated the development of their sales and their staff size; in addition, they provided their break-even forecasts.

The author estimated the remaining data –mainly the bottom-line profits. The calculations are based on the revenue data, from cost estimates were subtracted. For the cost estimates, the average number of employees per year was multiplied by the average total cost per employee. The average cost per employee ratio is the average total cost per employee ratio from all case studies that provided profitability data (i.e., *Airweb*, *Multichart*, and *YellowMap*). The calculation is imperfect because it does not account for different location costs and assumes similar cost structures. However, it provides a basic indication with a estimated failure range from +/- 30%, which is sufficient for this study.

In addition, the financial data are displayed only in an aggregated form, because most case study companies did not allow publishing of the precise and detailed data.

Case Data

YellowMap performed better than *Gate5*, because its sales grew significantly faster and its profitability was better. *Gate5* is only a notch above *YellowMap* concerning organizational size and technological innovations. The results of the performance evaluation are depicted in figure 27.



Gate5's revenues developed very slowly. From 1999 to 2001, *Gate5* had no significant sales. Its first two product strategies—mobile city portal and location based service platform—were commercially unsuccessful. In 2002, *Gate5* realized its first projects. It co-developed an application with sales partners on its MLS platform such as electronic city guides together with *Falk*. *Gate5* was very unprofitable. Its small revenues faced costs of an organization with 50+ employees.

Figure 27 Performance of MLS case studies

Gate5 performs better in terms of organizational size and innovation. It scaled up its organization from 10 employees at the end of 1999 to 65 at the end of 2000. From 2001 on, it consistently had 55-60 employees. With its very technology-based approach, *Gate5* became country finalist of the *Super Nova* competition and won the *e-economy* and the *tel.con* awards.

By comparison, *YellowMap's* financials developed better. By 2000, its sales were already above €1 million and the forecast for 2002 expected to surpass the €2 million border and break even. From an organizational point of view, *YellowMap* went through a severe reorganization. Its sales office in Munich was closed, activities centralized in Karlsruhe, and the organization was scaled down from 40 to 18 employees. Its technology is innovative and very interesting for industry players such as the *Gelben Seiten Verlag*, but *YellowMap* could not win as many awards as *Gate5*.

3.2.4 Segment conclusion

This section has provided background information covering the general case study settings of the two firms, summarized characteristics of the two case study firms, and detailed analyses of organizational change, resource requirements, alliance portfolios, the processes to manage alliance portfolios, and company performance. What conclusion can be drawn? What pattern can be detected?

The two firms in the MLS segment developed stage-wise from typical entrepreneurial start-ups in the first stage to ventures guided by business managers in the second stage, to firms organized according business units in stage three and, finally, stable (mid-term strategy) organizations in stage four. The firms are focused on internal growth and have lost all characteristics specific start-up such as team structures, strictly informal communication, and technical-entrepreneurial top management from the beginning of their life cycle.

Along with the organizational change, firm resource needs shifted significantly. Despite the fact that the two resources, technological know-how and reputation, were always important due to the firm's business model, five out of seven measured resource types show significant changes. Of these five resource types, four consistently shift with the stage development. Requirements for organizational skills, human resources and access to markets grow step-by-step. The need for access to supply grows in the first two phases and loses importance in the later two phases. Only the need for financial resources cannot be integrated into the stage structure, because the financing rounds of the two ventures took place very differently.

According to resource needs, partnerships have been built up. Starting with less than five alliances in stage one, the alliances were intensified and new alliances were built up in the following stages. In the end, the alliances portfolios of both firms comprised more than 50 partly very intensive alliances. Thereby, shifts in resource requirements lead to changes in alliance portfolios. In the first two stages, the alliance portfolios are centered on technology and sourcing alliances; in the later two periods, distribution partnerships gain significant importance and the portfolio's center of gravity shifts.

These structural changes are facilitated through an allying process. This process is fairly similar in both case study firms and has three steps. A strategic pre-phase, from which alliance needs are derived, an alliance formation phase, in which potential partners are sought, screened, and contacted, and in which the partnership contracts are negotiated, and an alliance management phase, in which partnerships are operated, intensified and embedded, monitored, realigned, and terminated.

The alliance portfolio and the underlying allying process have implications on company performance; the faster the alliance portfolio is adjusted to the requirement of every stage, the better the performance. As in the case of *YellowMap*, the early creation of sales partnerships increased its revenues by forcing the company to develop products closer to customer needs. In contrast, *Gate5*—with no distribution partnerships—realized twice, that nobody was buying its product.

In addition, alliances help to lower development costs on the technology side. *Gate5*'s alliance with *location.net* lowers development costs and time to market without losing strategic flexibility or fearing its strategic positioning. These technology alliances in particular require trust. Thus, the trust between *YellowMap* and *CAS Software* and *PTV* gave *YellowMap* a quick start on the technology side as well. It could build its prototype applications quickly and efficiently through cooperating with *CAS Software* and *PTV*. Therefore, alliances have been important for past performance and will be for future performance of both firms as well.

3.3 Mobile Content Services

This section analyzes alliance portfolios in the Mobile Content Service (MCS) industry and follows the same structure applied in the MLS segment in section 3.2. The segment is introduced by a segment overview, which specifies the offered services, their revenue potentials and main obstacles to mass marketing. The second part provides a short description of the case study companies: *Airweb*, *Clever.Tanken*, *e-hotel*, and *Multichart*. Their organizational change and alliance portfolios are assessed in the third part. The section concludes with the within-segment analysis.

3.3.1 Segment overview

Mobile Content Services deliver information, such as traffic news to mobile devices (cell phones and PDAs), or enable the exchange of content via mobile applications such as mobile brokerage. This segment overview first provides a short definition or examples for all services that are subsumed in this segment and, second, gives a revenue-forecast for them. The third part states the main barriers and obstacles for mass marketing. The fourth and last part concludes this sub-section with a picture of the current status and an outlook for these services.

Segmentation

Mobile Content Services include numerous services and applications. The segmentation on which this study is based refers to a study of the German Institute for Future Studies and Technology Assessment (IZT, et al., 2002) on mobile multimedia services. These services deliver information to mobile devices from different areas such as political and business news, weather, sports, travel, erotic, and others. Financial services are subsumed in this segment. These services range from financial news such as stock quotes over mobile bank transfers to mobile brokerage. These services can be described as follows:

Political and business news: Current news edited in a short format. Services resemble scaled down versions of online news-pages such as *CNN.com* or *Spiegel.de*.

Weather: Basic services such as current weather conditions and weather forecasts for numerous locations. Additional services are wind speed, water temperature, snow height, and quality as well as likelihood of avalanches, and other weather events.

Sports: Scores and live reporting of sport events, up-to-date league tables, sport news, and the like.

Travel: Traffic and transportation related services such as news on road conditions, traffic jams, fuel prices of filling stations nearby located, routing, schedules for trains and airline flights, delays and check-in functionality of flights; hotel and rental car information, and booking services.

Erotic: Erotic pictures, stories, and erotic city guides. Scaled down versions of erotic Internet portals.

Financial news: Quotes and charts from stocks, funds and indices as well as market news, such as from Bloomberg.

Mobile bank transfers: Mobile-enabled online banking such as account balance enquiry, SMS-based account transactions reporting, and mobile bank transfers.

Mobile brokerage: Buying and selling stocks via cell phone or PDA, portfolio management, for example, by mobile executing a stop-loss functionality.

Other services: Niche and special purpose services such as horoscopes, music, hobby, and youth channels, to name a few.

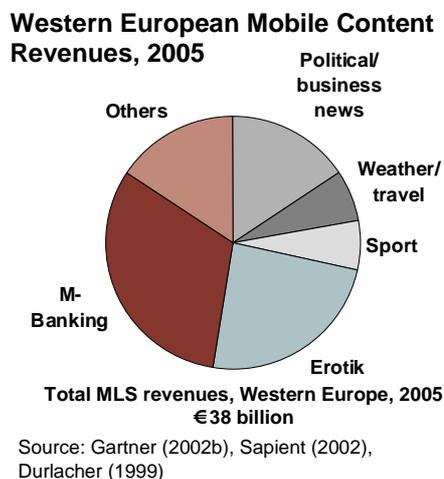
Some information services have already been mentioned in the chapter on Mobile Location Services. The boundary between these two industry segments is fuzzy. In the case of financial services the distinction is obvious: the delivery of stock quotes is a clear information service; the routing to the closest ATM is a clear location service. The case of a weather forecast for, for example, Berlin, is not as clear. In this study, all services using

specifically location information such as routing services, city guides are assigned to Mobile Location Services; all others are part of the Mobile Content Service segment.

Revenue forecast

Business analysts forecast for the end of 2005 approximately 150 million Mobile Content Service subscribers in Western Europe, representing >40% penetration of the mobile subscriber installed base. Analogous to an MLS user, an MCS subscriber is defined as any mobile subscriber who uses Mobile Content Services at least once a month. Revenues are forecasted to reach €3.2 billion in 2005 (see figure 28). Mobile banking and erotic services will generate the highest revenues.

The British market analyst Datamonitor (2002) estimates that by 2005 21.5 million



subscribers in Europe will use their cell phones and PDAs to do bank transactions. Revenues from mobile banking are estimated to be above € 1 billion⁴⁹. Sapient (2002) estimates that erotic services will generate sales of € 750 million by 2005. Durlacher (1999) forecasts that information provisioning for political and business news, sport, weather and other content account together for twice as much sales revenue (€1.5 billion).

Figure 28 Mobile Content Sales Forecast 2005

Barriers to mass marketing

The first Mobile Content Services were launched in 1998. However, only a few of them have lived up to expectations. Industry analysts believe that many of the prerequisites of mass-market adoption of Mobile Content Services are not yet in place. The data communication bandwidth and screen quality of mobile devices are not sufficient. Analysts forecast that these services will benefit from the recent generation of color display mobile devices and bandwidth increases through GPRS, EDGE, and UMTS technology. In addition, the success of Mobile Content Services depends on:

- The degree to which services will be customized and personalized, to enable ease of use and a high speed with which information is accessed.

⁴⁹ Connecting fee and provisions on transaction (approx. 0.5%) on a volume that is estimated to exceed €50 billion.

- The availability of user's selection choice of anonymous services usage. The user should have control over his or her identification. Many users fear loss of privacy, when their usage data will be stored and analyzed.
- 'Socialization' of users to pay for content. Their unreadiness to pay for content services is rooted in complex causes:
 - Mobile content users are very likely experienced online users. As online users, they access a broad range of information for free. Therefore, charging fees for content services will be difficult in the beginning. However, the current trend to charge for Internet content might support its introduction.
 - Limited tolerance toward add-financing, especially in Europe. Banners, pop-up advertisements, and offers financed by advertisement are black marked in Europe in comparison to the US, where a tolerance toward this financing method is considerable higher (IZT, et al., 2002, p. 25).
 - Low quality of mobile content. Up until now, information has often been unattractively edited and delivered with longer time lags. The improvement of information services is an essential challenge for content service providers (Boston Consulting Group, 2001).

For mobile finance services, additional requirements will have to be fulfilled. As with most markets, the growth of the m-finance market will not take place in a vacuum. There will be many factors that will contribute to how rapidly people adopt the use of m-finance. However, the most important drivers will be the international adoption of wireless data services and network tolerance.

International adoption of wireless data services: During the past two years, a great deal of optimism has been expressed about the adoption of wireless financial services such as the use of m-banking. There are several forces that drive the international adoption of wireless data services:

- Availability of data-capable wireless devices: Data-enabled wireless devices must be widely available at a cost low enough to make their use ubiquitous; in addition, they should be easy to use. Again, the importance of color displays has already been mentioned above.
 - Availability of compelling wireless content and applications: Although the novelty of wireless data services can attract new users, it will not see long-lived acceptance unless it can deliver true value and perceived benefit. Therefore, m-brokerage and mobile money transfer services have to be easy to use.
-

- Security in data transmission and user identification: New encryption standards, digital signature, and cell phones with biometric user identification (e.g., finger scan) and integrated payment function (e.g., via Bluetooth) will increase users' confidence in new systems.

Network tolerance: The frequency with which a data communication is disrupted or fails to reach completion will continue to have a direct impact on customers' willingness to embrace m-finance solutions. They may be willing to put up with occasional lapses in coverage and completion with wireless voice calls, but when dealing with the transmission of a financial transaction, such as buying securities, leniency is unlikely.

In 1998, an average of 10 percent of all wireless calls in the United States were accidentally dropped; by 2002, that average had decreased to approximately 5 percent. In Western Europe and Japan, the 2002 average remained around 4 percent (Gartner, 2002a). Although this represents a significant improvement, it still falls short of the needed mark.

Before mass adoption of m-finance systems, vendors and carriers will need to make sure that lapses in communication are very infrequent and, in the event communication is disrupted during a transaction, the underlying infrastructure and applications are resilient enough to 'rebuild' the entire transaction once the connection is re-established. Of course, the vendors and carriers must also ensure that this resiliency completely eliminates the possibility of double charging for those transactions.

Status quo and outlook

Already today, more than 100 mobile information and finance services are offered in Western Europe. Furthermore, a few of them are already well established, such as *Dynetic* or *Mobileway* (Mobile Metrix, 2002). These content services can be subscribed to as packages (e.g., a push SMS info package for the World Soccer Championship, or a pull WAP package *Bundesliga life*) or offered for free on various portals (e.g., *T-info*, the information portal of *T-mobile*, offers travel, weather, and business directory services). Moreover, despite the above mentioned security concerns, different companies offer m-banking services often in cooperation with retail banks such as *Fun Communications* with *Sparkassen* and *Fiducia*⁵⁰ and *Multichart* with *Sparda Bank* and other banks in Germany. Similar services can be found all over Europe⁵¹.

⁵⁰ Data processing center of 600 *Volks- und Raiffeisenbanken*

⁵¹ *Mobile Pay* in Finland, *Móvipago* in Spain, *Lloyds* in UK, *Metax* in Denmark, *Telia Payit* in Sweden, as examples.

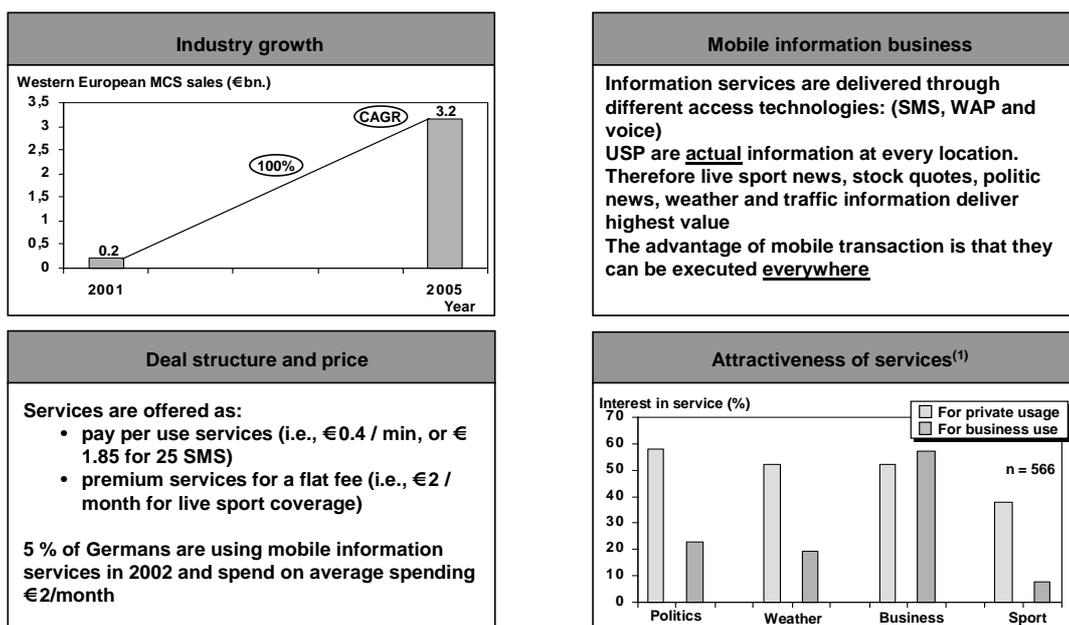
The main challenge for MCS providers is to educate mobile service subscribers to pay for content and services, which, in the past, have been available for free on mobile portals are still partly available for free on the Internet. Thereby, improved handsets (bigger screens and color displays) and improved data communication standards (i.e., MMS, GPRS, UMTS) are expected to improve the level of service and boost sales. A prominent example is the cooperation of *T-mobile* and *Deutsche Fußball Liga*. *T-mobile* covers every *Bundesliga* game and sends out an MMS for every goal, red card, or penalty, and a summary MMS at the end of each game. The service costs €2.40 per game. This service is in line with the current development in billing mechanisms. Industry experts have observed that billing mechanisms are in the process of changing from pay per use (e.g., first WAP services) to package prices (like many SMS services) to subscriptions (VDZ, et al., 2003).

In addition to the pure content services, M-banking is one of the most prosperous mobile content applications (IZT, et al., 2002). M-banking is expected to gain attractiveness during 'small breaks in the course of the day' like waiting for public transportation and thereby achieve a high acceptance. However, thoroughness of carrier network coverage and difficulty of overcoming geographic differences within Western Europe will continue to be daunting. Interoperability between the many carrier networks will be a paramount concern; however, the continued emergence of a variety of mediated delivery models will drive this market toward its full potential by 2007 (Gartner, 2002a).

This segment introduction is summarized in figure 29

INDUSTRY SEGMENT: MOBILE CONTENT SERVICES

Sales, industry rules, deal structure and user penetration



Source: IZT, SFZ, et al. (2002); Durlacher (1999); Gartner (2002); Sapient (2002); Gründel (2002)

Figure 29 Segment overview Mobile Content Services

3.3.2 Case history

This sub-section gives a brief overview of the development and business models of the four case studies: *Airweb*, *Clever.Tanken*, *e-hotel* and *Multichart*. The companies' development is a summary of the technological, financial, and organizational aspects of each case study history. The business model describes the value chain from the supply side to the downstream activities.

Airweb's development

Airweb was founded in August 1999 with a French operation in Paris and a German operation in Mönchengladbach. Three of the founders were formerly employed by the information and communication division of *Siemens France*. The fourth founder had previously worked for *Kienbaum*, a German consulting company. *Airweb's* development is summarized in figure 30.

AIRWEB – COMPANY DEVELOPMENT

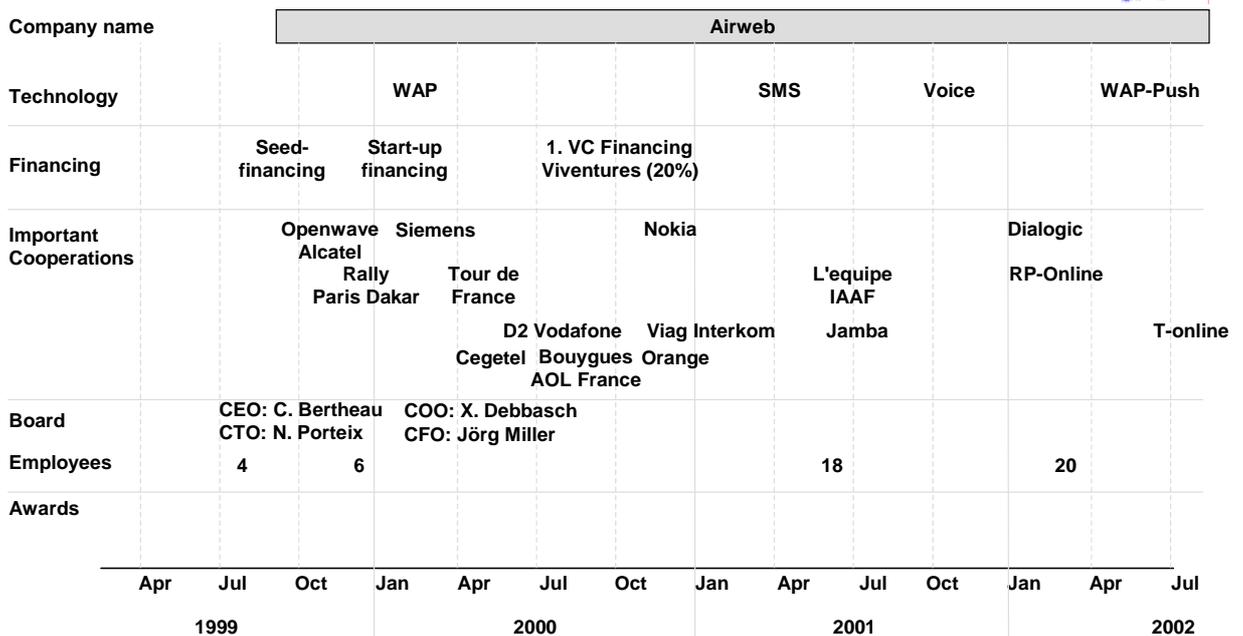


Figure 30 Company development: Airweb

Airweb started to develop WAP solutions for information services and launched its first service in January 2000, a WAP service for the *Rallye Paris-Dakar*. In spring 2001, *Airweb* began to broaden its technology platform and launched SMS services (e.g., goals and scores of *Bundesliga* games), and in the fall of that year it added voice services such as sport news on 0190-numbers. In 2002, WAP-Push services and J2EE services such as picture messages and color WAP pages (e.g., pictures of soccer goals) completed its technology portfolio.

Airweb received its seed financing from its founders in August 1999. In January 2000, its start-up financing round was closed with €350.000 from ‘family and fools’. The first VC financing round took place in August 2001. *Viventures*, the corporate VC unit of the French conglomerate *Vivendi*, bought a 20% stake of *Airweb* for €3 million. After the market turned down in 2001, *Airweb* stopped talks concerning a second VC-financing round and started to focus on its bottom line and organic growth.

To develop and sell its services, *Airweb* partnered with different companies and organizations. In the beginning, it formed partnerships to create reputation and to build up its technology through working with well-known incumbents such as *Siemens* and *Alcatel* and technology leaders such as *Openwave* (former *Phone.com*). As a show-case service, it launched the first WAP service in France in cooperation with the *Rallye Paris-Dakar*.

In 2000, additional services were launched such as a *Tour de France* service, a tennis service with the *ATP*, and soccer services in Germany and France. With this service portfolio, *Airweb* started to build up its distribution network by cooperating with MNOs in France, Germany, and Belgium such as *Cegetel*, *D2 Vodafone*, *Bouygues*, among others and with portals such as *AOL* in France. This cooperation with portals continued in 2001, when *Airweb* initiated an alliance with *Jamba!*, a mobile portal, which is the standard portal of Germany’s largest mobile service provider, *Debitel*, that has 7 million clients in Germany.

In 2001, it switched its content strategy. After creating their own sport content and cooperating with sport marketing companies or directly with associations, *Airweb* started to partner with sport content companies. In Summer 2001, it closed a deal with *L’equipe*, France’s biggest sports magazine. In the beginning of 2002, it started to work with the *Rheinische Post*, one of Germany’s biggest regional newspaper publishers. A detailed analysis of its alliance portfolio is provided in the next section.

During the period from 1999 to 2002, the management team did not change and the organization grew from the four founders in 1999 to 20 employees in 2002. *Airweb* did not win any start-up, new economy, or multimedia awards.

Airwebs business model

Airweb offers mainly sport information services. These services are based on different bearer technologies. As mentioned above, *Airweb* started with WAP services and broadened its portfolio by adding SMS and voice services. For multi-media capable devices, *Airweb* started at the end of 2002 to develop Java (J2EE) services. *Airweb*’s business model is summarized in figure 31.

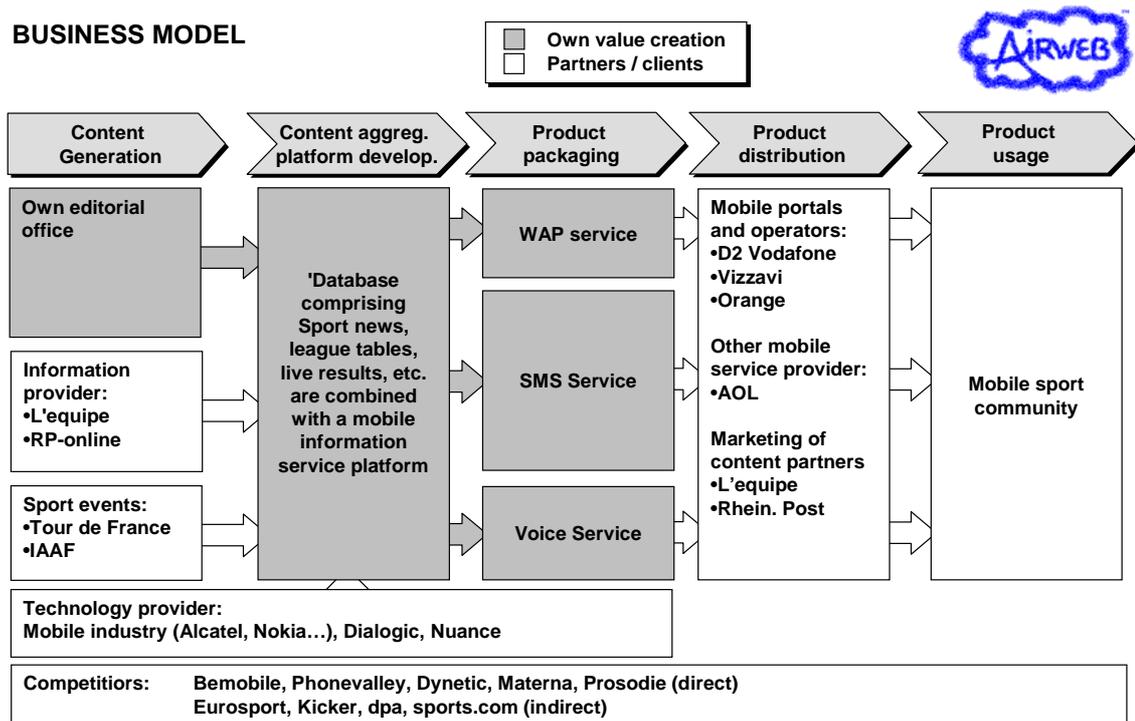


Figure 31 Business model: Airweb

These services are distributed and marketed with three different kinds of partners: MNOs, independent mobile portals, and strong content partners. *Airweb* cooperates with MNOs that run their own mobile portals such as *Orange*, *T-mobile*, and *Vodafone* (including *Vizzavi*) by providing sport news services under their own brand or under the operator's brand. Its cooperative relationship with independent mobile portals such as *AOL* and *Jamba!* are very similar. The third kind of distribution partnership is with strong content providers, which use *Airweb's* technology to build up a third distribution channel in addition to regular print and online news.

To deliver these services, *Airweb* packages client specific products, which are determined by the bearer technology and the covered content. All services are based on *Airweb's* content database and its mobile information platform.

The content database is serviced by the company's editorial office, which updates league tables and results in the main sport leagues (i.e., soccer, basketball, ice hockey, formula 1 racing), writes news, and delivers live reports from sporting events. Content partners support a couple of these activities. In particular, pictures for MMS are sourced from partners that own the necessary copyrights such as *SID*⁵². Due to economic considerations, *Airweb* tries to intensify these relations to save money still spent on in-house editorial activities.

⁵² *Sport Informations Dienst*, Germany largest sport information agency

Airweb's mobile information platform allows sending out information in different designs, using different bearer services to different devices. The core of this platform is developed in-house. However, peripheral features such as text-to-speech functionality are developed with partners (i.e., *Dialogic*). *Airweb* also cooperates with device manufacturers (*Alcatel, Nokia, etc.*) to adjust its services on their new devices (screen size, browser technology, etc.). With its value creation, *Airweb* competes against two types of companies. Direct competitors are other mobile content services companies such as *Bemobile, Phonevalley, Dynetic, and Materna*). Indirect competitors are sport content companies with their own mobile services such as *Eurosport, dpa* and *sports.com*.

Clever.Tanken's development

The *Clever.Tanken* service was initiated in August 1999 as a new business of a Nuremberg-based new media consulting company, *sbcon Consulting*. The management team of *sbcon Consulting*, Steffen Block and Michael Feldmüller, started to develop a special purpose portal centered around road traffic, primarily filling stations and fuel prices. The basic idea of this service is to create unique content by motivating thousands of drivers to report fuel prices (so called 'fuel price pilots') and to sell this content to mobile portals, local radio stations, and telematic service providers. Its development is summarized in figure 32.

CLEVER-TANKEN – COMPANY DEVELOPMENT



Company Name	sbcon Consulting			Clever-Tanken.de												
Technologies	Web			WAP				LBS				SMS				
Financing	1. VC Financing Fortnox Venture AG TBG						2. VC Financing Fortnox Venture AG TBG									
Important Cooperations				Materna D2 Vodafone T-online				Webmiles Radio Stations CAA AG & VW telematic companies T-mobile Internet and mobile portals				Proxemo Viag Interkom				
Site Traffic	1500 visits/day			100 Wap User/day												
Benzinscouts		1.500	4.000	6.250	10.000			25.000	34.000	37.000			43.700			
Filling Stat.		300	9.400	10.000	11.000			15.000					15.467			
Board Employees Awards	S.Bock, M.Feldmüller 5+10-12 FL			5+ 10-12 FL WAP Developer Award				7+ 10-12 FL				5+ 10-12 FL				
	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul		
	1999			2000				2001				2002				

Figure 32 Company Development: Clever.Tanken

In 1999, the *Clever.Tanken* service was still web-based, but with the introduction of the first WAP-phone, *Nokia's 7110*, in December 1999, *sbcon Consulting* started its WAP-service.

After the first successful steps, the company focused on mobile services and changed the company's name into its service name. *Clever.Tanken* added SMS as a third bearer service in 2001, after the big success of SMS in Europe, and started to enable its platform for Location Based Services⁵³.

Due to its corporate past, *Clever.Tanken* did not need seed and start-up financing rounds. But when the services started to grow, external money was needed. In March 2001, *Fortknock Ventures* together with *tbg* as a co-investor bought a stake in *Clever.Tanken*. A second VC-financing round with the same investor was closed in August 2001.

To develop and sell its services, *Clever.Tanken* partnered from the beginning on with MNOs such as *D2 Vodafone* and *T-online*. They were important for launching its service and managing the connection between the company and its 'fuel price pilots'⁵⁴. An incentive system for these pilots was built in 2001, together with *Webmiles*. After the technological part of the service was established and connectivity to different mobile Networks was set up, *Clever.Tanken* started to market its service to regional radio stations, in car computer manufacturers and telematic service providers as well as to Internet and mobile portals.

Beginning with 1,500 visits per day on its web page one month after launching the Internet portal in September 1999 and 100 WAP users a day one month after launching the WAP service in February 2000, the service grew continuously. In 2002, more than 43,000 people regularly reported fuel prices for more than 15,000 filling stations in Germany, which constitutes a penetration of more than 90%.

During the period from 1999 to 2002, the management team did not change and the organization stayed fairly stable with 5 to 7 employees and 10 to 12 additional freelancer workers. *Clever.Tanken* won the *WAP developer award* in 2000 for its innovative service.

Clever.Tanken's business model

Clever.Tanken offers the mobile community information on filling stations. The content is distributed using three channels: first, via Internet portals such as *Clever.Tanken's* own page and general purpose portals such as *MSN* and *T-online*, second, via mobile portals such as *Vodafone* with its *Vizzavi* portal or operator independent portals as *mobile.de*, and, third, via in-car computer systems, which are linked to telematic systems provided, for example, by *Gedas*. *Clever.Tanken's* business model is summarized in figure 33.

⁵³ Therefore it cooperated with *Map&Guide*, which provided maps and routing

⁵⁴ Drivers, who report fuel prices

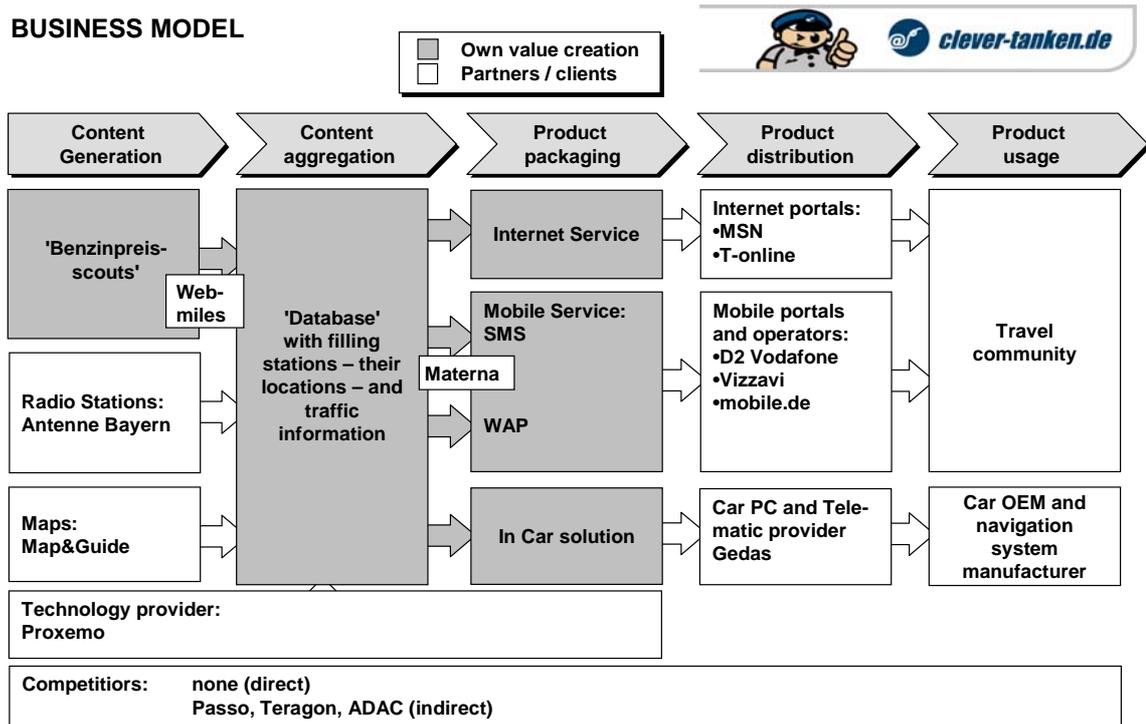


Figure 33 Business model: Clever.Tanken

To package its content for the distribution channels, *Clever.Tanken* uses different standards. Its Internet service uses common html and xml technology. For the mobile services, SMS and WAP technology is used. To manage the SMS traffic, *Clever.Tanken* cooperates with *Materna*. For in-car solutions, standards of car PC platforms (such as *i-drive* from *BMW*) are used. All products are based on *Clever.Tanken's* database and its content management system, whose development has been supported by technology partners such as *Proxemo*. The content compilation that transforms messages from more than 40,000 fuel price pilots into a single database format is a particularly critical step.

These fuel price pilots generate the most important of the three content types used by *Clever.Tanken*: fuel prices from more than 15,000 filling stations. This content is unique in Germany. The 'pilots' are rewarded with bonus points, which are provided by *Webmiles*. The system is similar to airline bonus programs like *Miles&More*. The other two content types are traffic information (speeding control points, traffic jams and road conditions), which are exchanged with radio stations, and maps, which are critical to build-up a location-sensitive service.

For its core service, *Clever.Tanken* has no competitor. As mentioned above, its fuel price content is unique. However, in the segment of road traffic portals, *Clever.Tanken* competes with various portals and telematic service providers such as *Passo* and *Teragon*. The *ADAC* with its travel information service is also a competitor.

E-hotel's development

The *e-hotel AG* was created in a merger of the *e-hotel* division of *I:FAO*⁵⁵ and *bedhunter.com* in September 2000. In the merger, the management team of *bedhunter.com* took over the management in the newly formed *e-hotel AG*. *Bedhunter.com* was founded in September 1999 by a former management consultant from *A.T. Kearney* and a former hotel manager. Its development is summarized in figure 34.

E-HOTEL – COMPANY DEVELOPMENT



Company Name	bedhunter			ehotel AG (49% I:FAO, 40% Bedhunter)													
Technology	Software package	Toll-free number	WAP														
Financing		Internet		1. VC Financing Fortknnox		2. Financing integrated in merger with ehotel services										3. VC Financing tbg (18%)	
Important Cooperations		TISS.com		Lufthansa		Radius		INNIXS								Pegasus	
		infogate		Sixt content		e-sixt										Lufthansa	
		D2 Vodafone		IMN				T-mobile									
Hotels	5.400		200	40.000		51.000											
Board Employees	M. Kose, M. Garke			6		35										18+5-7 FL	
Awards																	
	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr
	1999			2000				2001				2002					

Figure 34 Company development: e-hotel

The company first developed a software tool to book hotel rooms with the aim to develop a mobile hotel booking service. After the backend application was built in fall 1999, *Bedhunter.com* offered its service initially through a toll free number (January 2000) and then (in March 2000) through a web-based solution. In May 2000, the WAP- and SMS-based services were completed. After May 2000, no new distribution channel was added. Therefore, no additional communication technology was introduced.

After the seed investment by its two founders in September 2000, *e-hotel* financed its growth from the beginning of 2000 on through its first VC financing round, which was closed with *Fortknnox Ventures*. In October 2000, the above-mentioned merger took place. The merger was motivated by *Bedhunter.com's* wish to grow externally and *I:FAO's* wish to deconsolidate its *e-hotel* service. The loss making service burdened its IPO prospects. This also explains why a second financing round was integrated in this merger. *I:FAO* provided

⁵⁵ *I:FAO* develops e-procurement software for the booking and management of business travel

additional funds for the new *e-hotel AG*. In January 2002, a third financing round was closed with *tbg*, which took an 18% share of the company.

E-hotel built different alliances on its front-end to sell its services and on its back-end to source hotel room contingents, rental cars, and other travel services. Its most important partner was *Radius*, for hotel rooms and *Lufthansa* and *Sixt* for flights and rental cars. *D2 Vodafone* and *T-mobile* were important distribution partners, who integrated *e-hotel's* service into their portals. At the end of 2000, the business logic of *e-hotel* changed from being a mobile travel agency to a hotel room specialist. Content partnerships with *Sixt* and *Lufthansa* were obsolete, but contacts to these companies could be used to integrate *e-hotel* service in *e-sixt's* and *Lufthansa's* travel portals. In addition to these sourcing and distribution partners, *e-hotel* cooperated with international electronic hotel room directories such as *INNXS.com* and later with *Pegasus* to link its service to international booking machines and with *I:FAO* and *Nokia* to build up its own technology platform.

Through its network, *e-hotel* built up a service that grew up to 51,000+ hotel rooms from October 2000 on. During that time the organization grew from 6 employees in 1999 to 35 toward the end of 2000. Due to the downturn of the multi media industry and limited new financing opportunities, the organization had to be scaled back to 18 employees by the end of 2001. The same management team has been running the organization since its foundation. *E-hotel* did not win any start-up, new economy or multimedia awards.

E-hotel's business model

E-hotel offers hotel-booking services to the private travel community and to corporations, which are served as large accounts. Large accounts are targeted with integrated offers that comprise mobile, online and toll free hotline services. *E-hotel's* business model is summarized in figure 35.

The private travel community can access *e-hotel's* service via four different channels. In cooperation with *iobox*, *e-hotel* offers its booking service via SMS technology. The booking service is also distributed using WAP technology. Partners such as MNOs and independent portals offer their users this service either under the *e-hotel* brand or under their own brand. When marketing under their brand, *e-hotel* customizes its front-end to the cooperation partner's look and feel. The third kind of cooperation is structured similarly. Allied Internet portals offer *e-hotel's* service either branded or under their own brand. Integrated travel agencies are the last distribution channel. *Lufthansa* and *e-sixt* offer their services by using a variety of media (e.g., call centers, online, and mobile).

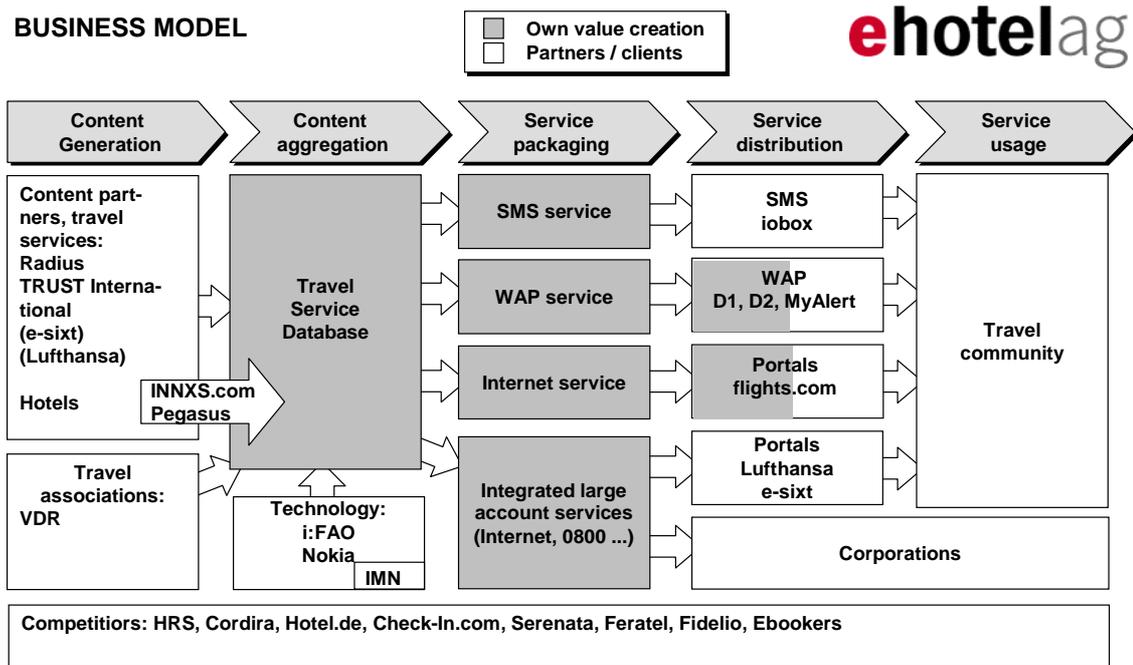


Figure 35 Business model: e-hotel

In the case of *e-hotel*, the packaging of its services is not very complex. All services are based on the same database of hotel room. *e-hotel* edits its content and adjusts the design sheets in its content management system to deliver tailored hotel information depending on the data capacities of the bearer service and the screen size of the CPE.

E-hotel's core resource is its booking engine together with its hotel-room contingents and hotel room database. Its booking engine was developed mainly in-house. Two partners supported the development of *e-hotel's* technology. *I:FAO*, as the largest shareholder, helped *e-hotel* with its knowledge as developer of e-procurement software for booking and managing business travels. *Nokia*, through its developing program, gave support for the mobile adaptation of *e-hotel's* service.

On the upstream side of its value chain, *e-hotel* established cooperation for accessing hotel room contingents with two purposes. First *e-hotel* partners with *Radius* to access hotel room contingents with large discounts to be competitive in tourist and business "hot spots". Second, *e-hotel* signed up hotel room database services provided by *INNXS.com* (a service of *Trust International*) and *Pegasus*. These providers collect and standardize hotel offers from all over the world. As a result of these alliances, *e-hotel* was able to broaden its service offer to 51,000 hotels to fulfill almost every client request.

E-hotel competes with its service with other independent hotel booking services like *HRS*, *Cordia*, *Hotel.de*, and *Check-In.com*, and with older booking systems such as *Fidelio*, for which online and mobile front-ends have been developed.

Multichart's company history

Multichart is in two ways an exception in comparison with the other case studies. *Multichart* was founded in 1985 in Kassel (Germany) and, from that time, grew organically without any venture capital. The founder, Thomas Brandenburger, started this venture to support financial institutions such as banks and Sparkassen⁵⁶ with software that graphed the development of securities such as stocks and bonds. Despite the availability of computer systems in the mid 1980s, brokers still graphed the development with pencils on paper. *Multichart's* first software tool, *Multichart2000*, targeted those brokers. Using this software, they could manage, control, and analyze their clients' portfolios. *Multichart's* development is summarized in figure 36:

MULTICHART – COMPANY DEVELOPMENT



Company Name	Multichart								
Products / revenues	Realtime over TV Satellite	Realtime over GSM	KISS(me) SMS	KISS(me) Cash	KISS(me) for PDA	KISS(me) WAP	Brokerage over GPRS	GPRS-Börsenticker	Aktien-signale
Financing						KISS(me) Pay	KISS(me) Infos	WebChart	Capital increase x2
Important Cooperations	Deutsche Börse	IC3S	e-plus	T-mobile	CompuTel	DPA	Motorola Ericsson		envigo
Board	Thomas Brandenburger					Stefan Pietsch	DVG Hannover	Sparda Bank	Fokus Money
Employees	5		11		14		17	21	17
Others							Sonderpreis der hessischen Kreditinstitute		
	1990	1994	1996	1997	1998	1999	2000	2001	2002

Figure 36 Company development: Multichart

In the early 1990s, *Multichart* began to integrate its business from graphing financial content into the transport of financial content. It offered real-time stock quotes to financial institutions and financially interested people via satellite technology. When GSM networks were introduced in Europe in 1992/1993, *Multichart* adopted this technology and delivered real-time stock quotes from the German stock exchange over GSM. In 1996, *Multichart* launched its first SMS service. The *KISS(me) Broker* was the first mobile data dialog system in Germany. It replied with the real-time stock quote after receiving the name of the

⁵⁶ Trustee savings banks

securities via SMS. The presentation of this service at the *CeBIT* in 1996 marks *Multichart's* entry in the mobile Internet industry.

In the four years that followed, it improved its service by additional functionality and additional accessibility. To enhance its product, *Multichart* added, step-by-step, a mobile cash function, m-brokerage, mobile info services and an application to manage bank accounts and transfer money via cell phone or PDA. To increase its usage, *Multichart* adapted its service to different technologies like WAP and GPRS.

In late 2001, *Multichart* built up its online services by offering tickers and security charts to companies for investor relations purposes, and updated its first product, *Multichart2000*, in a web-enabled tool called *Aktiensignale*.

These developments were mainly financed internally. *Multichart* grew organically from 1985 without venture capital. External capital was only accessed by regular bank loans or by selling minority stakes of the company to important partners like *Distefora*.

To develop and sell its service, *Multichart* cooperated with different companies. Its most important cooperation partner on the supply side is *Deutsche Börse*⁵⁷, with whom *Multichart* has cooperated since 1986. With its entry into the Mobile Internet industry, *Multichart* started to partner with technology providers and CPE manufactures. Through *IC3S* and *Distefora Mobile*, it connected its service to the new digital communication channels using their SMS centers. CPE manufacturers provided *Multichart* with the latest handset technology so that it could adapt its service. Four types of partners cooperated with *Multichart* on sales and distribution: MNOs such as *e-plus* and *T-mobile*; financial content providers such as *Focus money* and *N-TV*; internet agencies and other communication companies such as *envigo* and *CompuTel*; and financial system integrators as data processing centers of banks (e.g., *DVG Hannover*, *ITZ*, etc.).

Thomas Brandenburger has lead *Multichart* as CEO since 1985. In 1999, Stefan Pietsch joined as second chairman focusing on mobile services. The organization grew steadily with an average of one employee per year from 1986 to 13 employees in 1998. From 1999 to 2001, the organization grew to up to 21 employees. In the beginning of 2002, it had to be cut back and operated with 17 employees in mid 2002. *Multichart* won the *Special Award of Financial Institutions in Hesse 2000* for its *KISS(me)* service.

⁵⁷ German Stock Exchange

Multichart's business model

Multichart sells two different types of products: mobile and online finance services and banking software. Its finance services are sold to the financially interested community, finance-oriented content providers such as *NTV*, *N 24*, and *3sat Börse*, and publicly traded companies like *Gardena* and *Karstadt Quelle* for their investor relations. WAP and GPRS services are sold exclusively under the *KISS(me)* brand; SMS and online services such as web-charts and stock quote tickers are also customized to the look and feel of the customer. *Multichart* either sells its banking software directly to banks, or uses financial software service companies as data processing centers. These companies integrate *Multichart's* software as one component in their full size banking software package. *Multichart's* business model is summarized in figure 37.

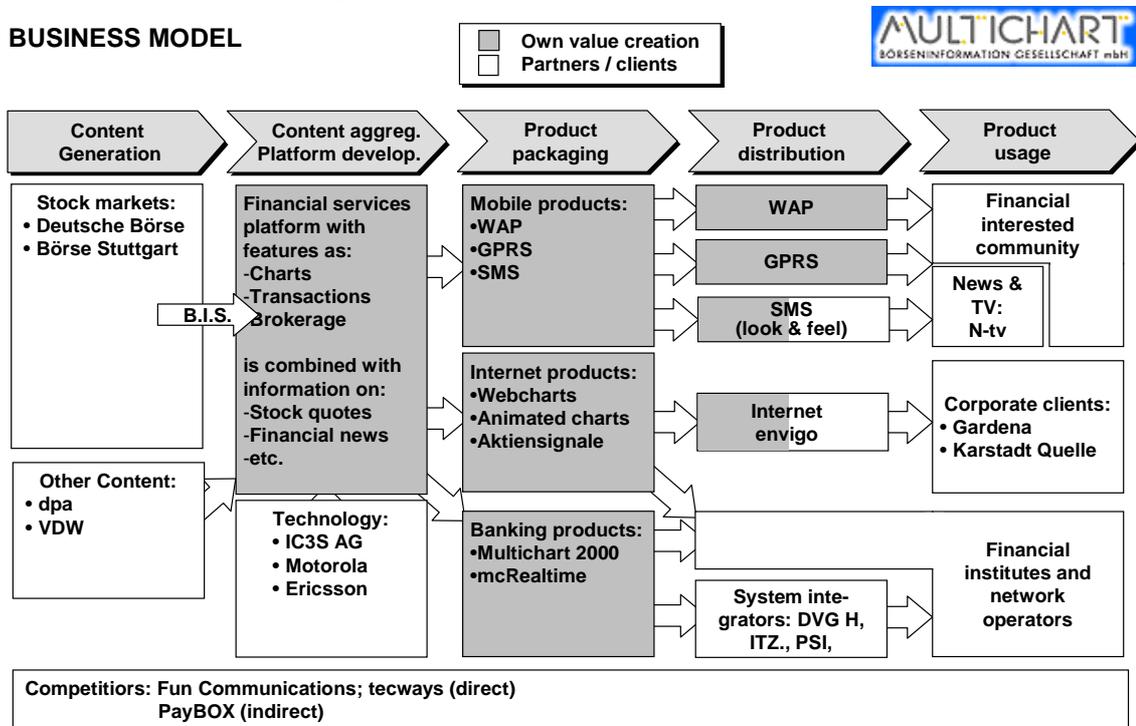


Figure 37 Business model: Multichart

Multichart sells different services in every product category. Mobile services include m-brokerage, m-payment, m-banking, and mobile financial information services. These services are available through different bearer services (i.e., WAP, SMS, and GPRS). Online products are web charts—both simple and animated—and the online portfolio management program *Aktiensignale*. *Multichart's* banking products are the portfolio management program for brokers, *Multichart2000*, and stock quote real-time provision through *mcRealtime*.

All products are based on three components: real-time content, chart capability in different designs, and good connectivity with various media. Real-time content is acquired through

cooperation with *Deutsche Börse* and *Börse Stuttgart* and accessed through the network of *BIS Börseninformationssysteme*. Additional content like financial and general news is accessed through co-operations with *dpa* and *VDW*. *Multichart's* chart capabilities have been developed in-house since 1985. No external co-operations are needed for its online services and software products. However, for its mobile services, *Multichart* cooperates with CPE manufacturers to adapt its solutions (especially the design sheets) to new handsets. *IC3S* is *Multichart's* most important partner in terms of connectivity; it manages *Multichart's* SMS traffic.

With its mobile services, *Multichart* competes with *Fun Communications* and *tecways*. Its m-cash service competes indirectly with the *PayBox* service.

Now that MCS case studies have been introduced, their alliance portfolios and organizational change will be examined in detail in the next section. This examination is guided by the following questions: How important are alliance portfolios from a strategic point of view? How and why do they change over time? How do they influence the development of the case study firms?

3.3.3 Within segment analysis

The cases in the Mobile Content Service segment are analyzed according to the structure used in the MLS segment analysis. To understand the longitudinal dynamics of alliance portfolios, their implications on company performance, and their interdependence with organizational change, the first two parts of the analysis cover each firms' development and resource requirements. The third part describes the alliance portfolio structure over the development of the case studies. The analysis of relevant processes to form and manage partnerships follows in the fourth. The fifth part describes the alliance portfolios' implications on firm performance. The section is summarized with a conclusion.

Company development

Two questions are answered in this section: Did different development stages exist? And how can they be characterized? Therefore, in the first section, the development steps are identified and classified. In the latter section, different organizational characteristics (such as the organizational structure and the communication style) are described and the development stages are characterized accordingly.

Development stages

Since their foundation, all four organizations have gone through longer periods during which they developed smoothly, and shorter problematic periods during which they had to adjust their structure. Thus, these companies went through different life cycle stages. Table 15 lists the stages, which have been identified and labeled by the managers who were interviewed. This also explains, why these stages are not characterized using a consistent criterion. Some managers used strategic growth targets, while others used changes in the product portfolio to characterize the company's development.

Company	<i>Airweb</i>	<i>Clever.Tanken</i>	<i>e-hotel</i>	<i>Multichart</i>
Phase 1	Growth oriented start-up venture 9.1999 – 1.2001	Service development 8.1999 – 12.2000	Start-up period 9.1999 – 12.2000	Banking software developer 8.1985 – 2.1996
Phase 2	Organic growth 1.2001 – 2.2002	Service marketing and consolidation 1.2001 – 5.2002	Professionalization period 1.2001 – 5.2002	M-finance service provider 3.1996 – 2.2001
Phase 3	Multi product provider From 2.2002 on	Not yet	Not yet	Multi-media finance service provider From 3.2001 on

Table 15 Stage description of companies in the MLS segment

All ventures started with an exploration phase, during which they generated the technology, screened the market, and developed prototypes. *Airweb* launched different services that were sold to operators for free to increase its user base. *Clever.Tanken* built up its database and fuel price pilot community, for which it iteratively developed an incentive scheme. *E-hotel* developed its booking engine, integrated its system into existing travel computer systems and struggled with its business model scope (i.e., between being a broad mobile travel agency or a specialized multi-access hotel room booking service). In its initial years, *Multichart* developed its portfolio management software for brokers. Step-by-step features were added after testing the software and receiving market feedback.

At the end of stage one, the case study companies faced similar problems. Their market niche was either not big or not profitable enough to earn solid revenues and the grown up organization required better processes and more structure to operate efficiently. Therefore, the second stage can be best characterized by the term professionalization. All companies began to focus more on sales and streamlined their business model on core capabilities. According to March's (1991) framework, the case study companies began to exploit their technology. *Airweb* cancelled all contracts with insufficient revenue models and increased its prices, *Clever.Tanken* started to work with radio stations to push its marketing, and *e-*

hotel focused on its hotel room booking service and abandoned its project to build a mobile travel portal. Only *Multichart's* case is a slightly different. The company had grown slowly but profitably. However, in the middle of the 1990s, it realized that its niche was not big enough, so it started to transfer its capabilities into a new mobile business.

Clever.Tanken and *e-hotel* are still in the professionalization period. *Airweb* and *Multichart* in 2001 and 2002 progressed to the third stage. Both organizations broadened their product portfolios to increase sales. In both cases, this step was combined with the consolidating and streamlining of current activities. *Multichart* cut back its Marketing and PR expenses by downsizing its marketing department. *Airweb* consolidated its content activities by building up alliances with strong content partners.

To compare the development steps of the case studies, the organizations were analyzed according to the organizational dimensions that were introduced in sub-section 3.2.3 'Company development'.

Stage characteristics

The four MCS companies were assessed over their development stages according to five dimensions: management focus, organizational structure, communication style, management's flexibility to market changes, and the structure of compensation and reward systems. The characteristics and their development over time are summarized in figure 38.

Company development

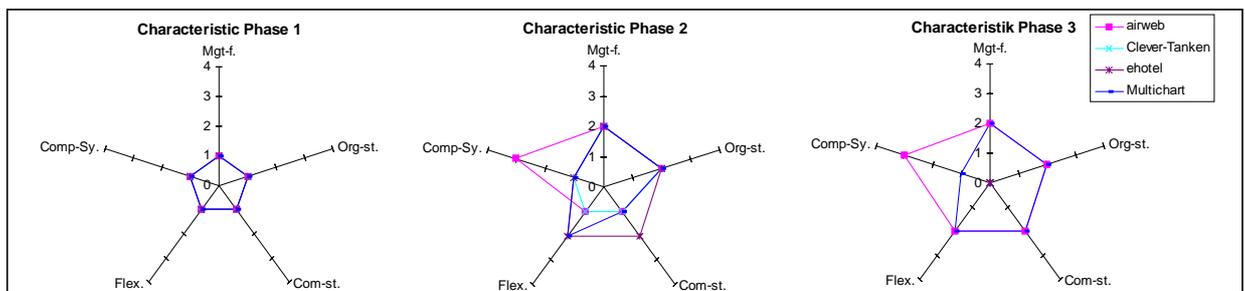


Figure 38 Company development in the Mobile Content Service segment

First stage: All four companies had typical start-up characteristics. Team-based organizations were led by an entrepreneurial manager or an entrepreneurial management team. Their in-house communication was very frequent and informal. In their exploration phase, the companies quickly reacted to market feedback by adjusting products and services. Long working hours were compensated with modest salaries and key employees had ownership.

Second stage: This stage is characterized by professionalization. In each company, the management focus shifted from developing new services and products to selling these

products and improving the efficiency of their processes by introducing a functional organization.

Most companies kept their informal communication style. With 15 or less employees, there was no need to develop more formalized communication. Only *e-hotel* changed the communication style by developing, for example, rules for meetings. The exception was motivated through its organizational growth. *E-hotel* had 35 employees at the end of 2000 when its professionalization stage started.

The case studies differed in the last two dimensions: planning horizon (i.e., management's flexibility to market changes) and compensation structure. *Airweb* and *Clever.Tanken* frequently continued to repackage their services. They shifted their business models and strategies every 3 to 6 months depending on market response. *E-hotel* and *Multichart* were already more confident in their market niche. Both companies developed mid-term strategies of 2 to 3 years, which were slightly adjusted every 6 months.

In terms of compensation structure, only *Airweb* started to develop more complex incentive systems by introducing individual bonus systems and a stock option program. All the other case study companies adhered to simple flat salaries to compensate their employees.

Third stage: As described above, only *Airweb* and *Multichart* entered a third stage. In this stage, key dimensions such as the management focus and the organization structure remained unchanged. However, because the organizations grew to 20 employees and above, both companies adjusted their communication style.

In terms of flexibility, *Airweb* gained confidence in its market and prolonged its planning horizon to a mid-term planning of 2 years. Its client relationship developed steadily, and numerous competitors dropped out of the market.

Resource requirements

Alliances are built partly to access external resources. Therefore, the documentation of resource requirements is a prerequisite for analyzing the influence of resource needs on alliance formation. These requirements have been assessed for every case study company over its development stages. The resource categories applied are identical to the MLS segment analysis, and the rationale for their selection is presented in the research methodology chapter.

The analyzed resources can be grouped into four categories, three of which are directly linked to the companies' development stages: resources with fading importance, resources with changing importance, and resources with growing importance. The last group

comprises resources that are not directly linked to development steps. The development of the resource requirements is summarized in figure 39.

Resource requirements

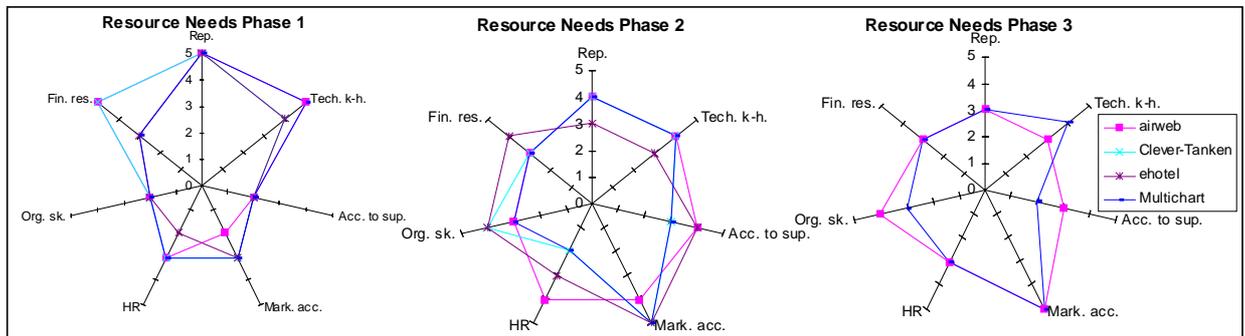


Figure 39 Resource requirements in the Mobile Content Service segment

Development dependent resources: Resource categories with **fading importance** include reputation and technological know-how. All four ventures were founded as technology-based start-ups that in their first period focused on developing services and products in new technology fields. Their technological skills played a major role and were consistently ranked very high. However, beginning with the second period, two factors led to the decrease of importance of this resource to a medium evaluation. On the one hand, companies had built up the major part of their service technology. The core features of the services were up and running and the next development steps were less crucial. On the other hand, the companies realized that their clients were not embracing the new technology as fast as had been forecasted. Given that, the industry was less about a technology race but rather a question of customizing and marketing the product. Yet, even in the later periods, technological skills are ranked medium importance.

In addition to a solid technology, the companies required reputation, particularly directly after their foundation. The companies needed a kind of legitimacy to contact other companies, sell their products and services, and to be noticed. After jumping a certain hurdle of reputation, the requirement of ‘additional reputation and publicity’ dropped to only medium level importance. The companies were established enough to be recognized and to receive an invitation when asking for a meeting. However, the reputation resource did not completely diminish in importance. As a software-developer or mobile service provider, a respectable level of reputation is always required to stay above the hurdle.

The next group of resources is characterized by **alternating importance** evaluations. Access to other supply and human resources show this pattern of alternating importance. In the case of access to other supply, all companies start with a medium to low requirement for this resource. The importance grew in stage two. However, in stage three, the resource again

lost some importance. For example, *Airweb* had developed its content service platform in stage one. To sell a service, *Airweb* needed sport news and sport events to cover. Good content began to be in short supply. *Airweb* solved this bottleneck by contracting with sport associations and with several sport content providers, and ‘access to other supply’ was again ranked medium.

In the case of *Clever.Tanken*, additional content is mainly filling station related. This content was ranked medium-low importance in period one while it built up its databases, content acquisition system, and technology. In period two, *Clever.Tanken* scaled up its system and the importance of content increased. In an effort to increase its content base, additional ‘fuel price pilots’ could be recruited. The number grew from 10,000 to above 40,000 and *Clever.Tanken* achieved good coverage in all of Germany. There are signs that *Clever.Tanken* has built up the major part of its supply network and that sourcing will lose importance. This is how the CEO of *Clever.Tanken*, S. Block, cautiously answered the question of whether content would maintain its high level of importance.

The situation is similar for *e-hotel*. The importance of superior supply was low in the first stage, when the technology had to be developed and a prototype service launched. However, in stage two, commercialization required access to hotel room databases and room contingents. Therefore, the evaluation jumped from medium low in phase one to medium high in phase two. There are indications that the sourcing network is in place, which may very likely cause it’s importance to decrease in the near future.

In the case of *Multichart*, the importance of superior content follows the same pattern: Low in stage one, higher in stage two and medium to low in stage three. Access to financial data was important for *Multichart* directly from its foundation. The partnership with *Deutsche Börse* dates back to 1986. However, no critical further supply was needed up to 1996 and 1997, when *Multichart* entered the Mobile Information business. Furthermore, the partnership with *Deutsche Börse* is fairly structured and is not exclusive. These three arguments explain the medium-low evaluation of the resource’s importance in stage one. The entry into new services triggered changes in resource needs. *Multichart* launched *KISS(me) info*, a mobile information service covering political, business and financial news. The requirement for information grew with *Multichart*’s reorientation as an M-finance service provider. Because of the return of its business focus to charts and the software tools to analyze securities and portfolios (i.e., *Webchart* and *Aktiensignale*), the requirement for content resources again decreased to medium-low importance.

Human resources are the second alternating evaluated resource category. All case study companies ranked its importance in the first period medium or medium low. The companies grew by only a few employees, most of whom were related to the company founders. Recruiting became more difficult in stage two (three out of four evaluations went up). This shift is based on two factors: increase in quantity and selectivity. More employees were sought out in absolute terms, because almost all companies grew from approximately 10 employees to their maximum size of 20 to 35 employees. In addition, the search became more structured and selective. Search profiles became more clear as the industry matured and the companies structured themselves to according functions. As Airweb's CEO said:

'In the beginning we selected people according the motto: "This is a good man, we can use him somewhere." In the meanwhile, we recruit people specifically for well-defined positions.' (Claudius Bertheau, CEO of Airweb, 2002)

In stage three, the requirement dropped back to a medium evaluation. Although the search selectivity continued to grow, cutbacks in the size of the organization reduced the need for additional human resources.

The next group comprises resource categories, which **gained importance** along with the development stages. The requirements of market access and organizational skills grew over time. Both resources received the lowest evaluation in stage one and the highest in stage three. In the case of market access, the need to sell products and services grew steadily. In the prototype stage (stage one), the technology-based start-ups focused on their development work. In addition, VC money was easy to acquire, which lowered the burden to survive.

Trends in the VC industry are important for understanding the shift in stage two. In addition to the regular development that the case study companies planned to break even in stage two, the VC industry drastically cut its investment in this industry. This increased the pressure to increase sales to provide internal financing. Therefore, all four case study companies rank access to markets as the most required resource in their last stage.

A similar pattern can be seen in the category organizational skills. The evaluation increases from medium-low in stage one to medium-high in the case studies' last stage. This increase is driven by two effects: a growing need for structure as organizations grew and diversified into different services, and a growing need for efficiency as external financing dried up and cost cutting became an important strategy to break even. An example of this trend is provided by the CEO of *Clever.Tanken*:

'We have an administration tool, with which we manage our data. It is built up very intelligently, so that it delivers on one hand information very reliably, on the other hand we save manpower. This system is very efficient and we start to benefit from these effects. ...These organizational skills were not that important in the beginning, but meanwhile these skills are crucial.' (Steffen Bock, CEO *Clever.Tanken*, 2002)

All case study companies introduced functional organizations to clearly assign responsibilities and sophisticated evaluation systems to improve measuring and monitoring of skills.

Other resources: This group of resources is not directly linked to development steps and applies to only one category: financial resources. The need for financial resources is the difference between the need to finance growth and survival and the available funds. This availability depends mainly on already closed VC financing rounds. As mentioned above, VC financing is very cyclical. Therefore, VC industry trends, which can be labeled exogenous to the company development, play a significant role in the evaluation of the importance of external financing.

Looking at the case study data: in stage one, *e-hotel* ranks its requirements of financial resources only medium because it went through its first financing round very early. *Clever.Tanken* and *Airweb* went through their first VC round late and therefore rated financial resources higher. In stage two, the picture has changed. *E-hotel* had to find a partner for its second VC-round. After a long search, *tbg* bought an 18% share in January 2002. This explains its higher evaluation of financial resources. *Airweb* is a different case; it required external funds to finance its growth in stage one. Yet after realizing that the 'Internet-business-logic' based on subscriber growth was no longer credible or supported by the financial community, it shifted its strategy to organic growth in stage two and the resource requirement dropped from very high to medium. Different growth expectations lowered the requirement for external financing. The evaluation of financial resources went down to medium. Also, since stage two, *Clever.Tanken* has focused on organic growth and lowered its evaluation to medium. Interestingly, these two companies lowered their evaluation to the same level as *Multichart*, which has grown organically since its foundation.

After demonstrating and describing how resource requirements change, it is interesting to see if these changes influence the structural changes of alliance portfolios.

Alliance networks

The alliance portfolios are analyzed in the same order as in the MLS segment. The development of each case portfolio is broken down stage-by-stage and graphed subsequently using Pajek (see figure 40). The rationale for this procedure, a detailed description of the network documentation and analysis, is provided in the research methodology (sub-section 2.2.5 ‘Analyzing data’) and in the first segment analysis (sub-segment 3.2.3 ‘Alliance networks’).

Alliance portfolio

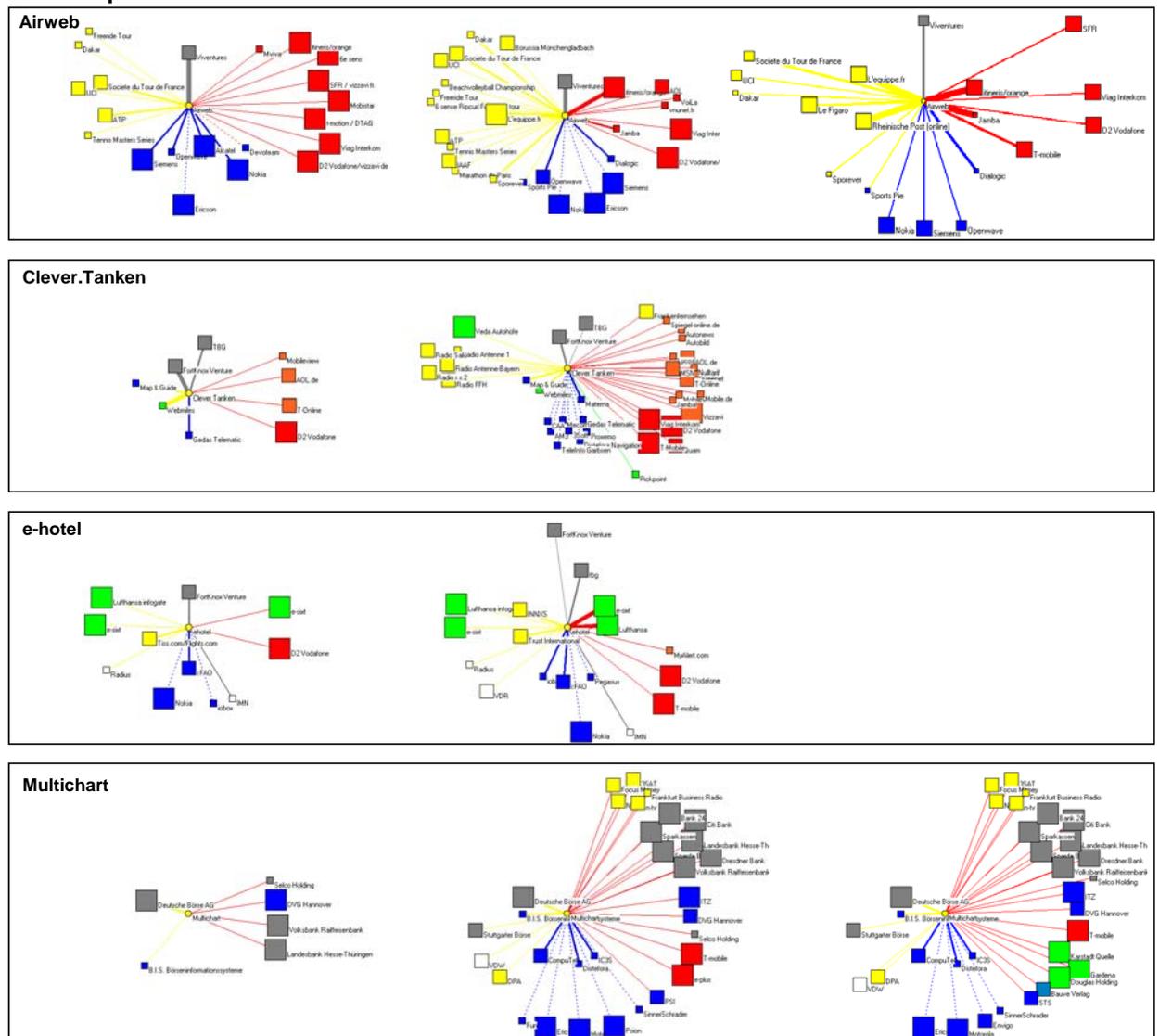


Figure 40 Alliance portfolios in the Mobile Content Services segment

Stage one: All companies have fairly exploratory network structures in their start-up stage with approximately 9 partners. Only *Airweb’s* network is twice the size, which can be attributed to its operations in two markets, France and Germany. Multiple weak ties for every resource category characterize the exploratory network structure. Only financial resources are accessed through stronger ties.

The case study companies closed their first VC round: *Airweb* with *Viventures*, *Clever.Tanken* and *e-hotel* with *Fortknox Ventures* and *tbg* as co-investor. *Multichart* was the only company that accessed external financing. Its organic growth is based on two factors: a less developed VC-industry in the 1980s when *Multichart* was founded, and a more conservative company philosophy.

Content-wise, all four case studies established links to critical markets. Many links were based on weak ties, and the companies proceeded in an exploratory fashion by contracting with different types of partners. *Airweb*'s management linked their company to different sport associations and companies such as the *Société de Tour de France* and the *ATP Tour*. *Clever.Tanken* closed a partnership with *Map&Guide* to access maps and set up a partnership with *Webmiles*⁵⁸ to incentivize its 'Fuel Price Pilots' to submit fuel prices. *E-hotel* created partnerships with *Radius*, *Lufthansa*, and *Sixt* to source hotel rooms, flights and rental cars for its portal. *Multichart* partnered with *Deutsche Börse*, who generated financial content through its trading activities, and *B.I.S. Börseninformationssysteme*, who transported and delivered this content.

Technology partnerships were rarely established. Most of the technology for the case study firms was developed in-house. *Clever.Tanken* and *Multichart* had one or fewer technology partnerships. *E-hotel* had three—one partnership with *Nokia* for reputation and PR purposes, and two partnerships for pure technology purposes. *I:FAO* assisted in building *e-hotel*'s booking technology and *iobox* with SMS technology. *Airweb*'s technology partners can also be grouped into these categories. *Siemens*, *Ericsson*, *Nokia*, and *Alcatel* were important for *Airweb*'s reputation; *Openwave*'s development program primarily provided technological support for emerging industry standards, but also contributed to *Airweb*'s reputation.

The companies' sales approaches differed. *Multichart* had almost pure client relationships and offered its applications in market similar transactions to financial service companies such as banks (*Volksbank*, *Raiffeisenbank*), independent financial agencies such as *Selco*⁵⁹, and to system integrators that provide turnkey financial software solutions for banks. *Airweb*, *Clever.Tanken* and *e-hotel* offered their services for free to obtain access to mobile service subscribers and increase their client base. Therefore, their sales ties were very weak

⁵⁸ Together with *Webmiles*, *Clever.Tanken* developed an incentive system for its 'Fuel Price Pilots' to report current fuel prices. *Webmiles* is not a content supplier, but it enables the exchange of content through its incentive system.

⁵⁹ Independent agent selling financial services, similar to *MLP*

in the beginning. Partnerships were established to access mobile portals of MNOs revenue sharing agreements or other financial sales deals were rare.

Stage two: The alliance portfolio grew significantly with the professionalization of the case study companies. *Airweb's*, *Clever.Tanken's*, and *Multichart's* portfolios comprised, on average, 32 partnerships. *E-hotel's* portfolio was smaller with 16 partners. Within all four cases, similar patterns concerning supply, technology and sales partnerships could be discovered. Supply partnerships were focused on a few important players to whom stronger ties were built. Technology partnerships continued to be rare. There were stronger links to only three or fewer younger technology providers with complementary technologies. Sales partnerships began to gain importance. Only links to financial partners developed differently.

Three out of four companies did not close new alliances to access financial resources. *Airweb* and *Clever.Tanken* shifted their aggressive growth strategy from period one towards profitability targets and organic growth, similar to *Multichart's* approach, without additional financing partners. Only *e-hotel* closed an additional deal with the VC *tbg* to attain external financing. Each partner group is subsequently discussed in greater detail.

On the supply side, stronger partners emerged in all four cases combined with additional partners that provided less crucial content. *Airweb* began an intense alliance with *L'equipe*, consolidating its diverse content web with more than ten smaller content partners. *Clever.Tanken* continued cooperating with *Map&Guide* and *Webmiles* to access maps and to incentivize the reporting of fuel prices. Additionally it built up weaker ties with state-wide and regional radio stations to access further traffic relevant content such as news on traffic jams⁶⁰ and features of roadside restaurants. The development of *Multichart's* portfolio was very similar. It continued its crucial partnership with *Deutsche Börse* and *B.I.S.*, and built up links to *VDW*⁶¹ and *DPA*⁶² to access second tier information such as daily news. *E-hotel* streamlined its business from a mobile travel portal to a multi-access hotel booking platform. In parallel it consolidated its supply partner portfolio on hotel partners such as *INNXS*, *Trust International* and *Radius*. A weaker tie was set up to the *VDR*⁶³.

Only a few strong technology partnerships were built in period two. *Airweb* kept most of its reputation partnerships as with *Siemens* and began a cooperation with *Dialogic* to voice

⁶⁰ The radio stations were used for marketing purposes as well.

⁶¹ Verband Deutscher Wirtschaft (German chamber of commerce)

⁶² Deutsche Presse Agentur (Germany's biggest news agency)

⁶³ Verband Deutscher Raststätten (Association of Germany's road-side restaurants)

enable its platform—a significant add-on. *Clever.Tanken* closely interacted with *Materna* to enhance its SMS technology capability, which was required to handle the growing data volume initiated by over 40,000 fuel price pilots. In addition, it cooperated with different In-Car-PC companies and telematic service providers to position its service in representative and innovative traffic solutions. *Multichart's* technology alliance strategy was similar to *Clever.Tanken's*. Partnerships with *IC3S* and *Distefora* were built to deliver SMS. Together with *CompuTel* fax and voice services were developed. Partnerships with incumbents were used for reputation purposes such as presentations at trade fairs like *CeBIT*. *E-hotel* did not change its technology partnerships significantly.

All case study companies intensified their distribution partnerships or accessed new groups of distribution partners. *Airweb* intensified its partnership through increasing its service level, service width, and prices. Its partnership with *Orange* was a particularly promising development. Simultaneously, numerous weak ties were cut off when MNOs were not willing to pay for *Airweb's* services. This was the case for MNOs such as *T-mobile* and *Mobistar*.

'After 18 months our activities achieved enough publicity in our sport information segment. We changed our strategy and terminated all contracts with portals. One part of these contracts we migrated to contracts with clear revenue sharing deals or other compensation structures; the rest got the chop.

This led to a reduction in partnerships with portals, but it was a crucial step towards a consolidating strategy focused on profitability.' (Claudius Bertheau, CEO Airweb, 2002)

E-hotel also started to focus on strong ties. Its major distribution partners are *e-sixt* and *Lufthansa* for whom its service was customized. Client specific product development projects build a solid basis for these cooperations. *E-hotel's* links to mobile portals became second tier.

Clever.Tanken and *Multichart* added new groups of distribution partners. *Clever.Tanken* started to cooperate with numerous portals, MNOs (e.g., *T-mobile*), mobile portals (e.g., *Jamba!*), general-purpose online portals (e.g., *Lycos*), and specialized car portals (e.g., *Autonews*). *Multichart* partners with business content providers (e.g., *3SAT Börse* and *Focus Money*), banks (e.g., *Bank24* and *Dresdner Bank*), their software providers (e.g., *ITZ* and *DVG Hannover*), and MNOs (e.g., *e-plus* and *T-mobile*).

Stage three: Only *Airweb* and *Multichart* entered stage three; thus, their alliance portfolios in this stage can only be analyzed preliminary. Both companies had just entered this stage when the data were collected. This stage was far from being over. Therefore, the alliance portfolios are very similar to the portfolios at the end of period two. However, a few trends are worth mentioning. Specifically, sales partnerships became even more important, content partnerships were consolidated, and finance and technology partnerships lost importance. Neither *Multichart* nor *Airweb* closed any new partnership to access financial or exchange technological resources. *Multichart* even kept its content network as it was, whereas *Airweb* continued consolidating. With *Rheinische Post* it gained its first strong German content player and with *Le Figaro* and additional strong French content player.

On the sales side, both companies worked on increasing sales and reducing dependencies on distribution partners that were too strong. *Airweb* started to build stronger ties to *SFR* in France and *Jamba!* and *T-mobile* in Germany to reduce its dependency on *Orange*. *Multichart* began to cooperate with publicly listed companies (e.g., *Gardena* and *Karstadt*) as a new group of clients. It supported their investor relations' activities by providing stock quotes, tickers, and charts. The structures of the alliance portfolios are summarized in table 16.

In the first stage, the firms managed to build up small alliance portfolios. Weak ties dominate these early portfolios, which are mainly focused on content. All firms started to consistently build alliances with information providers to fill their prototypes with content. Only a few technology and very weak distribution partnerships existed.

In stage two, the alliance portfolios grew and the first more intense partnerships were formed. The portfolios started to shift toward the distribution side. On the content side, the firms intensified their existing content partnerships and added a few new partners. In terms of technology, the portfolios were only medium strong. All firms had formed technology partnerships but in three out of four cases only 5 to 7 weak ties. On the distribution side, the case studies either built up strong ties with a few partners or they formed many partnerships (15+) in different distribution segments. The alliance strategy thereby depended on how easily the service could be adapted and packaged. In stage three, the focus is clearly on distribution partnerships. Alliance portfolios grew by additional distribution partnerships and both firms managed to build up additional medium and strong ties. Whereas technology partnerships lost importance and content partnerships were decentralized to reduce dependencies, *Airweb* and *Multichart* intensified and built up additional distribution partnerships.

		Airweb		Clever.Tanken		e-hotel		Multichart	
	Alliance category	Alliance Portfolio	Reasoning	Alliance Portfolio	Reasoning	Alliance Portfolio	Reasoning	Alliance Portfolio	Reasoning
Stage 1	Technology	•	5 weak ties	↓↓	No ties	↑	1 medium, 2 weak ties	↓↓	No ties
	Supply	•	6 weak ties	•	2 medium ties	↑	1 medium, 2 weak ties	•	1 medium, 1 weak tie
	Markets	↓	9 very weak ties	•	5 weak ties	↓	2 weak ties	↓	3 weak ties
Stage 2	Technology	•	1 medium, 5 weak ties	•	7 weak ties	•	5 weak ties	↑	3 medium, 8 weak ties
	Supply	↑	1 medium, 12 weak ties	↑	2 medium, 5 weak ties	↑	2 medium, 3 weak ties	•	1 medium, 4 weak ties
	Markets	↑	1 strong, 1 medium, 5 weak ties	↑	20 weak ties in 5 groups	↑↑	2 strong, 3 weak ties	↑	2 medium 15 weak ties in 4 groups
Stage 3	Technology	↓	4 weak ties					•	1 medium, 5 weak ties medium
	Supply	↑	2 strong, 1 medium, 3 weak ties					•	1 medium, 4 weak ties
	Markets	↑	1 strong, 2 medium 3 weak ties					↑↑	5 groups, 3 medium, 21 weak ties
	Legend	↑↑ Strong	↑ Medium strong	• Medium	↓ Medium weak	↓↓ Weak			

Table 16 Alliance portfolio structure (MLS)

Now that the significant changes in firms' alliance network structure have been presented, the next part examines how case study firms manage this change and how underlying alliance processes support the adjustment of the alliance portfolio.

Alliance process

All case studies consistently report of an allying process, which is started by revising corporate strategy and which ends with the realignment or termination of partnerships. The overall allying process has three phases: a strategic pre-phase, in which the alliance concept is worked out; an alliance formation phase, in which partners are sought and screened, contacted, and the partnership negotiated and contracted; and an alliance management phase, in which partnerships are operated and embedded, their performance monitored, and when required, their structure realigned or terminated as needed. This process is identical to the

allying process in the MLS segment, which is depicted in figure 26. Its steps are described subsequently.

Strategy pre-phase: In the strategic pre-phase, alliance needs are derived from the corporate strategy. The steps for deriving an alliance need are best formulated from the marketing manager of *Multichart*:

'The allying process starts with the consideration, how do we get new services in the market. For every new business, we analyze what we need to do to deliver this service and how we can get support. Therefore, we break the whole service apart and think about who is already working on similar problems, which type of company could be supportive in every sub-problem. Then we work out the benefits of such an alliance. Hence, we accordingly formulate an alliance concept. Thereby, from our perspective a win-win situation for all participants is very important. When we have completed these conceptual considerations, we start to search, screen, and contact potential partners.' (Anja Dönke-Bartling, marketing manager *Multichart*, 2002)

In this phase, it is important to develop a clear picture of, how the alliance should be structured and what benefits should be achieved. On this point, *Clever.Tanken* went through a learning process. Its CEO realized:

'The better and more precise we developed our vision of an alliance—the alliance concept, in which we specified what we want to achieve and how we want to do it—the more successful our alliances activities became.' (Steffen Bock, CEO *Clever.Tanken*, 2002)

The finalization of the alliance concept starts off the alliance formation phase.

Formation phase: The formation phase comprises three steps, searching and screening, contacting, and contracting. In the searching and screening step, to search for content and technology providers as well as for distribution partners, all case study firms use in-house industry expertise.

In the contacting step, reputation is very important. The partner industries are often oligopolistic. Therefore, the contacting is very competitive, as the CEO of *Airweb* reports:

'Contacting potential partners is not easy, because especially at our content partner it is always the case, that our competitors aim as well to form alliances with these companies.'

(Claudius Bertheau, CEO Airweb, 2002)

Reputation is the best selling argument in the case of competition.

In the contracting stage it is important to negotiate fair and flexible alliance structures. This point was previously mentioned in a quote of Mrs. Dönke Bartling. The CEO of *e-hotel* also stressed this point:

'It is crucial to find a fair model from which both companies benefit. This is especially the case when we negotiate revenue sharing deals. They have to be maintainable und flexible, when underlying assumptions don't come true. Otherwise, one partner feels diddled and the partnership is short-lived.' (Matthias Kose, CEO e-hotel, 2002)

With the execution of the partnership contract the allying process enters the management phase.

Management phase: In this last phase, partners cooperate and benefit from the formed alliance. In the operating phase, it is important to create efficient and stable cooperation by intensifying and embedding the relationship. While operating an alliance, it is important to control the efficiency of alliances and when the efficiency is not achieved, alliances have to be restructured or terminated as needed.

While operating alliances it is important to embed the relationship, as the CEO of *e-hotel* reported:

'It is very important to build up a personal relationship with your counterpart. This helps you to warrant the stability of the partnership. That is, your relationship is able to handle a crisis in the case it arises. Directness, mutual trust, and honesty are important parts to operate alliances efficiently.' (Matthias Kose, CEO e-hotel, 2002)

Besides embedding relationships and building up trust to intensify the cooperation, it is important to monitor the efficiency of the alliance. Partners behave opportunistically like in the case of *Airweb*, in which *Jamba!* stole *Airweb's* mobile content by mirroring its information service without permission. However, even in the case of no misbehavior, it is important to monitor alliance efficiency to assure efficient allocation of resources. Alliances

that do not meet their targets absorb too much management time and other resources. That is why the case study companies measure and monitor the alliance targets, which are specified in the alliance concept and partly in the alliance contract. Thereby the most important monitoring criteria are revenue targets, as the CEO of e-hotel reports:

'The most important criteria is meeting revenue targets. When we are disappointed with the revenue development of our joint activities we only keep alliances with highly regarded firms, because we benefit from their reputation. But in fact, only revenues are important, when we decide on which alliance to keep and which to terminate.' (Matthias Kose, CEO e-hotel, 2002)

Even if all four case study firms report of this three step allying process, they differ in the degree to which they have institutionalized the process. Companies with extensive alliance activities like *Clever.Tanken* (34 alliances) have a more structured approach than *e-hotel* (15 alliances), as reported by their respective CEOs. *E-hotel's* CEO stated:

'We do not have a documented process with several steps, where it is specified what to do in every step. We are not that structured. We pass through that process more or less informally.' (Matthias Kose, CEO e-hotel, 2002)

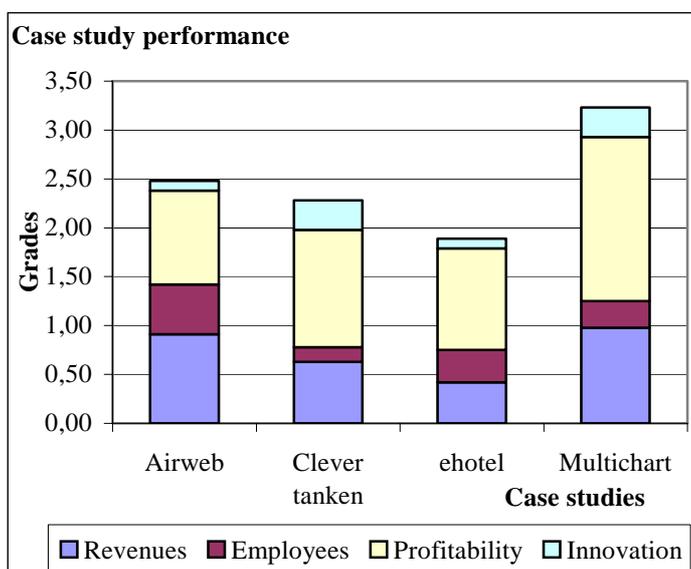
At the other extreme, the CEO of *Clever.Tanken*, who has formed more than twice as many alliances as *e-hotel*, reports:

'Concerning the required skills to successfully manage the allying process, it is important to have a tight process. You have to identify opportunities, evaluate them, and handle and process them consequently. We have seen many companies that fail even though they have excellent ideas, but they are not capable of pushing the whole allying process through and implementing the ideas.' (Steffen Bock, CEO *Clever.Tanken*, 2002)

Considering this statement, it is interesting to see how alliance portfolios and their management influence firm's performance, which will be analyzed in the next paragraphs.

Performance

Comparing the case study on the basis of performance, *Multichart* scores highest. The performance benchmark is based on the dimensions, criteria and scales explained in section 3.3.3 ‘Within Case Study Analyses – Performance’ and takes into account the growth of the companies (revenue-wise and in terms of organization size), their profitability and their innovation. The total scale ranges from 1 – very poor performance to 5 – very high performance with a mean of 2.4 calculated over all case studies. The performance of mobile content providers is exhibited in figure 41.



Multichart scores best according to three dimensions: revenue growth, profitability and innovation. It is the only company with annual sales above € 1 million. It even approached the € 2 million level in 2000 and 2002. The other ventures have annual sales ranging from close to € 200,000 to € 850,000. However, in comparison to *Multichart*, their sales grow faster which offsets the score to a certain degree.

Figure 41 Case study performance in the Mobile Content segment

Multichart is also highly rated in terms of profitability. It reached its break even shortly after foundation in the late 80s. Except for 2001, *Multichart* was always profitable in the past years. The other companies have partly significant losses ranging from € 100,000 to more than € 500,000. If their sales develop as planned, *Clever.Tanken* will have reached break even at the end of 2002; *e-hotel* and *Airweb* will have reached break even in mid 2003.

Finally in terms of innovation, *Clever.Tanken* and *Multichart* are the only MCS companies that won awards (*Sonderpreis der hessischen Kreditwirtschaft* for new media in the case of *Multichart*, the *WAP developer award 2000* in the case of *Clever.Tanken*). Neither *Airweb* nor *e-hotel* received an award for their technologies or service innovations.

Organizational growth is the only category, in which two other companies perform better than *Multichart*. *E-hotel* and *Airweb*, with approximately 20 employees, employ more people and grew faster than *Multichart*. In addition, *Airweb* did not resize its organization

like the other ventures did by cutting back 2 to 3 positions in the case of *Multichart* and *Clever.Tanken*, and more than 15 in the case of *e-hotel*.

This evaluation is partly distorted because it compares *Multichart*, which was founded in 1985 and entered the mobile content business in 1996, with other companies founded in 1999. The cross-segment analysis accounts for this difference.

3.3.4 Segment conclusion

In conclusion of the cross-case analysis, the case study companies develop stage-wise; thereby, the stage duration differs as a function of the case study company. From step to step the organizations add complexity and develop fairly parallel from an entrepreneurial team to a mid-term focused functional organization that already started to formalize its procedures and its communication.

Along with the organizational change, resource requirements shift according new challenges in every step. Out of the seven measured resource categories, six change consistently to the stage grid. Thereby technological know-how and reputation lose importance, access to content and human resources first gain and later lose importance, and distributional resources and organizational skills steadily gain importance.

Alliance portfolios shift as well. They grow from a set of fewer than 10, reputation seeking, exploratory, loosely tied partnerships to an intensification of content partnerships and to a market focused alliance portfolio with 30+ partners. Thereby, technology partnership never exceeded their reputation or exploratory status and in later stages lost almost all importance. This changing alliance portfolio structure reflects the shifts in resource requirements—in particular the fading importance of technological know-how, the growing importance of having access to markets, and the alternating importance of access to content.

The development of an alliance portfolio and its changes are facilitated through a three-step alliance process comprised of a strategic pre-phase, a formation phase and an alliance management phase. The better the case study firms have institutionalized this process, the bigger their alliance portfolio and the higher the alliance efficiency. The efficiency leads to sales increase and to cost-saving sourcing alliances. Both effects have a positive impact on company growth and profitability.

3.4 Mobile marketing services

In this section, alliance portfolios and organizational change are analyzed in the mobile marketing industry. The analysis is structured as in previous two sections. A segment overview is followed by a brief introduction of the three case profiles of *12snap*, *ApollisInteractive*, and *Mindmatics*. Their organizational developments and alliances are thoroughly analyzed in part three—the cross-case analysis. The section closes by summarizing the findings of the whole within-segment analysis.

3.4.1 Segment overview

The mobile marketing industry comprises companies that create marketing campaigns suitable for mobile devices or deliver these advertisements. These companies are referred to as mobile marketing agencies. Their business model is similar to that of regular marketing companies (such as *Saatchi&Saatchi*, *BBDO*, or *Scholz & Friends*). The business model has two important value generation steps: creation of marketing campaigns and media selling. This section, first, defines the segment mobile marketing, second, provides a revenue forecast, third, discusses barriers to mass introduction and, fourth, summarizes the status quo and the outlook for this industry.

Definition

Mobile marketing is a special kind of direct marketing, which until now has heavily relied on traditional mail. Despite its limitations (i.e., small display sizes, limited communication bandwidth, and monochrome displays), mobile marketing has four decisive advantages:

1. Low transportation cost
2. Advanced segmentation capabilities, due to existing databases
3. Location sensitivity
4. Interactivity

(1) The transportation costs for mobile mass messages are only 10% of direct mailings. A mass SMS costs between € 0.05 and 0.06 (and even the expensive MMS⁶⁴ decrease in price); in contrast, the delivery of mass letters costs, on average, € 0.30 on average, not taken into account the costs for paper, printing and envelopes.

⁶⁴ Multi-media message, a format capable to send pictures

(2) Marketing-relevant recipient data already exists in databases. MNOs have data on gender, age, residence, and communication habits, which can be used to segment social milieus and target advertisements. Therefore, in alliances or joint projects between MNOs and mobile marketing agencies, the address collection effort can be significantly lowered in comparison to traditional direct marketing.

While the first two reasons are efficiency arguments, the last two arguments are probably the most important. They pinpoint very valuable features that no other marketing approach has, so far, been able to offer.

(3) Modern GSM networks can provide location information with an accuracy of approximately 50-200m, which is close to the quality of commercial GPS systems, which have an accuracy of approximately 3-10m. This feature allows sending out context specific advertisements. Context specific refers to messages that are dependent upon time, social-demographic characteristics of the recipient, and location. These advertisements can reduce marketing costs significantly, because the divergence losses can be reduced and the response rate can be increased. In addition, context specific advertisements can help to significantly reduce spam messages.

(4) Interactivity. Mobile marketing is an ideal response medium rather than just a broadcast channel. By offering it on a multi-access platform, marketing agencies will be able to enhance other marketing channels and increase efficiency of the total marketing mix. Both features are a step toward an interactive one-to-one marketing approach.

Revenue forecast

Due to the advantages of mobile marketing, business analysts estimate the industry will grow by more than 50% a year (CAGR) from 2002 to 2006 (detailed data is provided in figure 43). In 2005 and 2006 revenues are forecast to account for € 0.4-1.4 billion (Durlacher; Ovum; The Kelsey Group, et al.).

The growth is mainly driven by user penetration. In 2001, mobile marketing campaigns could reach only 3% of mobile communication users by directed, customized campaigns.⁶⁵ The low penetration is expected to rise to up to 65% by 2006. This very positive scenario is supported by multiple surveys (Berlecon Research, 2001; Nokia, 2002), which consistently report high mobile advertising acceptance. *Nokia's* HPI study states a short advertisement's acceptance rate of 76%, and a revolving study done by *A.T. Kearney* and the University of

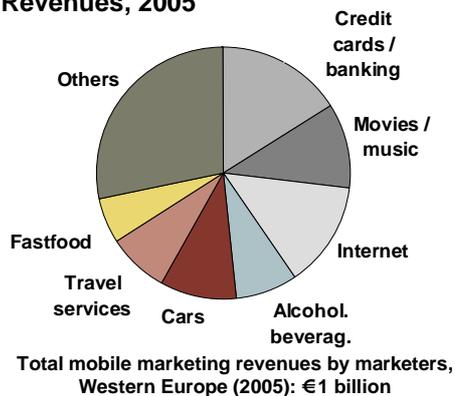
⁶⁵ Spam-SMS had a higher reach. But they drastically lost their attractiveness, due to a 150% increase in mass SMS prices in the middle of 2001. In addition, they provoked privacy concerns of operators.

Cambridge (2002) showed that penetration rates were already increasing. In Europe, 40% of users received advertising messages from companies (permitted and non-permitted) by the end of 2002. This ratio has increased from 1% a year ago, which is consistent with the industry insiders' forecast, including the CEO from *Mindmatics*, who projected:

'The market size will grow up to 5% of all media spendings' (Huber, 2002)

Several marketers are expected to deploy mobile marketing. A current study of Frank N.

Western European Mobile Marketing Revenues, 2005



Source: Nokia (2002), A.T. Kearney (2002), Frank N. Magid Associates (2002)

Figure 42 Mobile marketing sales forecast 2005

Barriers to mass marketing

In spite of its clear advantages and excellent growth prospects, the mobile marketing industry must cope with a number of critical issues. In addition to common standardization issues (e.g., the industry suffers from proprietary operation systems and different screen sizes to name a few), privacy concerns are most frequently stated, and have been realized and faced. The industry has defined its own ethics, to avoid the negative regulatory effects that will be potentially induced as a result of spam SMS. Different associations have formulated these ethics as axioms. One of the most condensed versions is provided by the *DDV* (the German direct marketing association) and is shown in the "mobile marketing axiom" in figure 43. The permission to send advertisements and the focus on short messages are the key points that distinguish mobile marketing from other forms of marketing such as traditional TV and print advertising and online marketing. The industry analyst Gartner (2002d) summarized the key requirement in a similar way:

- Advertising delivered to mobile-communication devices must be relevant, requested, and interactive. End-user opt-in is essential. Unsolicited mobile advertising is damaging and will result in end-user ambivalence to this new medium.
- It is essential to respect end-user privacy on a personal device such as a mobile phone. Standards and regulations for mobile advertising need to be defined quickly.

Many companies are encouraging users to submit text messages, thus obtaining their mobile-device numbers, which can then be used by marketers to send content, offers, or advertising messages. However, there is some doubt as to whether sending one such opt-in message constitutes permission to send "related" or subsequent material. Standard bodies, such as the worldwide active *MMA*⁶⁶, must formulate opt-in regulation quickly and in accordance with existing data protection acts, before users' privacy is further infringed. Further mobile spam will drastically lower subscribers' acceptance of mobile marketing. In addition, it might provoke either MNOs or governmental limitations for this industry.

Additional growth barriers are the availability of devices and poor economic conditions in the overall advertising market:

- Unavailability of color display terminals with high bandwidth technology: Although many services can be offered using monochrome displays and limited bandwidth, more elaborated campaigns and applications will require color displays and much higher bandwidth. Industry experts believe that EDGE technology phones with color displays will not become available in commercial quantities until the end of 2003.
- Poor economic conditions: Scaled down marketing budgets lower the likelihood of mobile marketing trial campaigns. Marketers stick to traditional communication forms and reduce the risk of their marketing mix. Less money is spent on innovative campaigns and new media, which slows down the penetration of mobile marketing.

Status quo and outlook

In Western Europe, wireless advertising generated revenues of € 20-30 million in 2001. Much of this activity is via SMS, which constitutes an inexpensive but direct advertising medium in comparison with direct mail. Although advertising based on WAP is available, it relies on users actually browsing a WAP site, and is less effective at present because of low WAP user levels compared with those of SMS. WAP advertising has also taken on a similar

⁶⁶ Mobile Marketing Association

appearance to mainstream Internet advertising by using banners and interstitial advertisements that are more irritating than stimulating and do not have the personal communication advantages of mobile advertising.

Marketing agencies offer two services: the elaboration of the marketing campaign and the delivery of messages to a specific group of recipients. In 2001, a small to medium sized mobile marketing campaign in Germany did cost roughly € 10,000. A basic campaign concept accounted for € 3,000 and the delivery of 20,000 SMS cost € 7,000 (a detailed calculation is provided in the graph “Campaign structure and price” in figure 43).

Crucial for the media selling business are sufficient client profiles; as the CEO of the mobile marketing agency *Mindmatics*, Ingo Lippert, stated:

‘Marketers are not interested in agencies with less than 1 million opt-in users. Many start-ups cannot overcome this hurdle.’ (Spiller, 2002)

Dirk Kraus, the CEO from *Mindmatics*’ competitor *YOC*, made similar comments in summer 2002 (Spiller, 2002).

The design of marketing campaigns requires different skills. As for classic marketing agencies, creativity plays a major role as Cyriac Roeding, CMO *12snap*, stated:

‘Good creativity is key. If you can get that close to the consumer, than you must do it right.’ (Borzo, 2002)

Business analysts such as *Gartner Dataquest* expect mobile marketing to become an important consumer-marketing channel in the next three years because the mobile device provides the perfect direct-marketing channel for marketers to retain and acquire customers. It offers one-to-one marketing opportunities anytime, anywhere. (Gartner, 2001)

The following two main forms of mobile advertising are expected to be most effective. For each form, different solutions are described, accompanied by examples:

- Mobile advertising included with information requested by the end user:
 - Sponsored messages: For example, *Worldpop* piloted a text message marketing campaign in Ibiza, Spain, during the period of May to July 2000. Those that signed up received messages offering reduced entry to nightclubs in return for receiving advertisements from companies such as *Durex* at the end of the messages.

- Location-based advertising: *SpotFlash* developed a campaign called *ZagMe* that sends SMS messages to users in the Lakeside Shopping Centre in Thurrock, United Kingdom, that contained information on discounted products in the shops at that center. At present, users have to inform the service that they are in the center, and say approximately how long they expect to stay. They then receive one or two messages per hour. Users are offered an incentive to sign up for the *ZagMe* service: 500 points (each point equating to £0.01), which are exchangeable for prepaid vouchers.
- Incentive advertising: *Mywapworld.com* offers discounts on taxis, beer and nightclub "queue jumpers" via SMS. Users show the SMS token at participating venues to receive their discounts.
- Interactive mobile advertising that enhances other marketing channels: Mobile communications can play a key role in a multi-channel strategy because they provide the opportunity for immediate response and broadcasting. Broadcasting channels in particular are already using SMS to market directly to interested users, thus aiding customer retention and acquisition. The following are examples of "action adverts":
 - *Flytxt* is running a wireless advertising campaign for *Channel 5* in the United Kingdom to promote its Tuesday-night movie. *Channel 5* asks a question at the end of the film that viewers can answer via SMS for a chance to win £1,000. Users are then sent a reminder via SMS on a Tuesday afternoon stating which film is being shown that evening. The aim is to boost television ratings, increase viewer loyalty and strengthen sponsor recognition.
 - *Boltblue* has created a wireless campaign around a popular television program called 'Popstars'. Users are able to vote for their favorite would-be pop star. Such interaction helps to build a relationship with the customer.

Both end-user-pulled and interactive mobile advertising can manage in successfully targeting a user with advertising relating to information specifically requested by that user.

Push services are not as positively evaluated. Some business analysts have even expressed the belief that push marketing will only lead to irritating end users. Even with a customer's opt-in, which is essential for all wireless advertising, push advertising sent at the wrong time will do more harm than good for a company's brand. Despite developing user-profile and location technologies, companies cannot know what a person really wants at a given time. For example, users may state that they like Italian food, but it will only be useful to receive

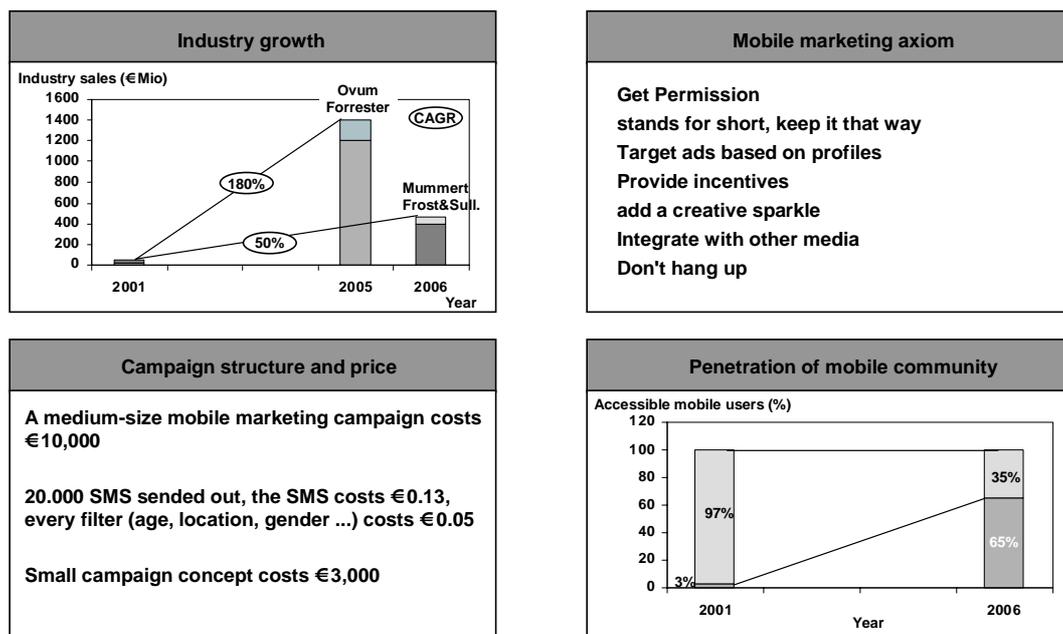
an advertisement for an Italian restaurant they happen to be walking past if they feel like eating an Italian meal at that time. The majority of industry players recognize that this type of information will only be useful when requested by a user. It is only when this has occurred that advertising can be pushed to the customer for an agreed period of time.

For mobile advertising to succeed, marketers will need to have a good understanding of each target customer, making the reality of ‘perfecting’ one-to-one marketing complex. However, the interactive nature of mobile communications facilitates successful wireless advertising. Through pull services, marketers can target consumers effectively using their known interest areas. Subsequently, mobile communications may be used to strike up a direct relationship with the end user. No profile software will offer sufficient details about an individual for opt-in push advertising to be effective.

Figure 43 summarizes the key issues in the mobile marketing segment.

INDUSTRY SEGMENT MOBILE MARKETING

Sales, industry rules, deal structure and user penetration



Source: Author partly based on Mummert & Partner (2002), Frost & Sullivan (2001), Ovum (2001), Forrester (2001), Nokia (2002)

Figure 43 Segment overview Mobile Marketing

3.4.2 Case history

After providing a general overview of the Mobile Marketing segment, the following section briefly introduces the three case study histories in this segment. Moreover, the developments and the business models of *12snap*, *ApollisInteractive*, and *Mindmatics* are sketched.

12snap's development

12snap was founded in Munich, Germany, in September 1999. The five founders were management consultants formerly employed by *McKinsey* and *A.T. Kearney*, who focused on developing a mobile auctioning solution. The business model was similar to a mobile adaptation of *eBay*⁶⁷, based on GSM technology. 12snap's development is summarized in figure 44.

12SNAP – COMPANY DEVELOPMENT



Company Name	12Snap																	
Business model	Mobile auctioning M-commerce			Revenues €3.5 M 12snap UK 12snap I			Mobile betting Ring tones			Mobile marketing Ring tones			Media selling					
Technology	SMS Cell Broadcast			WAP GPRS									Big Text, EMS MMS					
Financing	1.VC Viventures	2.VC Nokia Ventures, Apax,			3.VC Apax, AGO €37 M Viventures, Goldm Sachs, tbg, Bayernkapital €6.6 M													
Important Cooperations	D2 Quelle MediaMarkt DEntert. AG MCCsmart MTV Air Marin Pilot media			One2One Vodafone UK BT genie Vodafone I Omnitel Lastmi- nute.com			T-mobile Vodafone UK Coral Eurobet American Express			McD Avesair UjP Protein OMA 20 th cent. fox Nestle			Empower Inter- active Group Sony Wella Bartle Boogle Hegarty (Microsoft)					
Board	CEO: Birkel, COO: Eisenstein CFO: Mühlfriedel, BDO Müller CMO Roeding															B. Michael (Grey) supervisory board		
Users (opt-in permission)	15 K 17 K						500 K						13 M 16 M UK, D, I (8.5 M in UK)					
Awards	Mobile Marketing Creative Award																	
	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul				
	1999			2000			2001			2002								

Figure 44 Company development: 12snap

In spring 2000, 12snap added an m-commerce application, with which it offered fixed price shopping for consumer products. Shortly after the first step of its service diversification, 12snap started to internationalize its business. Operations were opened in Milan (Italy) and London (UK). In spring 2001, 12snap further diversified its services by offering common entertainment services such as, for example, ring-tones, games, and mobile betting. These entertainment services helped 12snap to broaden its customer base.

In summer 2001, 12snap refocused its business on the interface between consumer product producers and its target audience, the mobile communication community between 14-35 years old. It started to offer mobile marketing services. Six months later, 12snap split this

⁶⁷ eBay is the worldwide biggest online auctioneer. Further information at: pages.ebay.de/community/aboutebay/overview/index

service up into an agency business that develops creative marketing campaigns and a media selling operation.

From a technology and bearer service point of view, *I2snap* heavily uses SMS technology. Starting in 2000, its mobile auctioning operation on cell broadcast, a GSM data-channel, *I2snap* soon started to adapt its service to SMS technology. By the end of 2000, *I2snap* designed a few applications for WAP and GPRS technology, but SMS persisted to be the most important bearer service. In 2002, *I2snap* updated its SMS technology to new SMS derivatives such as Big Text SMS, EMS and MMS, which are particularly useful for advertising campaigns.

I2snap received extensive external financing, which provided the required funds to diversify and internationalize so quickly. In three financing rounds, close to €50 million was raised. After the founders' seed investment in summer 1999, *Viventures* invested in this new start-up in October 1999. The second VC round was closed in March 2000. *Nokia Ventures*, *Apax*, *Viventures*, *Goldman Sachs*, *tbg*, and *Bayernkapital* invested € 6.6 million. In September 2000, the third round was closed with *Apax* and *Argo Global Capital* in the lead with additional €37 million of funding. In summer 2001, *I2snap* revised its strategy to grow through external funds. The cooling down of financial markets forced *I2snap* to consolidate its operations and to focus on internally financed organic growth.

To develop and sell its services, *I2snap* partnered with different companies. For its auctioning service, an alliance with *D2 Vodafone* was formed. *I2snap's* service was marketed toward *D2 Vodafone* users. In addition, *I2snap* established links to consumer good producers and retailers like *Quelle*, *MediaMarkt*, and *MCC Smart*, which started to market consumer products on *I2snap's* retail channel. In a next step, *I2snap* targeted additional customers for its services. It partnered with other MNOs such as *T-mobile* in Germany and *Vodafone* in the UK, *BT genie*, *Omnitel*, and *Vodafone (I)* in its new British and Italian markets. M-entertainment services, as well as m-auctioning, were distributed through these channels.

In 2001, *I2snap* started to approach a new group of partners, when it started to build up its mobile marketing operation. Target groups were entertainment companies such as *20th Century Fox*, *Sony* and *UIP*; consumer good producers such as *Nestlé* and *McDonalds*, and traditional marketing agencies such as *BBH* and *Grey*, which manage marketing budgets for large incumbents (as *BBH* does for *Microsoft*).

Together with a few of these partners (e.g., *McDonalds*) and 30 additional customer acquisition partners, *I2snap* could build up its customer base, which grew from 15,000 –

17,000 mobile auction clients to a mobile marketing community of 16 million permission based subscribers (i.e., 4.5 mill. in Germany, 8.5 mill. in UK and 3 mill. in Italy).

The founding management team has lead *12snap* since its foundation. Only the structure of its supervisory board and its organization size have changed over time. New VC rounds and new strategic alignments have triggered these changes. *Viventures*, *Nokia Ventures*, *Apax*, and *Argo Global Capital* each got a seat in the supervisory board, as did B. Michael, manager of the marketing agency *Grey*. The organization grew from 15 employees in 2000 to more than 120 in 2001. The focus on mobile marketing, made a few operations obsolete such as the *SnapLab* in Praha—a mobile application development center. *SnapLab* was sold to another *Apax* venture. In 2002, the organization size stabilized at 70-75 employees.

12snap’s business model

Since the middle of 2001, *12snap* has exclusively offered mobile marketing services. Consumers receive marketing advertisements or are involved in more interactive forms of marketing such as games. As mentioned above, *12snap* has access to 16 million subscribers of mobile services in Germany, the UK, and Italy. Its business model is summarized in figure 45.

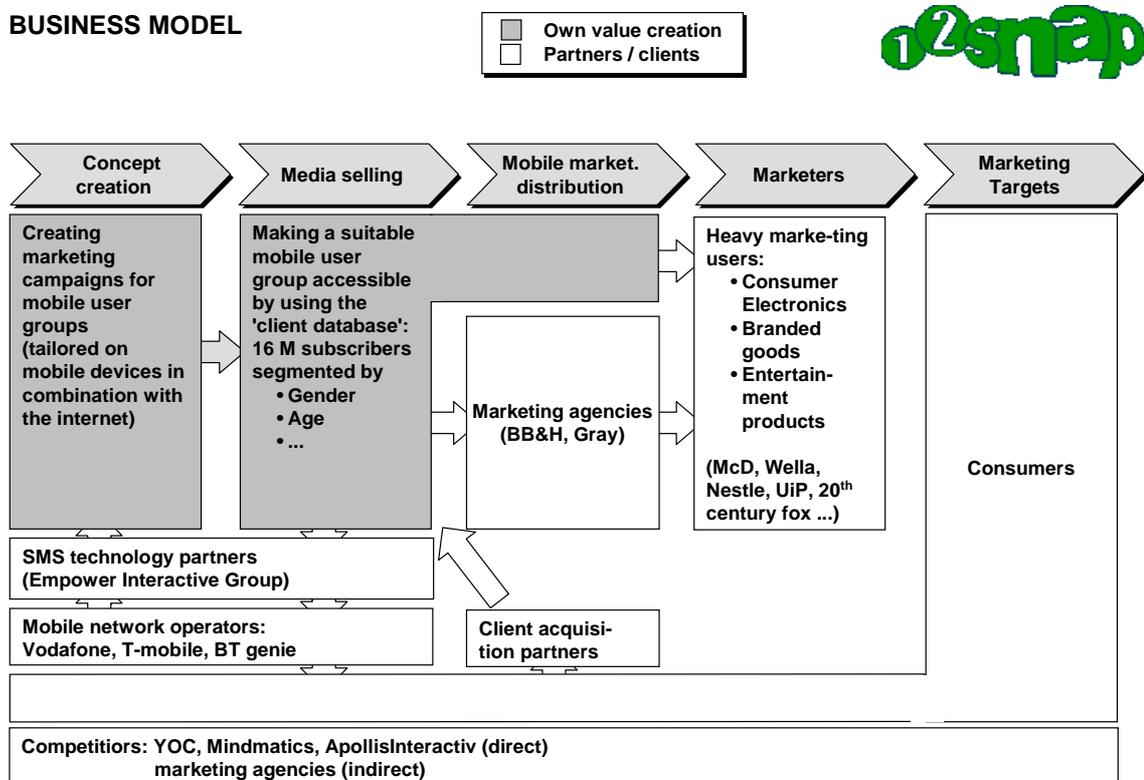


Figure 45 Business model: 12snap

Heavy marketers, such as producers of consumer electronics, branded goods and entertainment services, use this marketing channel. *12snap* has already successfully

supported film-launches for *UIP* and *20th Century Fox*. For *McDonalds*, coupon programs were sent to its loyal customer base that had signed up for its *McSMS* service. The campaigns are either directly designed and distributed to these marketers or via marketing agencies. In the case of *McDonalds*, *12snap* developed a campaign that is fairly removed from *McDonalds's* traditional marketing mix; therefore, it is not integrated into *McDonalds's* agreement with its marketing agencies. However, in many cases, mobile marketing has begun to be a part of the overall marketing mix that many companies buy from one general marketing agency. To capture this trend, *12snaps* cooperates with established marketing agencies. It offers its services as a specialized provider for mobile media campaigns, which these agency source to cover the whole media mix. For example *BBH* did this for its *Microsoft* account. To strengthen its position in this market, *12snap* invited a manager of the marketing agency *Grey* to join its supervisory board (as mentioned above).

12snap's core activities are media selling and creating campaign concepts. In its media selling business, it sells access to its mobile community. Due to its client database, *12snap* can segment target groups according, for example, gender, age, and location. This segmentation is used to target its own campaigns, but is also sold to other marketing agencies. In its creative department, *12snap* designs marketing campaigns for mobile devices that can take various forms, such as dialog campaigns, small games, and lotteries.

12snap cooperates with three additional partner groups: technology providers, MNOs, and client acquisition partners. Technology providers support *12snap* to further develop its services by supplying SMS and MMS technology. MNOs are important for message delivery and to allow for dialogues between customers and *12snap*. Client acquisition partners support *12snap* by growing its opt-in client base. These companies have already established their own user bases, which they are allowed to contact via mobile devices.

12snap competes directly with a number of German and European mobile marketing agencies such as *YOC*, *Mindmatics*, and *ApollisInteractive*. Indirectly it competes with traditional marketing agencies for a share in the total media and campaign selling market.

ApollisInteractive's development

ApollisInteractive was founded in fall of 1999 under the company name *C-Com-One*. Its three founders had engineering backgrounds from the RWTH Aachen and two of them had worked for the management consulting company *A.T. Kearney* for a couple of years. The company's development is summarized in figure 46.

APOLLISINTERACTIVE – COMPANY DEVELOPMENT



Company name	C-Com-One									ApollisInteractive				
Business model / revenues	kompazz.de			Mobile Marketing Mobile Business Solutions						Entertainment (ring tones, astro service, quiz SMS)				
Technology	WAP			SMS						EMS, MMS				
Financing	Seed-	Start-Up	1. VC Financing €2 Mio (Apollis)			2. VC Financing > €10 Mio (Apollis + GAP) + Stock Options Program								
Important Cooperations	Oracle Cisco Cable&Wireless D2 Vodafone			DDV DMMV Marketing Club										
Board	Anthony S. Park (CEO) Markus Langner (CFO) Pai Sang Woo (CTO)			Roberto Blickhan (CEO)						Anthony Park (CEO) Anja Winter (CSO) Marc Wilhelm (CTO)				
Employees				8-9			25			45				
Users (opt-in permission)														
Awards														
	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul
	1999			2000			2001			2002				

Figure 46 Company development: ApollisInteractive

ApollisInteractive started to develop a mobile shopping guide *kompazz.de*, which provided location information depending on the type of product, brand label, and location information. In 2001, the company focus shifted toward the sales interface of branded consumer good producers and the mobile community. *ApollisInteractive* developed and sold mobile marketing campaigns and location sensitive proximity marketing. In addition, it developed software applications for sales forces (*Mobile Sales Manager* and *Mobile Field Service*). In November 2001, when the company name changed from *C-Com-One* to *ApollisInteractive*⁶⁸, the company focus was clearly on mobile marketing.

‘... location-based shopping information could be requested via WAP. This was in 2000. But it was still too early. The mobile Internet did not run as stable, as it had been envisioned; accordingly the service was barely used. For this reason, we changed our business model and focussed on Mobile Marketing.’ (Thorsten Rehfus, Marketing Manager *ApollisInteractive*, 2002)

⁶⁸ The name change took place when *C-Com-One* was integrated into the *Apollis Group*. *General Atlantic Partners* and *McKinsey* founded *Apollis* as a technology VC. In 2000, *Apollis* changed its business model and became involved in the mobile application service market. Since 2002 *Apollis* has integrated three operations, *ApollisMediaServices*, *ApollisInteractive*, and *Convisual*.

In 2002, *ApollisInteractive* added ordinary entertainment services such as ring tones, SMS astro service and mobile quizzes to its product portfolio to enrich the creative variety of its campaigns.

ApollisInteractive's technology is based primarily on WAP and SMS. Its *kompazz* service was designed as a WAP application. Additionally, an html-based Internet front end was developed to increase its usage. The other mobile software applications, like its business solutions (*Mobile Sales Manager* and *Mobile Field Service*) are also WAP based. In contrast, mobile marketing services are based on SMS technology that is step by step upgraded through EMS and MMS technology.

The development and growth was financed mostly with external capital. After its seed and start-up financing in winter 1999 to 2000, *ApollisInteractive* closed two VC rounds. *Apollis* invested € 2 million in September 2000 and a consortium built by *GAP*⁶⁹ and *Apollis* invested more than €10 million in September 2001.

To develop and commercialize its technology, *ApollisInteractive* partnered with different groups of partners: technology providers, MNOs, and marketing associations. It created partnerships with *Oracle*, *Cisco*, and *Cable&Wireless* to establish a solid technology platform. Its first services were launched together with *D2 Vodafone*, and platforms such as the *Marketing Club Munich* and the German direct marketing association (*DDV*) were actively used to network with marketers.

During its development, the organization size and the management team changed several times. The organization grew from 8-9 employees at the end of 2000 to 25 in summer 2001. By the end of 2001 *ApollisInteractive* had 45 employees. The number was reduced in 2002 to 35. The first restructuring of the management team took place in early summer 2001. A new CEO, Roberto Blickhan, joined *ApollisInteractive* after the business model became focused on mobile marketing. Mr. Blickhan was an experienced salesman who had previously worked as manager for Motorola's German mobile business and as head of sales for *Premiere World*. Consequently two founders, Markus Langner and Pai Sang Woo, left the company. In 2002, the management team was restructured a second time. Mr. Blickhan left *ApollisInteractive*. Together with a new sales officer, Anja Winter, the remaining founder Anthony Park took over the management of the company.

ApollisInteractive did not win any start-up, new economy or multimedia awards.

⁶⁹ *General Atlantic Partners*

ApollisInteractive's business model

ApollisInteractive enables and develops mobile applications and services. It provides tailor-made solutions and concepts for communication to customers, one-to-one or one-to-many communication as well as uni- or bi-directional dialogs. It also develops mobile sales software solutions. Its business model is summarized in figure 47.

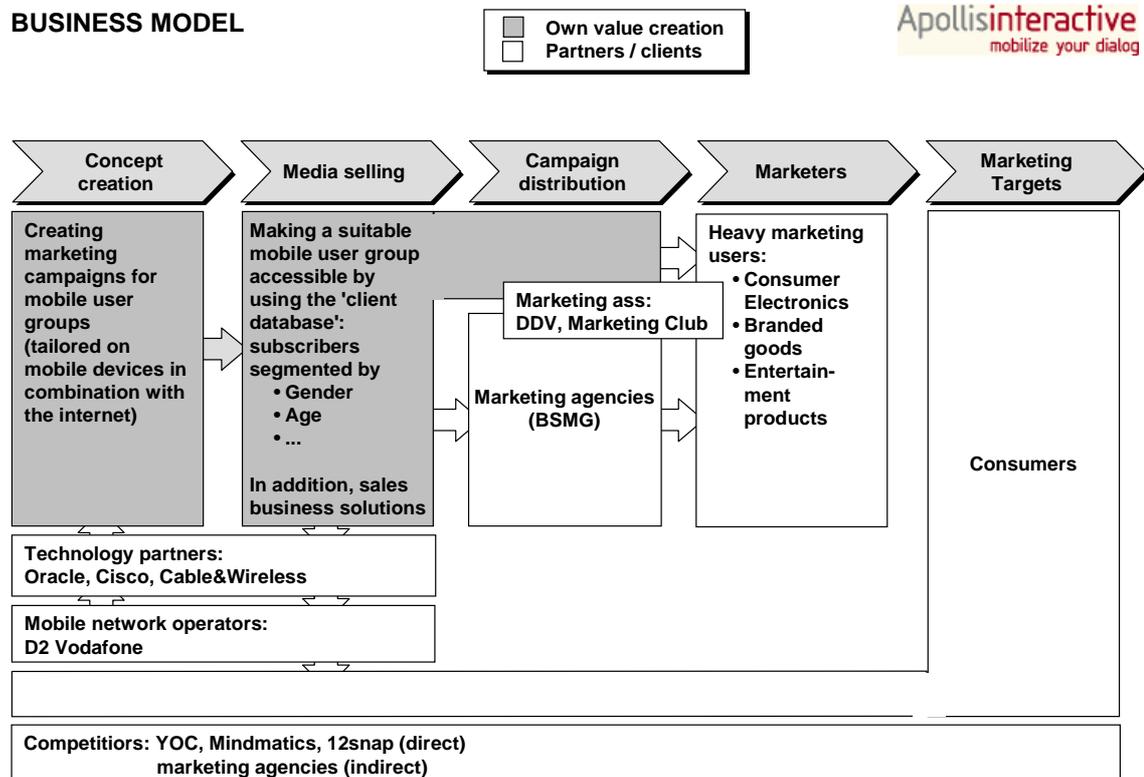


Figure 47 Business model: ApollisInteractive

Heavy marketers such as producers of consumer electronics, branded goods and entertainment services, use *ApollisInteractive's* mobile marketing services. *ApollisInteractive* successfully launched marketing campaigns for *MCC Smart*, *Premiere World*, and *Wrigleys*.

As in the case of *12snap*, the campaigns are either directly designed and distributed to marketers or arranged by traditional marketing agencies. To network with marketers and marketing agencies, *ApollisInteractive* is a member of different marketing associations such as the *Marketing Club Munich* and the German direct marketing association (*DDV*). *ApollisInteractive* had not yet attained a marketing agency as partner, but it brought in a new chief sales officer, Anja Winter, who had worked in the agencies *BBDO* and *Bates Germany* for 8 years.

ApollisInteractive's core activities are the creation of campaign concepts and the development of mobile sales support software. Its media selling business is very limited. *ApollisInteractive* uses only subscriber bases, which are built up with marketers. It does not

have a user base on its own. In its creative department, *ApollisInteractive* designs marketing campaigns for mobile devices. It designs dialog campaigns, small games and lotteries. Its in-house technology provides sophisticated WAP and J2ME capabilities for designing very sophisticated campaigns. In addition, *ApollisInteractive* designs business solutions for sales organizations. Its technology department develops WAP applications such as the *Mobile Sales Manager* and *Mobile Field Service*, to improve the efficiency of sales forces and technical field services with mobile data communication.

ApollisInteractive cooperates with two additional partner groups: technology providers and MNOs. Technology partners support *ApollisInteractive* by developing applications such as its *Sales Manager*. They provide solid database and Internet technology. Together with MNOs, *ApollisInteractive* launches its new services; and through their networks it distributes advertisements and connects to its user base.

ApollisInteractive competes directly with a number of German and European mobile marketing agencies such as *YOC*, *Mindmatics*, and *12snap*. In addition, it competes with the developers of mobile business applications like *Bemobile*. Indirectly, it competes with traditional marketing agencies for a share in the total media and campaign selling market.

Mindmatics' company development

Mindmatics was founded in Munich, Germany, in the beginning of 2000. The two founders were project leaders in *Roland Berger's* telecommunication and e-commerce practice group. *Mindmatics* started to develop SMS and WAP services for B2C communication: 'SMS-me-up' and 'WAP-me-up'. In January 2001 these services were combined into an integrated mobile marketing platform called: *Mr.AdGood*. Additionally, *Mindmatics* started to commercialize its SMS technology in October 2000. It started an SMS gateway provider business, sending and receiving mass messages. While building up its product portfolio, *Mindmatics* also internationalized. In October 2000, it opened operations in London (UK). In September 2001, it entered the Austrian market. Its development is summarized in figure 48.

MINDMATICS – COMPANY DEVELOPMENT



Company Name	mindmatics													
Business model	SMS-you-up WAP-you-up				Mr. AdGood in Germany in UK				Mr. AdGood in Austria				SMS Gateway	
Technology	SMS WAP				Audiotex Carrier-Class				EMS Server				MMS	
Financing					1. Capital increase, by 2x €1.474 to €52,899 ca. €0,8 Mio. 2. Capital increase, by €5.989 to €58,888 Best Practice Venture Capital 10% ca. €2 Mio.				3. Capital increase, by €49,551 to €108,439 t-ventures, holtzbrinck networxs, WestLB €3 Mio.				Convertible Bond (€1,91/share)	
Important Cooperations	Member Initiative Mobiles Netz (IMN)				DigiGuide		t-mobile AdLink		Sonera zed		Mobile Marketing Association BBDO			
Board/ employees	CEO: Ingo Lippert CFO: Christian Hinrichs				CTO: Armin Barbalata CSO: Oliver Beckmann CBD: Anders Hakfelt		SB: Martin Weber MD Holtzbrinck NetworXs ⁽¹⁾		SB: R. Zimmer- mann (CEO BBDO)					
Users (opt-in permission)					15		60.000		550.000		160.000 UK		> 850.000 > 1 Mio	
Awards							100 120		150 170 campaigns					
					Multimedia Award 2001		New media award (mobile)							
	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct	Jan	Apr	Jul
	1999			2000				2001				2002		

(1) Additional supervisory board members: G. Wetzlar, MD Best Practice Venture Capital; J. Gemis MD WestKB; M. Boshammer Investment Direktor t-Ventures; A. Haselhorst CEO EUVIA Media

Figure 48 Company development: Mindmatics

Mindmatics technology is based mainly on SMS. Starting simultaneously with WAP and SMS services in the beginning of 2000, *Mindmatics* quickly focused on SMS services. In addition to selling SMS based marketing campaigns, it designed and developed its above-mentioned SMS gateway technology. Finally it developed Internet based front-ends that marketers could develop and trigger their own marketing campaigns, using *Mindmatics* as a back-end service provider.

Mindmatics received approximately € 6 million external funds to finance its expansion. After the seed financing in March 2000, its start-up financing took place in July 2000, when it raised €0.8 million from business angels. Its first VC round was closed in November 2000. *Best Practice Venture* bought a 10% stake for €2 million. Additional funds were received, when *Mindmatics* went to its second VC round. *T-Ventures*, *Holtzbrinck networXs*, and *WestLB* invested €3 million.

Since March 2001, *Mindmatics* has started a couple of important cooperative relationships with MNOs and mobile portals on the one hand and marketing partners on the other hand. The most important mobile communication partners are *T-mobile* and *Sonera Zed*, with whom it started to cooperate in March and June 2000. Its most important marketing partner is the Internet agency *AdLink* and the marketing agency *BBDO*; these alliances were closed in April 2001 and May 2002.

Together with a few of these partners, *Mindmatics* was able to build up its customer base, which grew from 60,000 in January 2001 to over 550.000 in Germany and to 160.000 in the UK in summer 2001 and to more than 1 million permission based subscribers in February 2002. During that time, *Mindmatics* realized more than 200 marketing campaigns.

From the middle of 2000 on, *Mindmatics*' management team did not change. Soon after its foundation, three additional members completed the managing board; two were former colleagues at Roland Berger Strategy Consultants and the CTO, Armin Barbalata, was formerly employed by a MNO. Only the structure of its supervisory board and its organization size changed over time. New VC rounds and new strategic alignments triggered these changes. *Holtzbrinck NetworXs*, *T-Ventures*, and *Best Practice Venture Capital* all got seats in the supervisory board as did R. Zimmermann, CEO of the marketing agency *BBDO Germany*. The organization grew from 14-15 employees in 2000 to 30 in the beginning of 2001.

Mindmatics won two awards: the Multimedia Award 2001⁷⁰ and the New Media Award⁷¹ in March 2002.

Mindmatic's business model

Like the two previous case study firms, *Mindmatics* offers mobile marketing services. Consumers receive marketing advertisements or are involved in more interactive forms of marketing like, for example, games. As mentioned above, *Mindmatics* has access to 1 million subscribers of mobile services in Germany, the UK, and Austria. Its business model is summarized in figure 49.

Heavy marketers such as producers of consumer electronics, branded goods and entertainment services use this marketing channel. For its cooperation with *Warner Brothers*, *Mindmatics* won the New Media Award 2002. Since that time more than 150 consumer product and service companies have used *Mindmatics*' service. *Coca-Cola*, *L'Oreal*, *Allianz*, and *Douglas* are prominent examples.

⁷⁰ The German multimedia award is given every year to excellent mobile, online, and offline application, which demonstrate the innovative and powerful strength of multimedia solutions. The award is issued by the German Multimedia Congress and the German multimedia association (*DMMV*) and sponsored by *Deutsche Bank*, *Macromedia* and *J-points*. Additional information at: www.deutscher-multimedia-award.de.

⁷¹ *Mindmatics* won this award with its campaign for *Warner Brothers*. The New Media Award is issued annually. Marketers and marketing agencies award excellent ad campaigns using electronic media. The award is initiated and financed by *Interactive Media*, *HORIZONT* and *T-Online*.

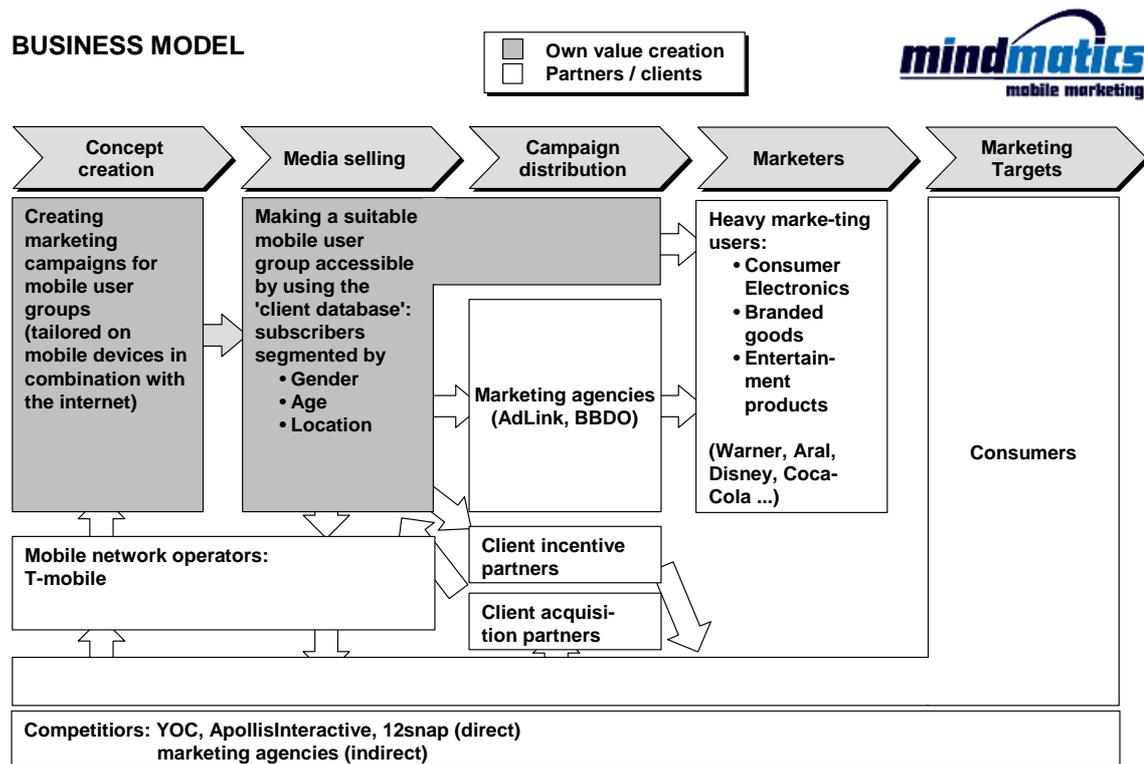


Figure 49 Business model: Mindmatics

The campaigns are either directly designed and distributed to these marketers or marketing agencies are used as intermediaries. In addition to its own sales activities, *Mindmatics* formed alliances with *AdLink* and *BBDO* to offer its services to their clients.

Mindmatics' core activities are media selling and the creation of campaign concepts. In its media selling business, it sells access to its mobile subscriber community. As an SMS gateway provider, it offers to take care of the SMS traffic. Due to its well-developed client database, *Mindmatics* can segment target groups according variables such as gender, age, and location. This segmentation is used to target their own campaigns but can also be sold to other marketing agencies and offered to marketers, who can design their own simple marketing campaigns by using *Mindmatics* front-end (*Wireless Interactive Box*). In its creative department (*Media Creation*), *Mindmatics* develops marketing campaigns for mobile devices. It designs dialog campaigns, which integrate small games. These campaigns are often based on several media technologies such as SMS, WAP, and e-mail.

In addition, *Mindmatics* cooperates with MNOs to connect its services to their mobile communication networks and to terminate its SMS traffic. Its most intense partnership is with *T-mobile*.

A unique feature in *Mindmatics*' business model is its approach to getting opt-in permissions. It has developed an innovative approach for acquiring new users and increasing its community. The *Mr.AdGood* service has an integrated Internet portal where users can

sign up for the service and get incentive points for every advertising message received. These incentive points can be either traded against logos and ring tones, or used to get cash back. The system is similar to *Webmiles*, which *Clever.Tanken* uses as an incentive system for its *Fuel Price Pilots*.

Like the other case study firms, *Mindmatics* competes directly with a number of German and European mobile marketing agencies. Indirectly it competes with traditional marketing agencies for a share in the total media and campaign selling market.

3.4.3 Within segment analysis

The alliance portfolios of the Mobile Marketing companies and their organizational change are analyzed according the structure applied in the segment analyses of MLS and MCS. To understand the longitudinal dynamics of these portfolios and their implication for firm performance and development, the company development is analyzed whether stages exist and how they can be characterized. In a second step, its resource requirements are evaluated for every stage. The third part of this section describes the alliance portfolio structure across the company's developments; followed by the analysis of relevant alliance skills and processes. The section ends with the description of the portfolios' performance implications and a concluding summary.

Company development

All firms developed stage-wise. The different development stages are named and their durations are determined in the first part of this section. The next section characterizes the case study organizations in each development stage.

Development stages

All three organizations have gone through at least three development stages. *12snap* went through four, the other two through three development stages. The reason for *12snap*'s additional development step is due to more money raised and its older age. In contrast to the other companies, *12snap* received € 50 million in funding. That is 3-6 times more VC funding than the other case study companies. In addition, *12snap* has already been founded in summer 1999, whereas the two other companies were founded at least half a year later at the end of 1999 and in the beginning of 2000. Table 17 lists all stages. The interviewed managers specified and named these stages. For this reason, these stages are not characterized using a consistent criterion. A few managers used strategic growth targets, while others used changes in the product portfolio to characterize the company's

development. *ApollisInteractive* could even attach office locations to its development steps. The development stages are specified in table 17.

Company	12snap	ApollisInteractive	Mindmatics
Phase 1	Start-up, focus on mobile auctioning 9.1999 – 1.2000	Start-up, focus on Mobile Location services (McKinsey Incubator) 9.1999 – 2.2001	Start-up, stamped by the founding team, focus on innovative WAP service 3.2000 – 8.2000
Phase 2	Internationalization and growth phase 2.2000 – 6.2000	Build up of organization, focus on mobile marketing (Center Munich) 3.2001- 12.2001	Build up of sales organization, and focus on mobile marketing 9.2000 – 3.2001
Phase 3	Professionalization of processes 7.2000 – 6.2001	Professionalization of processes (Munich Riem) From 1.2002 on	Professionalization From 4.2001 on
Phase 4	Consolidation and mobile marketing phase From 7.2001 on	Not yet	Not Yet

Table 17 Stage description of companies in the mobile marketing segment

In the first stage, all three companies started with a typical start-up period. A founding team focused its work on developing innovative mobile services. *12snap* built a mobile auctioning service based on cell broadcast technology, *ApollisInteractive* developed a mobile shopping guide (*kompazz*) and *Mindmatics* launched a WAP service—paid by advertisements. All ventures explored technological feasibilities and market opportunities in the emerging mobile Internet industry.

The second stage can be characterized with growth and the revision of the product and service portfolio. *12snap* shifted its product portfolio towards entertainment products, while the other two started to develop mobile marketing services. *12snap's* diverging focus can be explained by its earlier development. *12snap* entered its second stage in February 2000, when wireless advertisements were not yet known in Germany. The other's second stage took place in winter and spring 2001. All three ventures grew significantly during the second stage and *12snap* and *Mindmatics* internationalized by opening operations in the UK and Italy.

In the third stage, the ventures started to professionalize their operations in their internal and external processes. These changes were reactions to developments in the capital market. From 2001 on, VC funding became more restrictive. The case study companies were forced to improve their profitability to internally finance further expansion. To improve sales, the companies invested in their sales skills. *ApollisInteractive* even hired a new sales-oriented

CEO to get access to a sales network and to improve its bargaining power. To enhance their cost effectiveness, the organizations streamlined their processes and set up sophisticated controlling, project management, and HR systems.

'In the third phase, we established and professionalized our processes. We put a lot of effort into controlling and analyzing our business model. We streamlined processes to increase efficiency in all company parts: core activities as well as support processes.' (Ingo Griebel, MD 12snap, 2002)

Only 12snap entered the fourth stage. In summer 2001 it drastically changed its product portfolio. 12snap focused on mobile marketing, where they earned the highest margins and faced the biggest potential. Its mobile auctioning and mobile entertainment businesses were dropped. In addition, it reorganized its mobile marketing business. Media selling services were separated from the design and creation of marketing campaigns. The stages are analyzed in a more structured way in the next section.

Stage characteristics

In every stage, the characteristics of the organization are described such as the organization structure, its strategic focus, and flexibility. Five dimensions are applied for this analysis. Descriptions of these five dimensions and the rationale for their selection have been previously described in the methodology chapter (sub-section 2.2.4).

First stage: All three companies show typical start-up characteristics in their first stage. The team-based organizations were led by an entrepreneurial management team. Their in-house communication was very frequent and informal. In their exploration phase, the companies reacted quickly to market feedback by adjusting products and services. Long hours of work were compensated with modest salaries and key employees had ownership. The CEO of *Mindmatics* described this stage as follows:

'Our first period was stamped by the founders, Mindmatics was a small start-up, we worked as a team in one big office.' (Ingo Lippert, CEO Mindmatics, 2002)

The characteristics of this stage and subsequent stages are graphed in figure 50.

Company developments

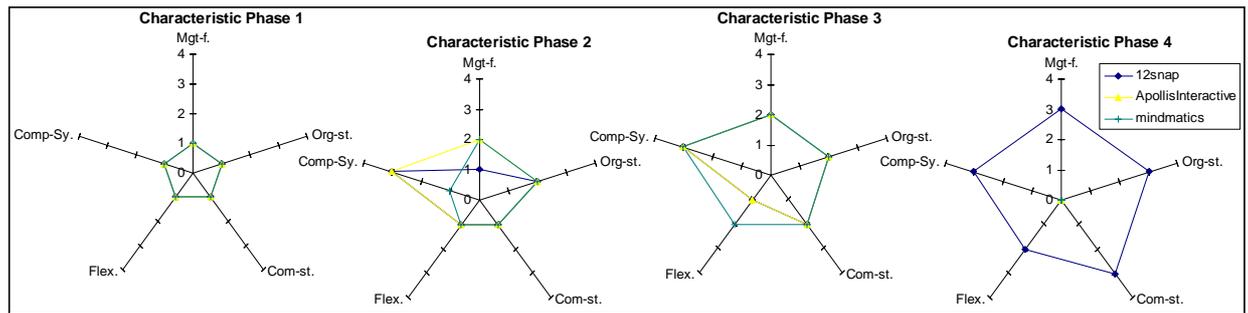


Figure 50 Company development in the mobile marketing segment

Second stage: In this stage the companies grew and adjusted their product portfolio. The companies' management focus shifted from an entrepreneurial and technical approach to leadership through business managers who focused more on selling these products and establishing internal processes, to enable the cooperation of its growing staff. Only *12snap* stuck to its entrepreneurial and technical management focus, as it was still in an exploration period, during which it tested different product approaches.

However, all organizations grew and larger organizations led to the introduction of functional organization structures. As *12snap*'s German managing director reports:

'In the foundation phase, we had a hands-on team structure. In the next step, we created departments for technology, marketing, developing our operator business, and operations. This was a purely functional organization.' (Ingo Griebel, MD *12snap*, 2002)

The other characteristics did not change. The companies kept their informal communication style. Their limited size of 15 or fewer employees did not force them to develop more formalized communication forms. In addition, the companies had 'communication friendly' locations; *ApollisInteractive* moved from *McKinsey*'s Munich incubator into a new 200 square meter one-room office; *12snap* had, and still has, a loft style office, where over 15 employees share one room and meetings take place just behind curtains rather than in separate meeting rooms.

The company's strategies also kept their flexibility. The markets were still emerging. Uncertain revenue sources required fast adjustments of business models. As an example, *ApollisInteractive* shifted its product focus from developing a mobile shopping guide to mobile marketing in the transition from stage one to stage two. Soon thereafter, it started to develop a mobile sales manager to offer mobile business services.

The biggest differences between the cases occurred in their incentive and reward systems. Early on, *I2snap* and *ApollisInteractive* set up stock option programs for their employees. *Mindmatics* still stuck to their old incentive structure of modest salaries and ownership only for key employees. However, in stage three, *Mindmatics* also incorporated a stock options program.

Third stage: In the third stage, the companies developed again fairly similarly. In all three case studies, business managers tried to professionalize their organizations. The companies changed along two dimensions, the communication style and the flexibility of their business model.

All three case studies formalized their communication style. The size and internationality of the organizations were the key drivers. By stage three, all organization had grown to a size of 30 or more employees. Purely informal communication was no longer practical, this was particularly the case for *I2snap* and *Mindmatics*, who had opened businesses in the UK, Austria, and Italy. However, even in the case of *ApollisInteractive*, the communication became more formalized due to a new office, a new CEO, and a larger organization size. Its new office in Munich-Riem had individual offices and over 40 employees, and its new CEO introduced a more 'Old Economy'-type working style, as described by Thorsten Rehfus:

'Also our culture changed through Mr. Blickhan. He wanted to get away from the 'Start-Up' image more towards an Old Economy type of organization. Rules were introduced to structure processes.' (Thorsten Rehfus, Marketing Manager ApollisInteractive, 2002)

Confidence in the business model grew. The firms shifted from their very flexible short term planning mode with strategic reviews every 3 month, to a more mid-term perspective and developed 2-3 year scenarios, which were slightly adjusted every 6 months. Only *ApollisInteractive* kept its short-term flexible approach, which can be attributed to two factors. *ApollisInteractive* had better technological skills and more experience in developing mobile applications, and it was lagging behind in the Mobile Marketing industry, with less opt-in users and less campaigns sold. Therefore, in contrast to its competitors, a shift in its business model would have been more reasonable. The fact that *ApollisInteractive* has not found a stable business model and changed its management team a second time in September 2002 are additional indicators.

Fourth stage: As described above, only *I2snap* entered a fourth stage. In this stage, almost all characteristics took the next level. *I2snap* introduced a holding structure, which managed and controlled its fairly independent national businesses in Germany, the UK, and Italy; in addition, it opened up its fourth operation in Scandinavia, thus covering the Swedish, Finnish, and Danish markets.

In parallel to its new management focus, *I2snap* introduced a business unit organization. Its national units, and within these units its media creation and media selling units, received P&L responsibility. The fact that the organizational units became more international and more independent also had an impact on the communication style. Communication between the holding and the business units was formalized and employees started to rely more on e-mails and memos.

In terms of flexibility and compensation structures, the characteristics of *I2snap* remained unchanged.

After showing a stage-wise development of NTBF in the Mobile Marketing segment with significant changes in organizational structure and characteristics, the question of whether resource requirements also shifted that drastically as a response to different organizational problems arises. This question will be analyzed in the next part.

Resource requirements

The resource requirements have been assessed for every case study according to the seven categories that were previously applied in the other segment analyses, ranging from reputation and technology, through access to distribution and sourcing markets, and internal factors such as human resources and organizational skills to financial resources. The managers who were interviewed ranked the resource importance on a scale from 1 (not important) to 5 (very important).

In analyzing the development of the requirements, the resources can be grouped into two categories: resources that changed according to the development steps, and resources whose requirements depended mainly on other factors. In the first category, certain resources became more important in the companies' life cycles, such as the access to markets, human resources and organizational skills. In contrast, the importance of other resources faded stage-wise, such as technological know-how. These resource developments are graphed in figure 51:

Resource requirements

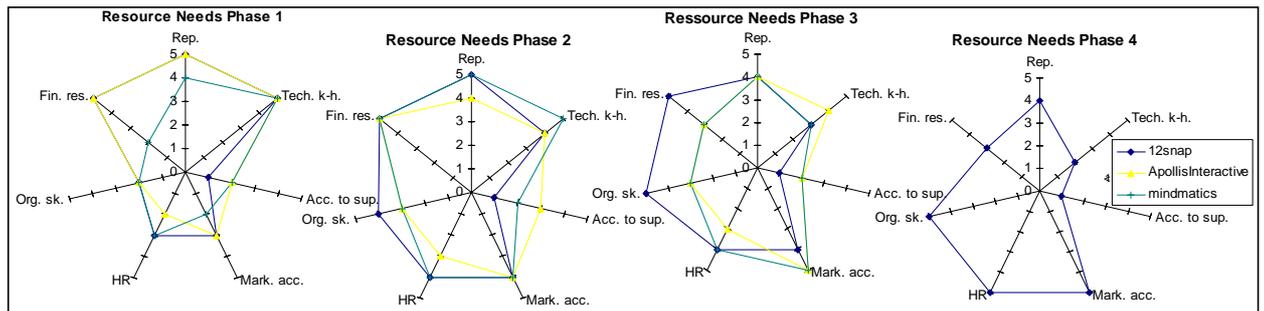


Figure 51 Resource requirements in the mobile marketing segment

Development-dependent resources: The importance of reputation resources and technological know-how **faded stage-wise**.

With respect to technological know-how, all three ventures started in a high-tech industry with innovative services and product. The development of these services was the core activity in stage one. The technological know-how was crucial for all case studies. *12snap* established resources for its cell broadcast capabilities to develop its mobile auction application. *ApollisInteractive* invested in WAP technology to develop its mobile shopping guide, one of the first MLS in Germany and *Mindmatics* focused on its WAP and SMS services, which also required significant technological know-how.

In the second stage the importance of technology began to decrease. *ApollisInteractive* and *Mindmatics* focused on mobile marketing, which was purely SMS based at that time. Furthermore, SMS technology was not particular complex. The maintenance of a high evaluation with ‘medium high’ is justified with activities that were linked to the company’s core activities. *ApollisInteractive* started to develop mobile business applications such as its *Mobile Sales Manager*, which was targeted towards the same client base, and *Mindmatics* built up its SMS gateway to integrate its business model into sending and receiving mass SMS. Only *12snap* continued to evaluate technological know-how as very important. Because it was not yet focusing on mobile marketing, it launched new entertainment solutions such as mobile betting, ring-tones, and others. The fast development of new applications was key for *12snap*’s strategy.

In step three, the importance of technological know-how dropped to medium. As the business models matured, the innovation speed dropped. The companies focused only on enabling mobile marketing campaigns with their technology. In addition, the mobile Internet industry had grown and services that formerly had to be developed in-house, could be sourced from out-side vendors. The technological scope declined, as *12snap*’s managing director reported:

'Interestingly, technological know-how had been very important in the beginning, when we had our transaction-based business model – mobile auctioning. Its importance faded, as we focused more on mobile marketing. In addition our industry developed. There are core competencies we always want to keep in-house; but there are services for which an infrastructure is already in place. Over time, a market established and we try to leverage know-how others have built up.

In the beginning, we pioneered a new market. We had to develop everything in-house, because nothing could be sourced from outside.' (Ingo Griebel, MD 12snap, 2002)

Only *ApollisInteractive* continued to put more emphasis on its technology. Because it was not especially successful with its mobile marketing business, it hedged its strategy by also providing mobile business applications, which requires more sophisticated technological skills.

In the fourth development step, the technological skills further declined. *12snap* continued with its model of developing a platform to create and configure SMS campaigns on basic SMS and WAP technology, and of sourcing supporting technology and services from outside vendors such as the SMS Empowerment Group.

Stage-wise weight gaining resources: Market access capabilities grew in importance from medium to low in the start-up phase, to medium-high in the middle phase, and to very high in the last stage. In their start-up phase, the ventures had almost no contact to end-users. They were only interested in getting feedback on their innovative solutions, and were not depending on external revenues. The importance of connecting its operations to end-user markets grew in stage two, when the ventures stabilized their business models. In addition, the importance of market revenues grew, as all three ventures started talks with VCs concerning their second financing round. In their last stage, all companies rated access to markets as one of their most important resources. The generation of revenues had turned out to be the only way to finance additional growth after financial markets had turned bad in 2001. All ventures had changed their fast growth strategy into a consolidation and base line improvement strategy.

Organizational skills developed accordingly; medium-low ratings in the start-up stage increased over time. The team organizations had limited organizational capabilities. The development of prototypes did not require sophisticated controlling procedures, and limited organizational sizes (<10 employees) did not require an efficient communication and

meeting culture. Requirements changed when the organizations grew in number of employees and complexity (various functions and international operations). The staff growth is the most significant driver for organizational skills. The organizational growth of up to more than 100 employees forced *12snap* to heavily develop and streamline its processes. The internationalization had a less significant influence, as can be seen in the case of *Mindmatics*, which rated the organizational capabilities over its development stages consistently as highly as *ApollisInteractive*, which grew somewhat faster in terms of employees, but did not internationalize. Ingo Griebel (MD of *12snap*) described this development as follows.

„In the third phase... we spent a lot of time building up our controlling systems and monitoring our business model. ... We streamlined processes, to make the organization more efficient – in our core activities as well as in our support processes.” (Ingo Griebel, MD *12snap*, 2002)

The discussion of human resource requirements is similar to the broader organizational skills. Over the life-cycle steps, the selectivity with which new co-workers were sought, selected, and employed grew. The development was driven by a growing confidence in their own business model. In comparison with the organizational skills, the development does not appear so obvious in the ratings because all companies lowered their recruiting targets as they switched to a consolidation strategy—*12snap* and *ApollisInteractive* even laid off staff.

Other resources: The second group of resource categories does not directly depend on the organizations' life cycles. A company's business model determines the importance of reputation and access to supply. Wireless advertising companies such as traditional marketing agencies depend heavily on their reputation and branding. Legitimacy considerations might have prevailed in the first stage. However, with entry in the mobile marketing business, reputation was important to position the company's brand.

In contrast, supply such as content has never been a crucial issue. The business model of mobile marketing companies does not rely on content like news, maps, business directories or financial data. *ApollisInteractive* was the only case that once rated access to supply as medium important. Its broader diversified approach (with its shopping guide) required content such as shop locations and their product range.

The requirements for financial resources were influenced by external events like in the other two segments. The need for financial resources is the difference between the need to finance

growth and survival and the available funds. This availability depends mainly on VC financing rounds. VC industry trends, which can be labeled exogenous to the company development, play a significant role in the evaluation of the importance of external financing. This issue can be seen in the case study data. In stage one, *Mindmatics* ranked its requirements for financial resources only medium, because it developed its organization slowly and had already been through its first financing round in stage one. *12snap* and *ApollisInteractive* started to expand faster and required more external financing in their start-up period. Two factors lowered their requirement for financial resources later on: significant VC financing rounds and their consolidation and professionalization strategy in the last stage.

In summary, consistent changes as a function of life cycles can be seen in four out of seven categories. Access to markets, human resources and organizational skills gain importance in a stepwise fashion. Technological know-how loses importance. In three resource categories, no direct dependencies to life cycle changes could be found. These resources depended mainly on other factors, such as the companies' respective business models and the development of financial markets.

Alliance networks

The alliance portfolios are analyzed according to the proceeding segments. The portfolios are graphed for every segment (figure 52) and analyzed stage by stage for all three case studies. The rationale for this procedure and a detailed description of the network documentation and analysis are provided in sub-section 3.2.3 'Alliance networks'.

Stage one: All three case studies started with small exploratory networks with less than five partners. All three case studies worked on setting up their organization; neither content partnerships nor distribution partnerships were established. *12snap* and *ApollisInteractive* contracted early with VCs (*Viventures* and *Apollis*). In addition, *12snap* worked together with the agencies *Vero Partners* to develop its customer interface. *ApollisInteractive* worked with large technology providers such as *Cisco*, *Oracle* and *Cable&Wireless* to set up its basic systems for its mobile platform.

Stage two: In the second stage, the networks grew significantly to a size of 11-15 partnerships. With the exception of financial partnerships, most alliances were still based on weak ties. Content wise, distribution partnerships were set up. The case studies developed their alliance portfolios similarly with respect to three partnership types: financial links,

access to markets, and technological resources. Concerning content only, *12snap* had a significantly different strategy.

Alliance portfolio

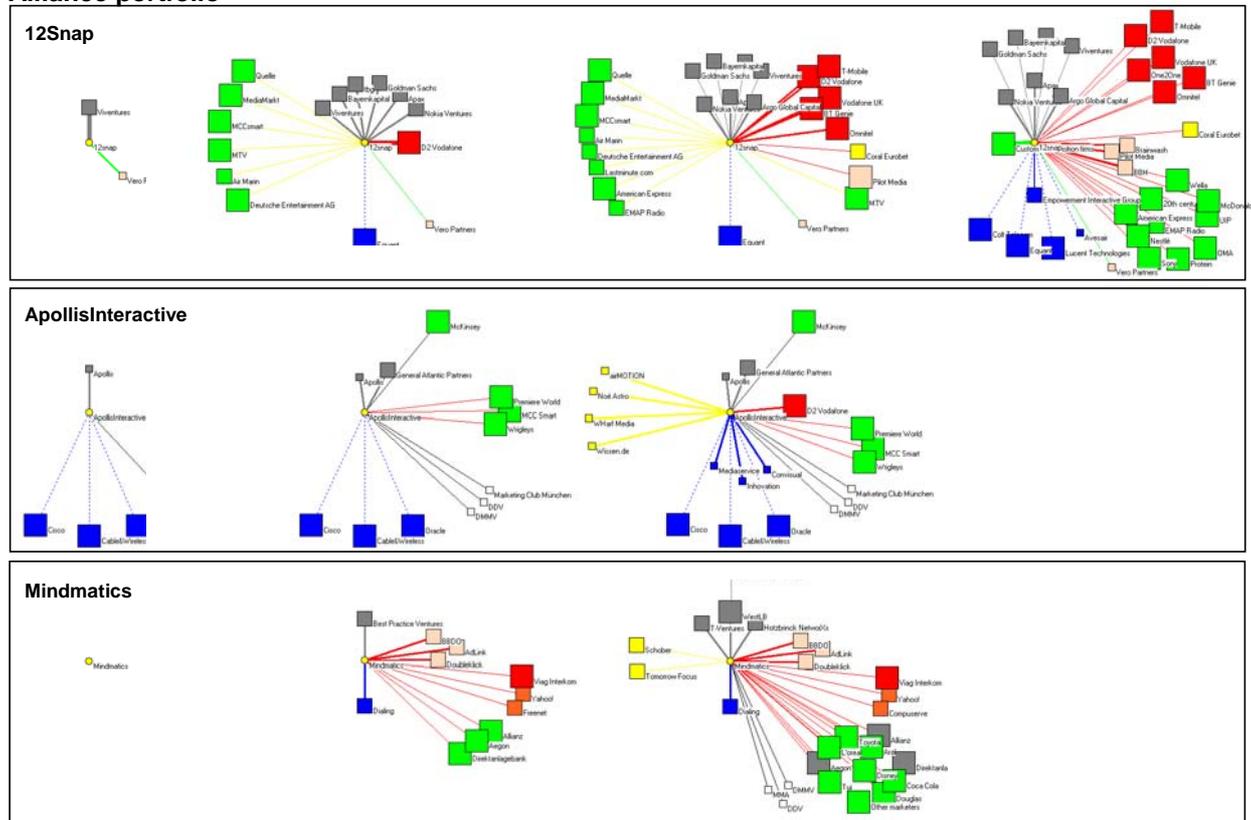


Figure 52 Alliance portfolios in the mobile marketing segment

All three companies went through a VC financing round. *12snap* closed its second round with *Viventures*, *Nokia Ventures*, *Apax*, *Goldman Sachs*, *Bayernkapital*, and *tbG*. *ApollisInteractive* attained financing from *Apollis* and *General Atlantic Partners*⁷². *Mindmatics* closed its first round with *Best Practice Ventures*.

Partner activities accessing technological resources were very modest whereas distribution partnerships grew significantly. Only *12snap* and *Mindmatics* closed a connection with one additional technology partner—*Equant* in the case of *12snap* and *Dialing* in the case of *Mindmatics*. However, on the distribution side, *ApollisInteractive* realized its first mobile marketing deals with different marketers (i.e., *Premiere World*, *MCC Smart*, *Wrigleys*) and joined different associations such as the German direct marketing association (*DDV*), the German multi-media association (*DMMV*), and the *Marketing Club Munich* for PR, reputation, and networking purposes. *Mindmatics* started to cooperate with marketing agencies such as *BBDO*, *AdLink*, and *Doubleclick*, marketers such as *Allianz*, *Aegon*, and

⁷² *General Atlantic Partners* also hold stakes in *Apollis*

Direktanlagebank, and communication companies such as *O2*, *Yahoo!*, and *Freenet*. *I2snap* started to interact closely with *D2 Vodafone*.

I2snap's sales approach differs from the other two because it built up one strong tie instead of multiple weaker ties. This discrepancy is based on its different business model. In period two, *I2snap* still offered mobile auctioning and fixed-price mobile commerce. Its auction and shop-portal was co-developed and marketed exclusively with *D2 Vodafone*, which contributed access to its subscriber base to this partnership.

The different business model also explains *I2snap*'s sourcing partnership with retailers and consumer goods producers such as *Quelle*, *MediaMarkt*, and *MCC Smart*. *I2snap* offered their products in its mobile distribution chains.

Stage three: All three networks grew by approximately 10 partners to between 20 and 27 partnerships in stage three. Most new ties were oriented toward the distribution side of the case studies. In addition, a few supply partnerships were formed and two of three case studies could attract new financial partners.

The three case studies intensified their sales activities by building up new distribution partnerships. The partnership networks have similar patterns. Their key focus is on marketing agencies and marketers of consumer products, with and for whom the case study companies develop campaigns. In addition, they cooperate with communication companies such as MNOs to deliver their campaigns, and they participate in association to develop standards, lobby, and get to know potential clients.

Mindmatics has the most elaborate network. Its close partnerships with *AdLink*, *Doubleclick* and *BBDO* allowed it to sell 180 campaigns in 2001. *ApollisInteractive* is lacking partnerships to agencies and *I2snap* was in a transition phase from a mobile entertainment portal (with m-commerce, ring tones, and mobile betting) to a mobile marketing agency.

On the supply side, all three companies added a few content partners through weak ties. Their content was required to offer broader and more interactive marketing services. *ApollisInteractive* partners with *wissen.de* to develop quizzes. A similar motivation underlies *ApollisInteractive*'s links to *airMOTION* (for sport news), *Noé Astro* (for horoscopes), and *Wharf Media* (for event news), and *Mindmatics*' links to *Tomorrow.Focus* (for broad online content⁷³), and *Schober* (for market and business news).

I2snap and *Mindmatics* entered new financial partnerships. *I2snap* closed its third round of financing (€37 million); *Apax* and *Argo Global Partners* were the lead investors.

⁷³ *Tomorrow.Focus* is a holding bundling different media activities such as *focus.de*, *tvspielfilm.de*, and *max.de*

Mindmatics attained funds from *T-Ventures*, *Holtzbrinck networXs*, and *WestLB* in its second VC round.

Partner activities to access technological resources, were again very modest. Neither *12snap* nor *Mindmatics* added a new technology partner. Only *ApollisInteractive* made new ties, most of which were passive. Its VC—*Apollis*—integrated itself into the operations of its investments, *ApollisInteractive* and *ApollisMediaservice*, and acquired *Convisual*. Through the new holding structure, *ApollisInteractive* is linked to the other subsidiaries.

Stage four: Only *12snap* entered a fourth stage. This fourth stage was not concluded at the time that the data were collected. Hence, the data provided only indicates how *12snap* started to develop in stage four. *12snap* added over 10 new partners to its portfolio, which grew to approximately 35 firms. The portfolio is increasingly balanced toward distribution partnerships.

In the transition period between stage three and stage four in summer 2001, *12snap* started to focus purely on mobile marketing. Consequently, it broke up all supply partnerships with retailers and consumer good manufacturers. Instead it established partnerships with marketing agencies such as *Brainwash*, *Pilot Media*, and *BBH*, and with marketers such as *McDonalds*, *Sony*, and *Nestlé*. In addition, it intensified the development of its opt-in user base, where it cooperated with over 10 customer acquisition firms⁷⁴. On the technology side, *12snap* partnered with new technology providers. They supported *12snap* in managing its growing data traffic. *Empowerment Interactive Group* provided an SMS gateway through which *12snap* could connect to all operator networks in Germany, the UK, and Italy.

The alliance portfolio structures are summarized in table 18.

		12snap		ApollisInteractive		Mindmatics	
	Alliance category	Alliance Portfolio	Reasoning	Alliance Portfolio	Reasoning	Alliance Portfolio	Reasoning
Stage 1	Technology	↓↓	No ties	↓	3 very weak ties	↓↓	No ties
	Supply	↓↓	No ties	↓↓	No ties	↓↓	No ties
	Markets	↓↓	1 weak tie	↓↓	No ties	↓↓	No ties
Stage 2	Technology	↓↓	1 weak tie	↓	3 very weak ties	↓	1 medium tie
	Supply	↓	6 weak ties	↓↓	No ties	↓↓	No ties
	Markets	•	1 strong tie	↓	3 (+3) weak ties	↑	3 medium, 6 weak ties

⁷⁴ How new opt-in clients and cooperation partners are acquired is a corporate secret; therefore, the partner firms are not specified

		12snap		ApollisInteractive		Mindmatics	
Stage 3	Technology	↓↓	1 weak tie	•	1 medium, 5 weak ties	↓	1 medium tie
	Supply	•	8 weak ties + a few customer acquisition firms	↓	4 weak ties	↓↓	2 weak ties
	Markets	↑	3 medium, 6 weak ties	↓	1 medium, 3 (+3) weak ties	↑	3 medium, >15 (+3) weak ties
Stage 4	Technology	↓	1 medium 4 weak ties				
	Supply	•	30 customer acquisition firms				
	Markets	↑↑	3 medium, >20 weak ties to three groups				
	Legend	↑↑ Strong	↑ Medium strong	• Medium	↓ Medium weak	↓↓ Weak	

Table 18 Alliance portfolio structure (MLS)

In conclusion, the alliance portfolios grow steadily through the stages. Their centers of gravity change from early to later stages, in which the portfolios consistently lean toward distribution partnerships. In addition, the limited requirements for the resources content and technological know-how can be seen in the alliance portfolio structure. Mobile Marketing agencies establish relatively few content and technology partnerships; these partnerships continue to play a less important role.

Finally, the firms differ significantly in terms of portfolio size and intensity. Whereas *Multichart* and *12snap* were capable of developing distribution biased alliance portfolios with more than 30 partners, *ApollisInteractive* could only build a smaller alliance portfolio (with approximately 20 partnerships), which was weaker on the distribution side.

It will be interesting to see, whether differences in underlying allying processes lead to the different portfolio sizes and whether differences in structure and process lead to discrepancies in firm performance. These two questions will be analyzed and discussed in the next two sections.

Alliance process

Also in the mobile marketing segment, the case studies report of a three-step allying process. The process begins with strategic considerations, defining alliance needs, passes through an alliance formation stage, in which partnerships are built up, and ends with the alliance management phase, in which partnerships are operated and terminated as necessary. This

process is identical to the allying process in the MLS segment, which is depicted in figure 26. Its steps are described subsequently.

Strategy pre-phase: In the first phase, alliance needs were derived from corporate strategy. All case studies review their strategy every three to six months. The strategic targets are broken down into market segments and projects. For these projects, resource requirements were worked out. In a last step, the management teams decide how to source required resources. This last step defines the alliance needs.

Formation phase: In the formation phase alliances are realized. This procedure can be broken down into three steps. First, potential partners are sought out, screened, and selected; second, partners are contacted; third, the alliance contract is negotiated and signed.

All three case studies report that searching and selecting partners is not a crucial step. The partnership relevant industries comprise MNOs, marketing agencies, and consumer and branded goods producer, all of which are mature and well documented.

In the contacting step, social relations are very important, as the CFO of *12snap* reports:

'Our business is relationship driven; you need good contacts. Old personal contacts, and good board members can help you a lot.' (Bernd Mühlfriedel, CFO *12snap*, 2002)

Besides the active search and contacting, alliances can be created through alliance opportunities that arise when other companies approach the case study firms with alliance concepts. These alliance opportunities exist to a significant extent, especially in the later stages, as the *12snap*'s MD Ingo Griebel reports:

'In addition, this straightforward alliance process is superposed by alliance opportunities, which arise by other companies contacting us. These opportunities rose with us getting better known in the industry and with the increasing number of people we already worked together with.' (Ingo Griebel, MD *12snap*, 2002)

In the contracting step, *Mindmatics* in particular stressed the importance of negotiating flexible contracts. The high uncertainty in this still young industry casts fix contracts into doubt. The CEO of *Mindmatics* reported its experience with exclusive contracts, that were signed and fixed too early:

'In our first stage we preferred to form exclusive partnerships. But almost all these partnerships did not live up to expectations and a few even hampered our development. That is why we nowadays prefer flexible contracts and we do not grant exclusivity. ...

In addition, we adjusted our contracting procedure. When we decide to cooperate with a partner, we do not set up and sign a binding contract, but we set up a joint project. During that trial phase we examine how we work together. When the project was successful, we intensify the cooperation and set up an outline contract.' (Ingo Lippert, CEO Mindmatics, 2002)

By setting up a trial project or signing the partnership contract, the management phase starts.

Management phase: The management phase is by far the longest phase in the allying process. It comprises the operating and embedding of partnerships, the monitoring of the partnerships, and the restructuring of alliances (realignment or termination).

During the operation of partnerships, all three case study firms try to embed the relationships by connecting to additional contact persons on the partners' side and by intensifying the projects as previously mentioned by Ingo Lippert. However, the intensification is not feasible in all cases. In developing industry, markets establish slowly, which challenges the forms of cooperation, as the CEO of *Mindmatics* reports:

'The intensity of our distribution partnerships decreases. This comes along with the establishment of our industry and distribution markets. After the first stages [2000 to mid-2001], it became obvious which players are important in our market and which revenue models are used. Thus the uncertainty in the industry decreased and, thereby, the need for very close partnerships.' (Ingo Lippert, CEO Mindmatics, 2002)

Concerning alliance controlling, all companies consistently stated that meeting revenue targets was the most important target monitored with respect to distribution partnerships. Technological reliability is another criteria that is controlled for in technology partnerships. When the alliance controlling detects that a partnership is not efficient concerning resources employed, partnership contracts are usually cancelled. In some cases, contracts are renegotiated before the cooperation is terminated.

Although all three case study firms report this three-step allying process, they differ by the degree to which the process is institutionalized. Companies with extensive alliance activities

such as *12snap* and *Mindmatics* have a more structured approach than *ApollisInteractive*. *ApollisInteractive*'s marketing manager reports:

'The alliance process does not go on formally. The three stages exist and the underlying steps as well. But only in a few of them we slowly start to set out results in writing. ...There is nothing formalized. This might be caused by the fact that most of our partnerships result from unplanned opportunities.' (Thorsten Rehfus, Marketing Manager *ApollisInteractive*, 2002)

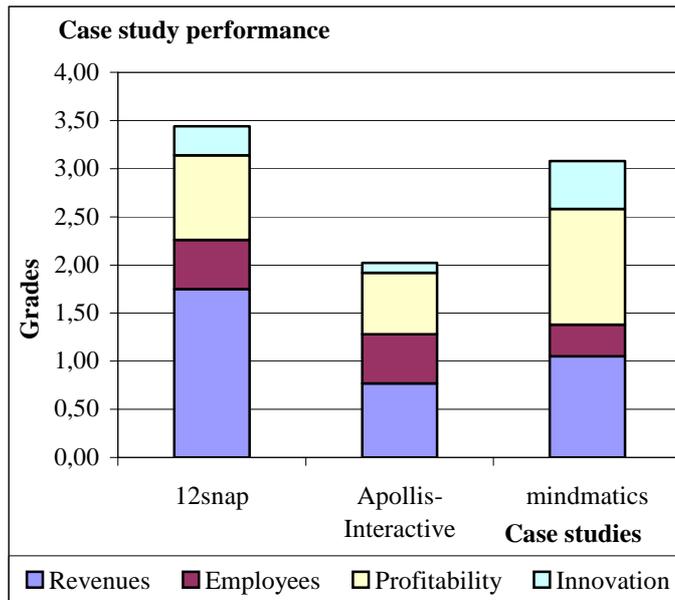
In contrast the CFO of *12snap* reports of a very formalized allying process:

'Starting with stage two, the partnership process was more and more institutionalized over time.' (Bernd Mühlfriedel, CFO *12snap*, 2002)

Given the differences in alliance portfolio size and institutionalization of allying procedures, it is interesting to analyze whether these two phenomena impact firm performance. This issue is analyzed in the next section.

Performance

Comparing the case studies on the basis of performance, *12snap* scores the highest. The performance benchmark is based on the dimensions, criteria, and scales applied in subsection 3.3.3 'Performance' and takes into account the growth of the companies, revenue- and employee-wise, profitability, and innovation. The scale ranges from 1—very poor performance to 5—very high performance with a mean of 2.4 calculated on all case studies. The performance of mobile content providers is exhibited in figure 53.



12snap scores highest on two dimensions: revenue and organizational growth. In terms of profitability and innovation, *Mindmatics* outperforms *12snap* and *ApollisInteractive*. *12snap* is the only company with annual sales significantly greater than € 2 million. In addition, its growth rate has been between 300% and 400% the past years and was expected to maintain that growth rate in 2002.

Figure 53 Case study performance in the mobile marketing segment

ApollisInteractive sales were considerably lower, at the lower end of the range of €500,000 to €1 million, slow growing. *Mindmatics*' sales were estimated to approach €1.5 million⁷⁵. In terms of organization size, *12snap* grew the fastest of all the case study companies. In the beginning of 2001 it had considerable more than 100 employees. It separated itself from a few activities, such as its technology development center in Praha (*SnapLab*) in summer 2001 due to its reorganization and concentration on mobile marketing. However, *12snap* is still the biggest organization, with between 70 and 75 employees. *ApollisInteractive* and *Mindmatics* grew more slowly and approached organization sizes of 40 and 30 employees without having significant cutbacks.

Mindmatics is rated highest in terms of profitability. Its losses were only in the lower € 100,000s in comparison with losses above € 1 million in the cases of *12snap* and *ApollisInteractive*. In addition, its break even point was planned to be reached by the end of 2002, similar to *12snap* but before *ApollisInteractive* (beginning of 2003).

12snap and *Mindmatics* also outperformed *ApollisInteractive* in terms of innovation. *Mindmatics* received two awards for its *MrAdGood*-service and its campaigns (*Multimedia Award 2001* and the *New Media Award 2002 (mobile)*). *12snap* attained the *Mobile Marketing Creative Award 2001*. *ApollisInteractive* did not receive any awards, neither for its technology or service, nor for its campaigns.

⁷⁵ The estimation is based on the published number of campaigns and their revenue structure.

3.4.4 Segment conclusion

Concluding the within-segment analysis, the case study companies develop stage-wise. Between the stages, organizational characteristics changed significantly. The ventures add complexity when they develop from very informal working entrepreneurial teams to business unit organizations with sophisticated controlling and incentive systems and formalized internal processes. Comparing the case study firms, *12snap* and *Mindmatics* developed more quickly than *ApollisInteractive*.

Resource requirements shift, in parallel with organizational changes. Reputation and technological know-how lose importance, whereas access to markets and organizational skills, that allow for efficiency gain in importance. Access to supply such as content never plays a significant role in this industry segment.

The resource changes are reflected in the case studies' alliance portfolios. Their structures are consistently small and exploratory in the beginning and grow to a significant size (>30 partners), with heavy bias toward the distribution side. Neither technology nor sourcing partnerships play a significant role. Weak ties dominate the alliance portfolios because in the later stages the distribution market matures and selling mobile marketing campaigns becomes more standardized. *12snap* and *Mindmatics* manage to adjust their alliance portfolios more efficiently than *ApollisInteractive*. They build up more alliances and focus more on the distribution side.

Furthermore, in terms of alliance processes, *12snap* and *Mindmatics* implement their allying procedures more thoroughly. All three case studies report of the same three-step allying process, but *ApollisInteractive* did not institutionalize and formalize the procedure and, therefore, heavily depends on alliance opportunities in contrast to strategically planned alliances. Thus, it is not surprising that *12snap* and *Mindmatics* outperform *ApollisInteractive* in terms of growth, profitability, and innovation.

After analyzing the nine cases segment-by-segment, the following section outlines the similarities and differences across the segments. Next, a co-evolution model between NTBF's alliance portfolio and organization is derived and broken down into hypotheses.

3.5 Cross-segment analysis - building a set of tentative hypotheses

This final section of the case study chapter deals with the comparative analyses of the three industry segments and the nine case study firms. In the first part, the case study results are analyzed across the three mobile service segments. The analytical focus is on the detection

of commonalities or differences concerning company developments, resource requirements, alliance portfolios, their management, and the firm performances. To understand the dynamic setting of the case studies, a longitudinal analysis framework is applied to structure the development of the case studies. According to this development framework, the alliance portfolios are analyzed and alliance acquisition and management skills examined. In the second part, a co-evolution model between NTBF's organization and network is developed. This model is based on a set of tentative hypotheses, that describe correlations and causal relations within the model. These tentative hypotheses constitute the basis for a detailed unfolding of the literature in the next chapter that leads to an extension of the theory of network dynamics.

3.5.1 Cross segment analysis

The structure of the cross-segment analysis is structurally related to the within segment analyses. It begins with an assessment of the firm developments and shows their different growth rates, and, second, presents a comparison of their stage characteristics, to control for a comparability of development stages and, thereby, the validity of results concerning the firms' growth rate. In the third part, resource requirements are compared, followed by the fourth part, which analyzes the different alliance portfolios. After checking the resource dependency of alliance portfolio structures, performance implications of efficient alliance portfolios are assessed. The last part analyzes how underlying processes assure and support the efficiency of alliance portfolios.

Company development

All nine case studies pass through a stage-wise development. The case studies differ significantly with respect to the time spent in each phase and in the number of phases they passed through. Table 19 lists the case studies according their development speed.

Case studies	12snap	Airweb	Apollis Interactive	Clever Tanken	ehotel	Gate5	mind- matics	Multi- chart	Yellow- Map	Average
Industry segment	Mobile Marketing	MCS	Mobile Marketing	MCS	MCS	MLS	Mobile Marketing	MCS	MLS	
Number of stages	4	3	3	2	2	4	4	3	4	3,2
Average stage duration [months]	7	15	14	21	20	10	7	95	10	22,3
Segment average [months]	10	38 (19)	10	38 (19)	38 (19)	10	10	38 (19)	10	(exclud. Multi- chart)

Table 19 Case study development stages

In analyzing the number of stages and the average stage duration, differences between companies and segments can be observed. On average, mobile marketing and MLS companies developed faster (10 months/stage) than MCS companies (38 months/stage, respectively 19 months/stage excluding *Multichart*). Different reasons for this may apply, such as better-defined market niches with higher entry barriers or higher investments from VCs. However, there are still significant differences in development speed within every segment ranging from seven months per stage in the case of *12snap* to 14 months per stage in the case of *ApollisInteractive*, or 15 months per stage in the case of *Airweb*, and to roughly 20 month per stage in the case of *e-hotel* and *Clever.Tanken*. These significantly different stage durations suggest two questions: Are the stages similar in terms of their characteristics, and therefore comparable? What impact do efficient alliance networks have on the stage duration? These questions are discussed next.

Stage characteristics

From an organizational perspective, the stages are comparable across industry segments. The case characteristics follow similar patterns along the development stages. Figure 54 depicts the organizational characteristics of all case study firms on the following dimensions: management focus, organizational structure, communication style, and flexibility to market changes (descriptions of these dimensions are presented in chapter 3.2.3 ‘Organizational dimensions’). The dimension ‘compensation structure’ is not included in the figure, because the segments differ as a function of this dimension. All MLS and mobile marketing companies have complex compensation programs such as stock options or individual bonuses. Apart from *Airweb*, all MCS companies kept simple compensation systems based on monthly fixed payments.

Company developments

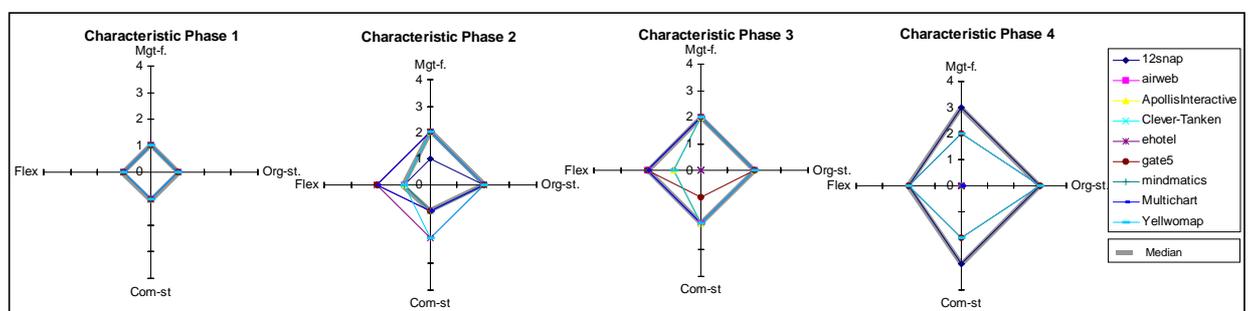


Figure 54 Company developments

Figure 54 shows that all case studies gradually added complexity to their organization. Their organizational structure developed from a team-based organization to a functional

organization. After the companies diversified their product portfolios, in the last phase, they introduced business unit organizations. The developments according to the other organizational dimensions are similar; an exemplary development is listed in table 20. The characteristics correspond to the median of all case studies, which is included in figure 54 (bold line).

Organizational dimension	Stage 1	Stage 2	Stage 3	Stage 4
Management focus	Entrepreneurial / technical	Business manager	Business manager	Business managers but managing by exception
Organizational structure	Team organization	Functional organization	Functional organization	Business unit organization
Communication style	Informal, company wide meetings	Informal, company wide meetings	Slowly formalized, meetings are more exclusive	More formal communication, memos exist
Strategic focus / flexibility on market changes	Short-term planning and strategies. Time horizon 3 months	Short-term planning and strategies. Time horizon 3 months	Mid-term planning and strategies. Time horizon 2 years. Reviews every 6 months	Mid-term planning and strategies. Time horizon 2 years. Reviews every 6 months

Table 20 Exemplary organizational development

Not all case studies developed in the same fashion. Yet the differences are small. No case study differs more than one complexity degree or longer than one period from the median. Within boundaries, the development characteristics of all case studies are comparable. Except for shorter durations, no difference between segments could be found.

Now that the comparability of stages has been assessed, the question of the impact of efficient alliance portfolios is tackled. To answer this question, the structure of the alliance portfolio is compared stage-wise with resource requirements.

Resource requirements

As analyzed in the within-segment analyses, the need for most resources shift over time. In all three industry segments, the resource categories could be divided according to what drives their requirements. The resources can be clustered into three groups: dependence on life cycle, dependence on business model, and dependence on other events. Table 21 lists the resource categories according to their dependency.

Category dependency	MLS	MCS	Mobile Marketing
Life cycle dependent - fading		Technological know-how, reputation	Technological know-how, reputation
- changing	Human resources, access to supply	Human resources, access to supply	
- growing	Market access, organizational skills	Market access, organizational skills	Market access, organizational skills, human resources
Business model dependent	Technological know-how, reputation		Access to supply
Dependent on other events	Financial resources	Financial resources	Financial resources

Table 21 Resource categories

When comparing the segments, similar pattern can be seen according to most resource categories. The assessment of financial resources, market access, and organizational skill coincide over all segments. The evaluation of technological know-how, reputation, and access to supply are also identical as long as segment business models either did not put an extremely high importance on these resources (as in the case of MLS companies on technological know-how and reputation) or put an extraordinary low importance on these resources (as in the case of Mobile Marketing companies on access to supply).

Besides these business-model-induced differences, only one resource category is non comparable. MLS and MCS companies report of initial growth and later decline in requirements for human resources; in the mobile marketing segments the requirements grew constantly. This difference can be explained by splitting up this category into the number of employees required and the specificity of human resources sought. In all cases, the specificity with which human resources were searched grew, as reported by 12snaps managing director:

'We started to boost our team with people, ... who have experience in our industry sector, who have worked for a couple of years and who probably bring a few clients with them. This has completely changed over the last two years.' (Ingo Griebel, MD 12snap Germany, 2002)

However, most companies scaled down their organization in the last period. *E-hotel* scaled its organization down from 35 to 18 employees, and *YellowMap* from 40 to 19. Only the mobile marketing companies *12snap*⁷⁶ and *Mindmatics* grew uniformly. Therefore,

⁷⁶ *12snap's* organization size declined as well, when they sold their SnapLab. On the other hand their core business – Mobile Marketing – grew and marketing professionals were needed.

companies with growing staff sizes evaluated human resource requirements increasingly high. For the other companies, human resource was rated important in the beginning, and lost some of its importance in the later stages.

These similar evaluation patterns concerning resource requirements can also be seen in a cross-case analysis depicted in figure 55. This figure maps the resources stage-by-stage according to their importance (5 – very important to 1 – not important at all). Only financial resources are excluded, because no stage dependency pattern could be found in the within-segment analyses.

Resource requirements

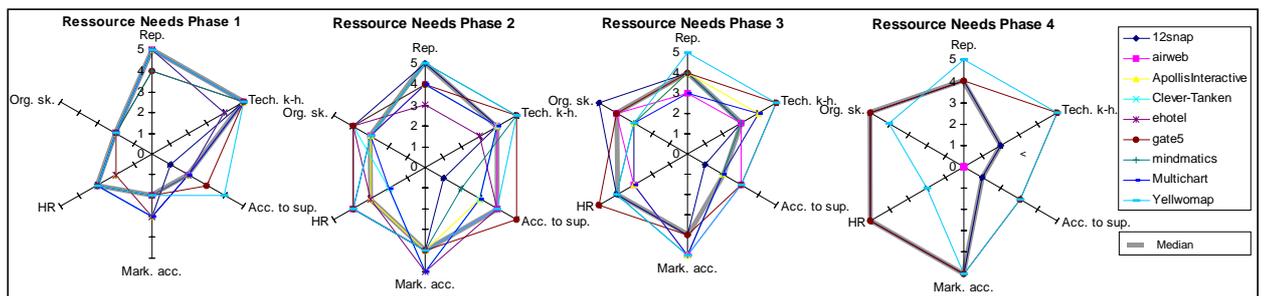


Figure 55 Resource requirements

All case studies shifted their resource requirements. Their center of gravity shifted from reputation and technological know-how in the first stage, to a supply side focus, to market access and organizational skills. The case studies shifted their resource requirements in very similar ways. An exemplary development is listed in table 22. The evaluations correspond to the median of all case studies, which is graphed in figure 55 with the thick gray line.

Organizational dimension	Stage 1	Stage 2	Stage 3	Stage 4
Reputation	High	High	Medium-high (MLS companies excluded)	Medium-high (MLS companies excluded)
Technological know-how	High	Medium-high (MLS companies excluded)	Medium (MLS companies excluded)	Medium-low (MLS companies excluded)
Access to supply	Medium (Mobile Marketing companies excluded)	Medium-high (Mobile Marketing companies excluded)	Medium-low (Mobile Marketing companies excluded)	Low
Market access	Medium-low	Medium-high	Medium-high	High
Human resources	Medium	Medium	Medium-high	High
Organizational skills	Medium-low	Medium	Medium-high	High

Table 22 Exemplary organizational development

Not all case studies evaluate their resource requirements equally. The above-mentioned influence of the segment specific business models has an especially important impact on the evaluation spread. This can be drastically seen in the assessment of access to supply such as content and maps. Furthermore, the evaluation of human resources starts to diverge in the later stages and differs by more than two units on the importance scale by the end.

However, in terms of reputation, market access, and organizational skills, the differences are very small. No case study differs more than one importance step or longer than one period from the median. Within boundaries, the resource requirement characteristics of all case studies are comparable concerning these categories. These findings further emphasize the existence of comparable stages.

Because alliances are suitable primarily for accessing reputation, technological know-how, supply, financial resources, and distribution channels and are less capable of providing human resources and organizational skills, the following discussion will focus on these four resource categories.

Whether the alliance portfolios reflect these partly different and partly similar resource requirements is analyzed in the following section.

Alliance portfolios

The case study companies in all three segments have been building up significant alliance portfolios (>20 partners). They access five different types of resources: financial resources, technological know-how (often linked with reputation), access to supply, and access to markets. Reputation is often not an isolated reason to form an alliance, but an additional motivator to form an alliance with a specific partner.

In the three segments, all these underlying alliance motivation patterns exist. The firms establish alliances to access funds and to improve the company performance through five different levers, which are listed and explained in table 23:

Background	Lever	Example	Explanation
Finance oriented	Access financial funds	<i>Mindmatics – T-Ventures</i>	<i>Mindmatics</i> received funds from <i>T-Ventures</i> in its second VC round to finance its further expansion.
Output oriented: Increase revenues	Access to superior distribution channels	<i>E-hotel – e-sixt</i>	<i>E-hotel</i> cooperates with <i>e-sixt</i> and supplies hotel rooms for their travel portal, which is one of the biggest and fastest growing travel portals in Germany
	Leveraging resources	<i>Gate5 - ESRI</i>	<i>Gate5</i> cooperates with <i>ESRI</i> to integrate its mobile location platform into governmental software. Thereby, it aims to leverage the usage of resources through the distribution power of <i>ESRI</i> .
Input oriented: Improve USP and cut costs	Access to external technology	<i>I2snap – Empowerment Interactive Group</i>	<i>I2snap</i> cooperates with <i>Empowerment Interactive Group</i> to access and use their SMS, EMS, and MMS technology for terminating their message traffic.
	Access to superior supply	<i>Airweb – L'équipe</i>	<i>Airweb</i> cooperates with <i>L'équipe</i> to access partially proprietary or right restricted sport content.

Table 23 Alliance types

The partnership types can be found in all segments. Financial ties exist as well in the MLS (e.g., *YellowMap – SAP Ventures*) and in the MCS segment (e.g., *e-hotel – Fortknex Venture*). Sales ties in the MCS segment link *Multichart* to system integrator *STS*, the MLS company *YellowMap* cooperates with *Jamba!*, and *Mindmatics* has joint projects with the marketing agency *AdLink*. Similar to *I2snaps* technological partnership with *Empowerment Interactive Group*, *Gate5* works with *Location.net*, and *Airweb* with *Dialogic*. Furthermore constellations such as *Airweb – L'équipe* can be found in the other segments with *YellowMap – Schober* and *ApollisInteractive – wissen.de*.

However the alliance portfolios have different points of gravity and developed somewhat distinctly. Table 24 shows which types of links declined, remained stable, or grew in importance and how these links changed.

Segment Alliance portfolio develop.		MLS			MCS		Mobile Marketing		
		1 -> 2	2 -> 3	3 -> 4	1 -> 2	2 -> 3	1 -> 2	2 -> 3	3 -> 4
Declining	Fading focus			Finance		Finance, Techno- logy		Techno- logy	Finance
Stagnant, Stable	Boundary span. (few weak ties, low importance)					Techno- logy		Supply	
	Diversification focus		Supply	Supply		Supply			
	Select. cooperat. (few strong ties)			Techno- logy	Finance				
Growing	Intensification (strengthen ties)	Finance	Markets	Markets	Supply	Markets	Finance	Finance	
	Portfolio growth (new weak ties)	Markets	Markets	Markets	Supply, Markets			Markets	Markets

Table 24 Alliance portfolio development

As the resource developments in the within-segment analyses already indicated, the importance of financial partnerships does not develop stage-wise. The cross-segment analysis supports this finding. There are no detailed coherent patterns in the development of financial resources across the segments. Overall, financial resources gained importance in the early stages when the financial markets were good. They then lost importance, when the companies matured and the financial markets cooled down. Despite their relevance for the development of organizations, financial resources are excluded from analyzing the co-evolution of organizations and alliance portfolios, because they cannot be integrated into the stage-development-grid on which the rest of the analysis is based. Further research is required to integrate the financial aspects.

Concerning the other resource and alliance categories, the portfolio shifts are analyzed on two levels. On a segment level, the relationship and causality is assessed if resource requirements influence alliance portfolio structures. On a firm level, the alliance portfolio efficiency is examined by analyzing its size, intensity, and adaptability. Efficiency differences are confronted with differences in firm performance and organizational development dynamics.

Segment level analysis

Resource requirements influence the shape of networks. Growing requirements lead to shifts in the alliance portfolio. Depending on the complexity of exchanged resources and the sophistication of the markets, either more partnerships are established or existing

partnerships are intensified. In a cross-segment analysis, table 25 contrasts resource requirements and the structure of alliance portfolios. For every segment evaluation, the median value for the case studies is calculated.

	Resource category	MLS		MCS		Mobile Marketing	
		Resource requirements	Alliance portfolio	Resource requirements	Alliance portfolio	Resource requirements	Alliance portfolio
Stage 1	Technology	↑↑	↑	↑	•	↑↑	↓
	Supply	•	•	↓	•	↓	↓↓
	Markets	↓	↓↓	•	↓	•	↓↓
Stage 2	Technology	↑↑	↑	↑	•	↑	↓
	Supply	↑	↑	↑	↑	↓	↓
	Markets	↑	•	↑↑	↑	↑	↑
Stage 3	Technology	↑↑	↑	•	↓	•	↓
	Supply	•	•	↓	↑	↓	↓
	Markets	↑	↑	↑↑	↑↑	↑↑	↑↑
Stage 4	Technology	↑↑	↑			↓	↓
	Supply	•	↓			↓↓	↓↓
	Markets	↑↑	↑↑			↑↑	↑↑
Legend	↑↑ High / strong	↑ Medium high / strong	• Medium	↓ Medium low / weak	↓↓ Low / weak	Tolerate (1 degree deviation)	Conflict (> 1 degree)

Table 25 Resource dependency of alliance networks

When assessing these evaluations, the correlation is evident. 14 pairs are identical and an additional 14 are similar, diverging by only one degree. Evaluations controvert in only 5 cases (15%).

In particular supply resources and partnerships and—in the later stages—the distribution side highly correlate. Only the technology side is not very highly correlated. Out of the 11 technology pairs, only one is identical (at medium low), and 8 are similar with the alliance portfolio structure always weaker than the resource requirement. This indicates that technology partnerships are more difficult to form. The CEO of *Gate5* attributes this to the habits of technologists:

‘Technologists do not form partnerships. Technologists try to develop everything by themselves. They do not know how to sell technology. That’s why they develop 100% of the product in-house instead of leaving 90% out, which should be better sourced from the outside, because the internal expertise is missing. ...

So far we did not experience successful technology partnerships. But this is our mistake.'
(Michael Halbherr, CEO Gate5, 2002)

However, in general resource requirements influence alliance portfolio structures. Resource requirements and alliance portfolios shift from reputation and technological know-how, to supply as content, and towards a market based focus in the later stages. The next step is to examine how efficiently each case study firm established and structured its alliance portfolio.

Firm level analysis

The firm level analysis compares the nine case study companies, assesses which one has the most efficient alliance portfolio, and compares portfolio efficiency with the performance evaluation and the speed of development of each firm.

The portfolio efficiency is influenced by three drivers: the portfolio size, the intensity of its ties, and its adaptability concerning resource shifts (i.e., how strong and fast the portfolio shifts as a function of resource requirements?). The more new partners can be acquired, the better firms can intensify links, and the better the portfolio structure is adjusted according resource requirements, the more efficient alliance portfolios will be. For the evaluation, the underlying data have been presented in the tables summarizing the within-segment alliance portfolio analyses. The evaluations are depicted in table 26.

Case studies	12snap	Airweb	Apollis Inter.	Clever Tanken	e-hotel	Gate5	Mind-matics	Multi-chart	Yellow Map
Portfolio size	Large	Medium	Small	Medium	Small	Medium	Medium	Medium	Large
Intensity of ties	Medium	Medium	Low	Medium	Medium high	High	High	Medium	Medium
Portfolio adaptability	High	High	Low	Low	Low	Medium	Medium	Low	High
Portfolio efficiency	High	Medium High	Low	Medium	Medium low	Medium High	Medium high	Medium	Medium high
Company performance	High	Medium high	Medium low	Medium	Low	Medium low	High	High	Medium high
Development speed	High	Medium	Medium	Slow	Slow	Medium	High	Low	Medium high

Table 26 Impact of alliance efficiency on organizational change

By analyzing the data, it becomes obvious that improved resource access via efficient alliances leads to improved firm performance. In addition, better alliance portfolios and, therefore higher performance, accelerate firm's organizational development and shortens

development stages. This correlation between alliance portfolio efficiency, performance and organizational development is depicted in figure 56.

Correlations between portfolio efficiency, performance, and organizational development

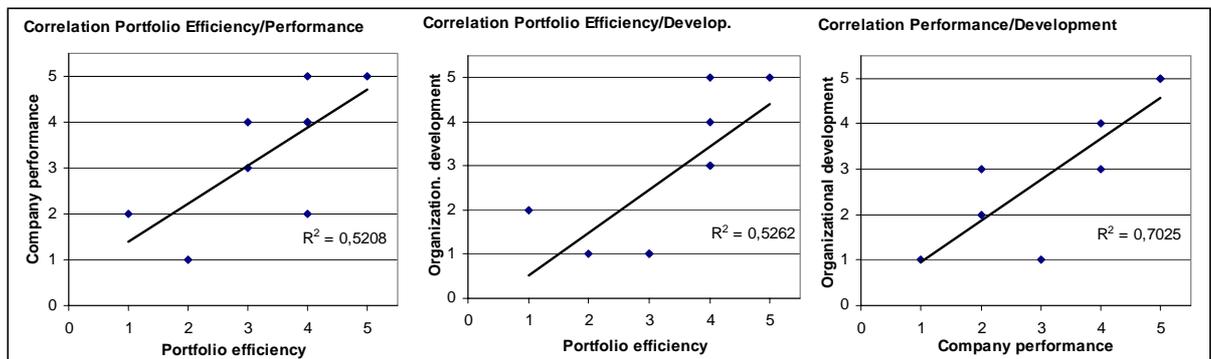


Figure 56 Coevolution correlations

The correlation between performance and organizational change is the strongest. This is not surprising because entrepreneurial performance as measured in this study comprises growth, and growing structures trigger organizational conflicts, which mark the transition from one stage to the next. In addition, profitability and innovation—the other performance components—usually accelerate growth.

Yet interestingly the correlations between portfolio efficiency and performance and between portfolio efficiency and organizational development are almost as strong, each explaining up to 50%. Therefore, alliance portfolio efficiency plays a mayor strategic role and heavily influences the development of NTBFs. Fast adaptation of networks according to the underlying resource requirements leads to improved entrepreneurial performance. On the other hand, organizational change defines resource requirements in a stepwise fashion. Therefore, alliance portfolio and organizational change are interdependent. Co-evolution between partnership networks and NTBF's organization exist.

In summary, organizational steps define overall requirements. Alliance networks help to fulfill these requirements. The faster the partnership adjusts to the requirements, the faster the organization develops.

Different skills support the firms in establishing and maintaining efficient alliance portfolios. These skills comprise capabilities for acquiring partners, and capabilities for to managing the portfolio. The structure of this allying process is presented in the next section.

Processes

Alliance portfolios are facilitated by an underlying allying process. This process supports shifts in the alliance portfolio structure and the resource exchange between the participating

partners. As consistently assessed in the within-segment analyses, the allying process consists of three phases, a strategic pre-phase (with most steps not part of the allying process), an alliance formation phase, and an alliance management phase. Every phase can be split up into steps. The phases, the steps, and crucial capabilities for each step are depicted in table 27.

Phases	Steps	Crucial capabilities
Strategy pre-phase	Strategy review	<ul style="list-style-type: none"> • Developing strategic concepts • Breaking them down into products and projects
	Deriving resource require.	<ul style="list-style-type: none"> • Developing a sourcing strategy for every project
	Defining alliance needs	<ul style="list-style-type: none"> • Working out alliance concepts with a clear vision, specifying <ul style="list-style-type: none"> – What to achieve – How the corporation should be structured – With which type of company to partner
Formation phase	Search & screening	<ul style="list-style-type: none"> • Drawing market portfolios of partner industries, thereby using market data as research and broker reports • Evaluating strategic fit in an overlap matrix, excluding direct and indirect competitors, and overlap in business units or markets
	Contacting	<ul style="list-style-type: none"> • Attracting a good supervisory board (with extensive personal contacts) • Reputation created through previous projects is crucial is particularly important in competitive situations • Unplanned alliance opportunities are an additional source of alliances. They depend on: <ul style="list-style-type: none"> – Reputation – Prior alliances and projects
	Contracting	<ul style="list-style-type: none"> • Finding a fair alliance model, assuring win-win situations, especially when negotiating revenue sharing deals • Flexible contracts, no exclusivity, including trial phases • Setting precise alliance targets
Management phase	Operating	<ul style="list-style-type: none"> • Building personal contacts to counterparts: <ul style="list-style-type: none"> – Directness – Trust – Honesty • Communication <ul style="list-style-type: none"> – Clear – In partnership – Strategic
	Controlling	<ul style="list-style-type: none"> • Measuring alliance targets, revenues in particular, every 3 to 6 months • Reputation is also important but plays a minor role
	Realignment or termination	<ul style="list-style-type: none"> • If alliance targets are not met, it is important to signal the deviation and start renegotiating the contract early. A long misfit almost surely leads to termination of the partnership

Table 27 Allying process - steps and capabilities

Despite the fact that overall structure of the process is fairly similar for all case study firms, the underlying capabilities are cultivated in different ways and the implementation and formalization also differ quite significantly. The within-segment analyses show that

companies that have implemented the allying process very thoroughly, formed more alliances and are better capable of restructuring the alliance portfolio.

With these process level findings, the cross-segment analysis is completed. In the next section, a conceptual model is built based on the results acquired. It covers alliance portfolio dynamics and organizational change.

3.5.2 Tentative hypotheses

Based on the contextual case descriptions, this section now closes by summarizing the findings of this cross-segment analysis. The summary is presented by providing first an overall co-evolution argument, which is subsequently broken down into a set of tentative hypotheses. The hypotheses are tentative because they will be evaluated in the context of the existing literature for further refinement and because the extension of theory that will build on the tentative hypotheses, will eventually be subject to large-sample quantitative testing (Zaby, 1999).

Co-evolution aspects between alliance portfolio and organization

The alliance portfolio influences organizational development and vice versa. An alliance portfolio makes required resources accessible. The efficient 'delivery' of required resources increases firm's performance, which drives organizational growth and change. The efficiency of the alliance portfolio depends on the firm's partner acquisition capabilities and its alliance management capabilities.

The organizational growth and change that often takes place stepwise, creates new organizational problems that determine—also often step-wise—shifts in resource requirements. These new requirements induce shifts in the alliance portfolio structure. The better the alliance portfolio is adjusted according to the resource needs, the more efficient the organization is, and the earlier the next development stage is reached. This co-evolution circle is depicted in figure 57.

Co-evolution of alliance portfolio and organization

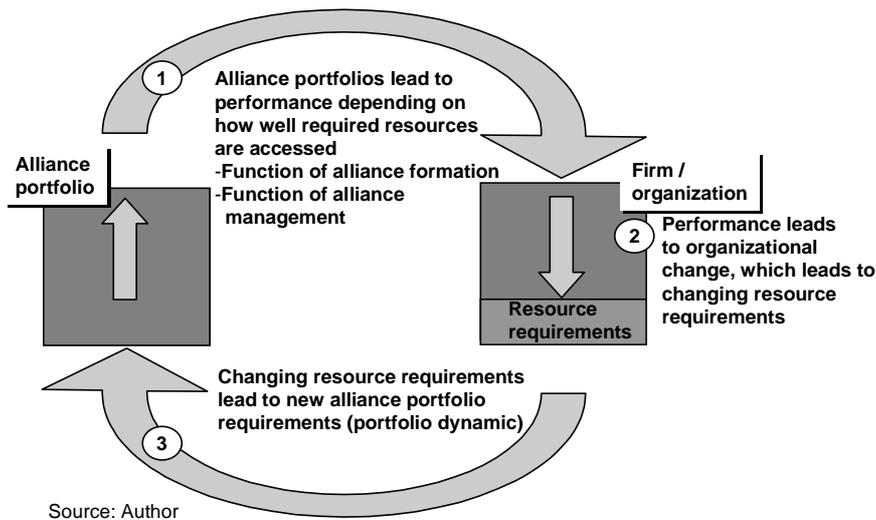


Figure 57 Coevolution of alliance portfolio and organization

In the following paragraphs, this comprehensive model is broken down into a set of hypotheses. The overall co-evolution hypothesis is broken down into three parts:

1. Alliance portfolio's impact on performance
2. Performance impact on organizational change and adjunct resource requirements
3. Resource requirements' impact on alliance portfolio shifts

Subsequently, the relationships in each part are described and broken down into hypotheses. The overall co-evolution hypothesis is phrased as follows:

Tentative hypothesis 1: *The better an alliance portfolio is adjusted to the step-wise changing resource requirements, the faster the firm develops. (Alliance Darwinism)*

The underlying hypotheses are presented separately.

Alliance portfolio's impact on performance

NTBF's performance, measured in growth, profitability, and technological distinctiveness, is improved through the alliance portfolio. These performance improvements depend on the efficiency of the alliance portfolio, which can act through different levers. These levers are depicted in figure 58.

The relationship between alliance efficiency and firm performance is formulated in hypothesis 2.

Tentative hypothesis 2: The better the firm can (1) leverage its resources, (2) access superior distribution channels, (3) access external product and service technologies, and (4) access superior supply via alliances, the better the companies perform in terms of (a) growth, (b) profitability and (c) technological innovation.

Performance impact of alliance portfolio

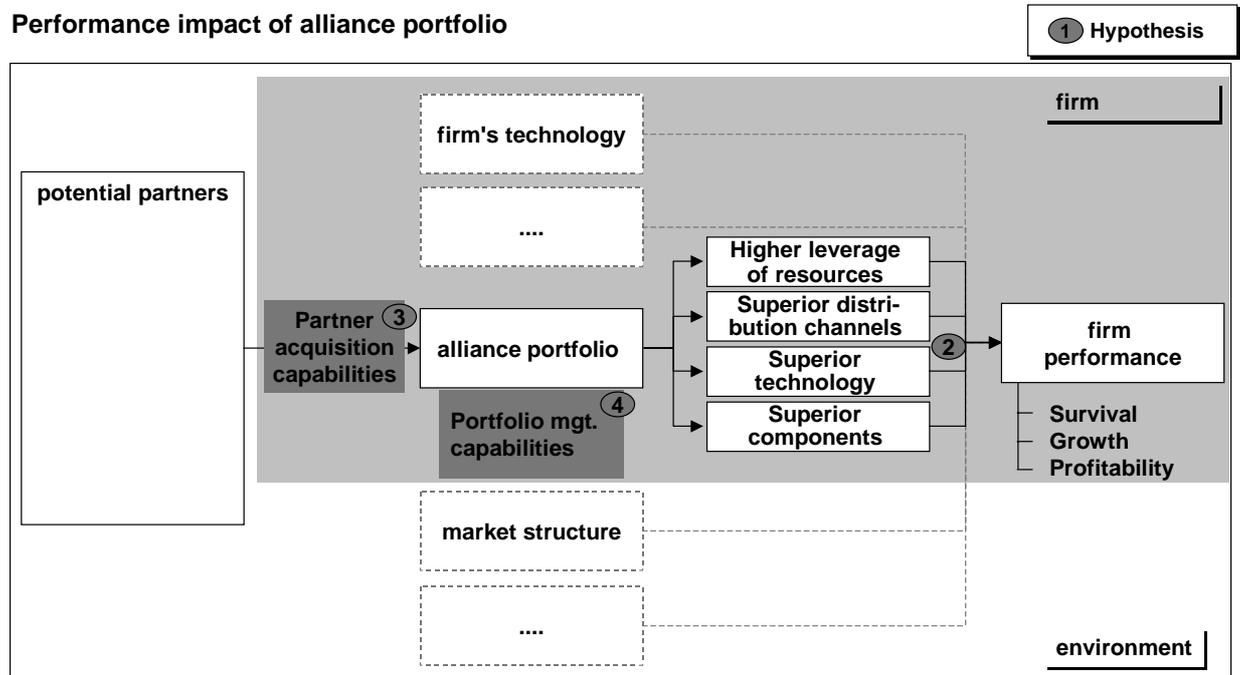


Figure 58 Hypothesis 2, 3, and 4

Therefore, the alliance portfolio efficiency depends on, first, how well the alliance portfolio structure can be adjusted according to resource needs by partner acquisition and, second, by partner management activities. These relations are formulated in the next two hypotheses.

Tentative hypothesis 3: *The better the partner acquisition capabilities, the faster alliance portfolio structures can be established and adjusted; thereby its efficiency is increased.*

Tentative hypothesis 4: *The better the portfolio management capabilities, the better the alliance portfolio efficiency because they (1) allow for intensified resource exchange and (2) eliminate alliance portfolio inefficiencies.*

The following ten hypotheses describe alliance formation and alliance management capabilities in greater detail.

Partner acquisition skills

The quality of partner acquisition skills depend on the strategic skills to select the best partner, the networking skills to contact the relevant partner, and the contracting skills to structure partnership deals. The important factors are depicted in figure 59.

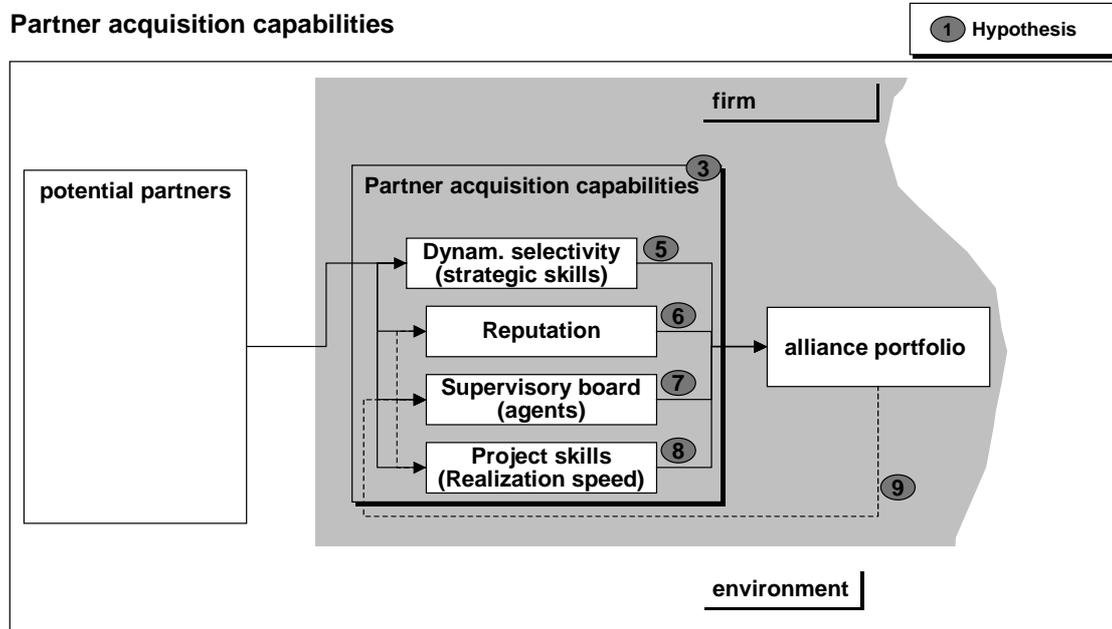


Figure 59 Hypothesis 5 to 9

The specific drivers influencing alliance formation skills are subsequently formulated in hypotheses 5 through 9.

Tentative hypothesis 5: *The better the ability to develop alliance concepts and select appropriate partners, the better the partner acquisition capabilities.*

Tentative hypothesis 6: *The better the firm's reputation, the better the partner acquisition capabilities.*

Tentative hypothesis 7: *The better the directorates (i.e., higher profile) and closely related agents, the better the partner acquisition capabilities.*

Tentative hypothesis 8: *The better the alliance project skills that are dependent on the alliance portfolio, the better the partner acquisition capabilities (reinforcing mechanism).*

Tentative hypothesis 9: *The better the existing alliance portfolio and the more diverse the alliance history, the better the partner acquisition capabilities due to (1) better alliance opportunities, (2) better reputation (outside effects), and (3) better project skills (interior effect).*

Alliance portfolio management

The quality of alliance portfolio management depends on how good resources can be exchanged, how effectively abuse of management capacities can be reduced, and how fast inefficient alliances are terminated. The important factors are depicted in figure 60.

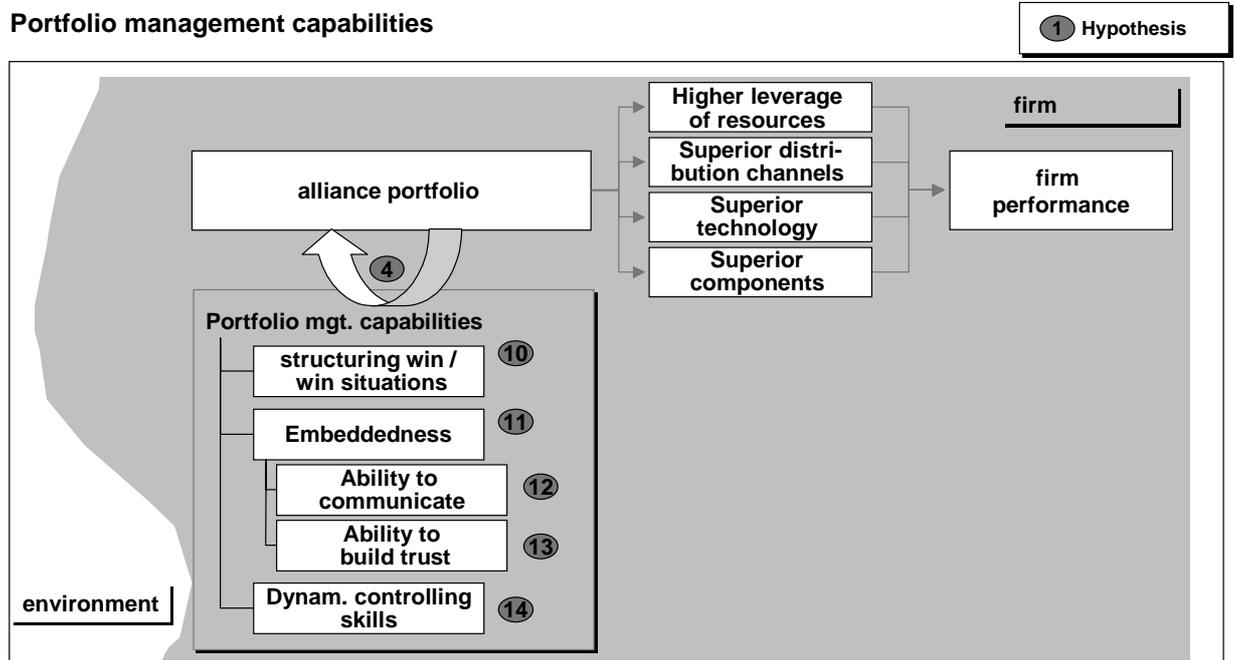


Figure 60 Hypothesis 10 to 14

The specific drivers influencing alliance management capabilities are subsequently formulated in hypotheses 10 through 14.

Tentative hypothesis 10: *The better the ability to adjust partnerships to maintain win-win situations, which requires flexible alliance contracts, the better the partner management capabilities.*

Tentative hypothesis 11: *The better the ability to embed partnership ties, the better resources can be exchanged and the more stable partnership links will be. Therefore, the better the ability to embed partnership ties as part of alliance management capabilities, the better the alliance portfolio efficiency.*

Tentative hypothesis 12: *The better the ability to communicate, the better the ability to embed partnership ties.*

Tentative hypothesis 13: *The better the ability to build trust, the better the ability to embed partnership ties.*

Tentative hypothesis 14: *The more tightly the ability to control partnerships according dynamic corporate goals, the better the portfolio management capabilities.*

These 13 hypotheses (2 through 14) describe and cover the influence of alliance portfolios on firm performance. The next set of hypotheses takes up the relationships between performance, organizational change, and resource requirements.

Performance impact on resource requirements

Resources are important for competitive advantage and performance. Thereby, it is not only the firm's controlled resources that are important, but also the resources accessed through alliances. Efficient access particularly to these external resources leads to higher performance of NTBFs. Sustainable high performance leads to competitive advantage, which is formulated in hypotheses 15 and 16.

Tentative hypothesis 15: *The more effectively a NTBF accesses rare sustainable inimitable non-substitutable resources through the alliance portfolio, the better the company's performance and, therefore, the higher its competitive advantage.*

Tentative hypothesis 16: *The better a NTBF is capable of rearranging its alliance portfolio according changing resource requirements (dynamic capability), the better the company's performance and, therefore, the higher its competitive advantage.*

Competitive advantage leads to faster growth. This growth runs smoothly for longer periods of time, but then creates organizational problems that then have to be resolved by changing the organizational system. New organizational structures define new organizational development stages. Hypotheses 17 and 18 cover this issue.

Tentative hypothesis 17: *The higher the competitive advantage the faster the organizational growth, which happens step-wise.*

Tentative hypothesis 18: *New development stages are characterized by new challenges and problems that create additional resource requirements. The problems shift from reputation and technology issues in the beginning, to supply questions, and to distribution and market access problems.*

Therefore, the step-wise organizational changes create new strategic problems and changing resource requirements, which must be managed and abided by. The impact of changing resource requirements on alliance portfolios and the required capabilities to manage those are covered by the last set of hypotheses.

Resource requirements' impact on alliance portfolio shifts

Shifts in resource requirements lead to shifts in alliance portfolio structure and thus influence the network dynamic. Dynamic capabilities are required to facilitate the structural alliance portfolio shifts.

Tentative hypothesis 19: *Shifts in resource requirements lead to changes in alliance portfolios. This is facilitated and enabled through allying capabilities, which is a dynamic skill.*

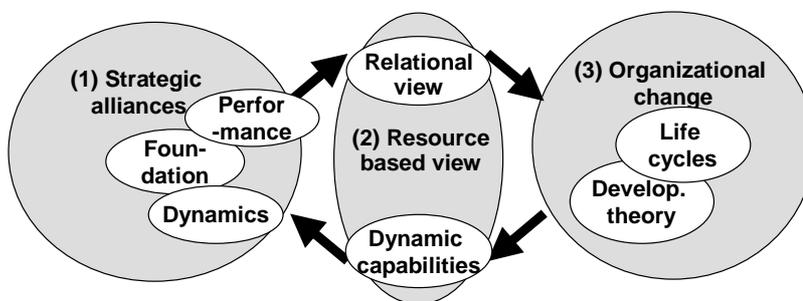
These hypotheses are the result of exploratory case-based research. At this point, the hypotheses are interrelated and specific to the emerging Mobile Internet industry. Therefore, they are not yet applicable for large-sample empirical testing. They are in need of further refinement. This refinement is achieved by examining the relevant literature. In the following chapter the case study findings are examined in the context of the literature on network dynamics, organizational development, and network management with the aim to develop an extension of the theory on network dynamics.

4. Theoretical perspectives on alliance portfolios and organizational coevolution

This chapter aims to refine the findings from the case studies. It does not constitute a break from the previous chapter but rather represents a continuation of the process of the case study research and corresponds to the step ‘enfolding literature’ in Eisenhardt’s approach (1989). As pointed out in the discussion of the methodological foundations of this study (chapter 2.2), case descriptions and analyses should ideally be theory free, allowing the researcher to capture the richness of the cases without bias⁷⁷. Only after tentative hypotheses have been derived from cases, should theory be enfolded (Eisenhardt, 1989). It is an essential component of case-based hypothesis formation and theory extension that the tentative hypothesis be juxtaposed with conflicting and similar theoretical findings. Thus, the tentative hypotheses can be challenged, corroborated, and eventually refined in such a way that together they serve as an extension to theory (Zaby, 1999)—that is, in this study, an extension of the dynamics of networks and their interplay with organizational change.

The literature to be incorporated and considered in the context of the case study results consists of a broad body of theoretical writings in (1) the field of alliance and network theory, (2) resource-, skill- and capability-based concepts of strategic management, and (3) organizational change theory. The latter two are well-established fields. In contrast, in network theory, much is still unknown about the dynamics of network changes (Gulati, 1998). In addition, studies rarely associated all three fields with each other. This study addresses an argument that links these fields by assessing the impact of strategic alliances on competitive advantage and organizational change and the implication of this change on alliance portfolio dynamics (see figure 61).

Field of relevant theories



Source: Author

Figure 61 Relevant theories

⁷⁷ Thereby, theory-free refers to having no theoretical framework or pre-formulated hypotheses in mind.

Section 4.1 analyzes the case findings in the context of alliance and network theories. In a first step, NTBFs' motives to build alliance networks and their performance implications are highlighted. Consequently, several of the most interesting aspects of network theory are discussed, including approaches that focus on the process of alliance formation and alliance management. A discussion of the dynamic aspects of alliance networks concludes this section.

Section 4.2 addresses how and why resources and capabilities are important factors for determining strategic competitive advantages. This section will be concluded by an outlook on how these resources and capabilities are affected by dynamic changes in the industry setting.

Finally, section 4.3 presents views on how life cycle models capture and frame the idea of organizational change and how they may likewise offer support for the constant reallocation and reconfiguration of resources, which will again force the organization to adapt to its environment through adjusted network structures. In all three sections, the discussion is restricted to the most prominent theoretical approaches due to the broadness of the disciplines.

This thesis culminates in chapter 5—the conclusion on co-evolution relationship between an NTBF's alliance portfolio and organization—toward which the entire fourth chapter works. The final chapter of this study ties together the case study results and the discussion of the three theoretical areas. In doing so, a model is proposed that attempts to explain the dynamic of networks and organizations and their reciprocal interferences. The model thus suggests an extension of the theory on network dynamics. In Yin's (1984, p.21) terminology, this inductively generated model, which is the result of case-based 'analytical generalization', will serve as a basis for future large sample 'statistical generalization' of the co-evolution aspects of NTBFs organization and network.

4.1 Alliance networks

The field of alliance and network theory has become increasingly popular in the last 15 years. The growing intensity of alliances in many industries (see Hagedoorn, 1993), which Doz and Hamel (1998) explain as a logical and timely response to intense and rapid changes in economic activity, technology, and globalization, has attracted many scholars. Both Auster (1994) and Gulati (1998) gave comprehensive summaries of the current status of research in this field. In the current literature, six different topics can be identified, four of which are concerned with the sequence of events in alliances and networks (their formation,

governance, management, and dynamics) and two of which are concerned with performance outcomes (for the alliance or network itself and for the participating firms). All six topics can be analyzed on an alliance level (dyad or triad) or on a network level. The structure of these different lines of research is depicted in figure 62.

Alliance and network literature

		Alliance / network sequence				Performance	
		Formation	Governance	Management	Dynamics	of alliances or networks	consequences for firms
Unit of analysis	Network						
	Alliance						

Source: Author based on Gulati (1998)

Figure 62 Alliance and network theory

Out of these twelve research areas, five are relevant to this study. The literature on performance consequences for firms entering those networks is important for discussing the impact of alliance portfolios on the performance of the case study firms and to understand firms' motives to enter those alliances (tentative hypothesis 2). The performance depends on alliance portfolio effectiveness⁷⁸, which is influenced by two factors: partner acquisition skills and alliance portfolio management skills. Therefore, the literature on alliance formation is required to discuss hypotheses concerned with partner acquisition (tentative hypotheses 3 and 5 to 9); the literature on alliance and network management is relevant for discussing the hypotheses on management skills (tentative hypotheses 4 and 10 to 14). The impact of shifts in resource requirements on the structure of alliance portfolios will be discussed in the context of the literature on network dynamics (tentative hypothesis 19).

To organize the discussion according the sequence of the hypotheses, this chapter has the following structure. After defining the relevant terminology and listing basic theoretical concepts, the first part discusses the implications of alliance networks on performance. The two subsequent sections cover alliance formation and network and alliance management topics including their dynamics. This chapter closes with a conclusion on the applicability of current alliance and network literature.

⁷⁸ An efficient alliance portfolio is one that provides access to more diverse information and capabilities per alliance, and thus produce desired benefits with minimum costs of redundancy, conflict, and complexity (Baum, et al., 2000)

4.1.1 Terminology and basic theoretical concepts

The rich line of research addressing alliances and network has created a plurality of definitions and theories. For the purpose of this study, a broad definition of **alliances** provided, for example, by Gomes-Casseres (1997) and Gulati (1998) is very useful, as it encompasses the diverse variety of alliances⁷⁹ that is present in the Mobile Internet industry. According to this definition⁸⁰:

‘... an alliance is an administrative arrangement to govern an incomplete contract between separate firms in which each partner has limited control. These arrangements can take different forms—from joint ventures, to joint R&D programs, to cooperative marketing arrangements—but each aims to govern joint decision making among partners’ (Gomes-Casseres, 1997).

Alliances blur the boundaries of firms, making it difficult to discern where one firm ends and where another—or the market—begins. Alliances do this because they are organizational structures that combine features of both firms (hierarchies) and markets.

An inter-firm (alliance) **network** is conceived and defined as a set of firms, generally characterized by different preferences and resources, coordinated through a mix of mechanisms not limited to price, exit, and background regulation (Grandori, 1999). Therefore, a network is a set of alliances linking together more than two companies.

In this study, the case study firms did not establish tightly knit networks, but either participated through links in different networks or had dyadic alliances to different firms. Therefore, terms such as a ‘set of alliances’ or an ‘**alliance portfolio**’ best characterize the kind of low-density⁸¹ alliance network with many structural holes⁸² that are analyzed in this study. Furthermore, other scholars such as Bamford (2002) and Stuart (2000) also used the

⁷⁹ The term ‘strategic alliance’ subsumes different collaboration forms, ranging from joint ventures, and cooperations with minority stakes, to arm’s length distribution partnerships (compare Mowery, et al., 1996, p. 80).

⁸⁰ Gulati’s (1998) definition is very similar. He defines strategic alliances as voluntary arrangements between firms involving exchange, sharing, or co-development of products, technologies, or services. They can occur as a result of a wide range of motives and goals, take a variety of forms, and occur across vertical and horizontal boundaries.

⁸¹ Density of a network refers to the extensiveness of ties between organizations, and is measured by comparing the total number of ties present to the potential number that would occur if every unit in the network were connected to every other unit (Dubini, et al., 1991)

⁸² For structural holes see Burt (1992)

term alliance portfolio to describe this kind of alliance network found especially in high technology industries.

Of the proposed theories concerning alliances and networks, three basic approaches constitute its theoretical foundation (Ireland, et al., 2002): (1) transaction cost economics (TCE), (2) social network theory, and (3) the resource-based view on alliances or the resource dependency theory.

(1) The **TCE** argument suggests that alliances are more efficient than markets or hierarchies when they minimize the firm's transaction costs (Jarillo, 1989). Thus, successful alliances are a product of the organization of a firm's boundary-spanning activities to minimize the sum of its transaction and production costs (Williamson, 1981).

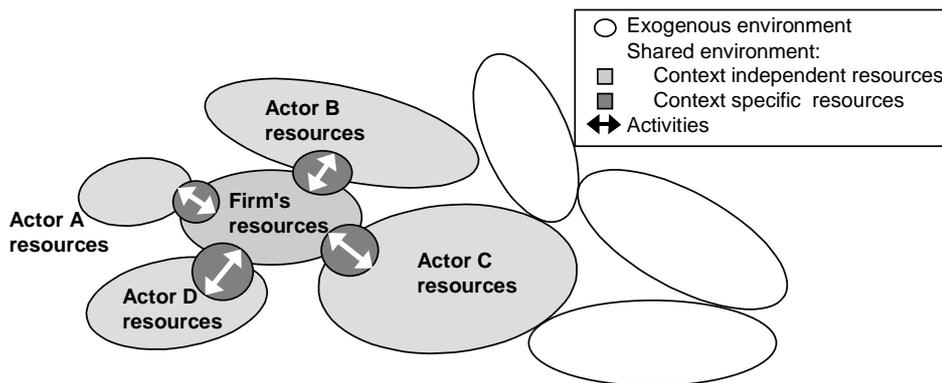
(1) **Social network theory** suggests that the firm's strategic actions are affected by the social context in which the actions and the firm are embedded (Burt, 1997). The firm's social context includes both direct and indirect ties with network actors. The context includes both inter-organizational and intra-organizational resource relationships (Madhok, et al., 1998).

(3) The **resource-based perspective** suggests that the firm is a collection of heterogeneous resources (tangible and intangible assets that are semi-permanently tied to the company). Sustained resource heterogeneity is a potential source of competitive advantage (Das, et al., 2000). The resource-based alliance argument suggests that firms use alliances to locate the optimal resource configuration in which the value of their resources is maximized relative to other possible combinations (Das, et al., 2000). Thus, alliances are used to develop a collection of value-creating resources—often complementary ones—that a firm cannot create independently.

Closely linked to the resource-based view on alliances is **resource dependency theory** (Pfeffer, et al., 1978), which builds on the exchange perspective. It suggests that organizations enter partnerships when they perceive critical strategic interdependence with other organizations in their environment, in which one organization has resources or capabilities that are beneficial to but not possessed by others. Applied to the dyadic context, these arguments suggest that firms sought out ties with partners who could help them manage such strategic interdependencies. This proposes the necessity for complementary resources as a key driver of inter-organizational cooperation. The strategic interdependence perspective on alliance formation suggests that firms ally with those with whom they share the greatest interdependence (Nohria, et al., 1991).

These theories will be used to analyze and understand the impact of an alliance portfolio on performance, its formation, its management, and its dynamics in the next sections. This alliance perspective is important because the traditional body of entrepreneurship research has considered NTBFs in relative isolation from their environment (Roberts, 1991; Slatter, 1992). In this tradition the interrelatedness of NTBFs and the other actors in their environment tended to be overlooked. Research has focused extensively on the direct organic growth of the firm.

The firm's context specific and context independent resources



Source: Author, based on Rizzoni (1993), Yli-Renko and Autio (1998)

Figure 63 Relevant resource scope

The catalyzing impact for NTBFs, delivered through technology interactions in innovation networks or co-development partnership with large clients, has not received the attention it deserves (Yli-Renko, et al., 1998). Many entrepreneurship models are too narrow because they enclose only a subset of a firm's relevant resources—namely its own. However, for its strategic development, its shared environment (external resources) plays a significant role. Recent empirical papers (i.e., Baum, et al., 2000) and industry reports (Booz Allen Hamilton, 2001b) clearly show evidence of the impact of strategic alliances on NTBFs' performance.

4.1.2 Alliance motives and network performance consequences

A common characteristic of NTBFs is fast growth. A common problem for their managers is obtaining enough resources to accommodate that growth. Gaining access to those resources becomes the 'first' entrepreneurial problem (Jarillo, 1989). Networking is a way to overcome this problem. Networking is a system by which NTBFs can tap resources that are external to them—that is, resources that they do not control. Networking consists of the use of relationships to obtain financing, access to distribution channels, and know-how, as

examples. (Birley, 1986). The ability to exploit resources that are outside the entrepreneur's control is a constant of entrepreneurial, high-growth management. Many scholars such as Jarillo (1989) view the essence of entrepreneurship precisely in the ability and willingness to use external resources. NTBFs use external resources when they try to grow faster than the limits set by resources they currently control.

On its own initiative, a firm identifies the need for an alliance, identifies the best partner available, and chooses an appropriate contract to formalize the alliance. Strategic alliances arise when firms in vulnerable strategic positions need resources that alliances can provide (Eisenhardt, et al., 1996). This highlights the importance of vulnerable strategic positions (i.e., new markets, many competitors, and pioneering technology) in analyzing alliances, especially in an entrepreneurial context. This is precisely the motivating issues for this study, which asks in an industry specific, entrepreneurial context: what is the effect of alliances and networks on the performance of firms entering into them?

Analyzing case study results in context of the relevant literature

As seen in the case studies, firm performance, as measured in terms of growth, profitability, and technological innovation, is affected by alliance activities in four ways. As formulated in tentative hypothesis #2: *The better the firm can (1) leverage its resources, (2) access superior distribution channels, (3) access external product and service technologies, and (4) access superior supply via alliances, the better the company performs in terms of (a) growth, (b) profitability, and (c) technological innovation.*

Performance outcomes and the relevant levers, the two aspects of this hypothesis, will now be discussed.

Performance outcomes

Different scholars have contributed to the body of literature on performance outcomes of alliances and networks (i.e., Baum, et al., 2000; Jarillo, 1989; Stuart, 2000). Various dependent variables have been applied as measures of performance. The most commonly applied are also measured in this study: (a) growth, (b) profitability, and (c) technological innovation. The relevant empirical findings are discussed subsequently.

Growth: As one of the earliest studies on alliances, Jarillo's (1989) work showed statistical support that entrepreneurial firms that engaged in especially intensive alliance activities show significantly higher growth rates. In his sample of 1902 publicly-traded US companies, the group with intensive alliance activities accounted for a 64% higher sales growth (Jarillo, 1989, p. 145).

Other scholars have found similar connections, such as Powell and colleagues (1996), who studied a sample of young firms in the biotechnology industry. In their sample, the companies that formed many alliances experienced accelerated growth rates. Stuart (2000) in an analysis of 1600 alliances of 150 semiconductor firms found that sales growth rates were linked to the quality of the alliance portfolio. In contrast, the simple count of the number of alliances formed was not a significant predictor in his model, which supports this study in accounting for different alliance intensities.

All these studies are consistent in that alliances accelerate ventures' growth in terms of sales. Therefore, growth is a viable performance outcome of alliances.

Profitability: P&L profitability is an often mentioned performance outcome. Unfortunately it is rarely measured and has only been supported by an early study by Eisenhardt and Schoonhoven (1990). They examined 96 newly-founded US semiconductor firms. Past experience of the top management team and their associated networks impacted not only growth but also long-term profitability.

There are different potential reasons why there is only limited evidence for the implications of alliance networks on profitability. The three most obvious are (1) limited data accessibility, (2) measurement problems, and (3) limited suitability as performance measures through their short-term focus. (1) P&L data from entrepreneurial firms is often hard to access because these often privately held organizations are reluctant to report these figures. (2) Measurement problems exist due to the fact that it is nearly impossible to measure, whether *ceteris paribus* the formation of an alliance or a change in the portfolio makes the portfolio more efficient and, thereby, creates competitive advantage for an individual firm. There are three major problems, which have not yet been addressed:

- How to measure alliance portfolio effectiveness.
- How to compare alliance portfolio effectiveness of different organizations.
- How to account for the fact, that low performers often lack more resources, which force them to build additional alliances. Therefore, alliance intensity of weak performers might be higher than of high performers due to their resource configuration, which distorts many statistical results.

More case-based research is needed to completely understand the relationship between alliances and profitability, and to statistically demonstrate this effect. This study is an attempt to shed light on this relationship.

Finally, (3) P&L profitability is often not suitable because it is a short-term measure. It is not capable of indicating the mid-term perspective of growing NTBFs. In Biotechnology in

particular, where the first revenues are earned years after the foundation, P&L profitability is not applicable for measuring performance.

On the other hand, recent years have shown that even NTBFs have to focus on the bottom line, which is clearly the case for all of the case study firms. Therefore, this study tries to provide additional insight into the link between alliance portfolio effectiveness and P&L.

Technological innovation: Relatively more is known about the impact of alliance networks on technological innovation. Shan and his colleagues (1994) showed that cumulative cooperative ties with commercial firms that were established by 85 US biopharmaceutical startups between their foundation and 1989 positively influenced their cumulated output (patents issued) over the same period. Mowery, Oxley, and Silverman (1996) and Hagedoorn and Schakenraad (1994) had similar findings. They explained high patenting activities and performance were a consequence of technology alliances and demonstrated a positive relationship between entry into these technology alliances and innovation rates.

Baum and colleagues (2000) examined the performance implications of 142 biotechnology firms founded in Canada during the six-year period from January 1991 to December 1996. He found that innovative performance, reflected in startup's patenting and R&D spending growth, was most clearly and strongly influenced by their alliances. The stronger impact on innovation-related performance is consistent with the widely-held belief that alliance networks form a locus of innovation in high-technology fields (Powell, et al., 1996).

Stuart (2000) in an analysis of the alliances of 150 semiconductor companies asked whether alliance partners have an impact on firm's rate of innovation in general. In his study, he offered additional evidence to confirm the prevalent assumption that strategic alliances can improve the innovation rate. In his patent rate analysis, the results demonstrated that the important determinants of the strength of the alliance-performance link are the attribute profiles of the firms and the intensity of the link, not the count of alliances or the accumulated number of previous alliances.

These studies show consistently that alliance networks—and specifically their effectiveness—strongly influence technological innovation.

In conclusion, all three dependent variables used as performance measures in chapters 3.2 through 3.4 have been previously applied and their use supported in the literature. In contrast, the impact of alliances on venture's profitability requires further case study research to better understand this relationship. In addition, Baum and Oliver (1991) and others discussed survival as another performance outcome. They examined the relationship

between the extent to which firms are embedded⁸³ in alliances and the likelihood of their survival. The results of these studies suggest that alliance network ties are generally beneficial in enhancing survival chances (Baum, et al., 1991; Uzzi, 1996). However, because the firms in this study cannot be discriminated according this criterion—all have survived so far—it is not discussed further.

Alliance and network levers on performance

Several scholars have focused on the question of what precisely are the levers of alliances and networks on performance (i.e., Eisenhardt, et al., 1996; Hagedoorn, 1993; Williamson, 1981). The principal theoretical approach for understanding these implications is transaction cost economics (Williamson, 1981). However, the logic of transaction cost minimization does not capture all of the strategic advantages of alliances, such as creation of legitimacy and fast market entry (Eisenhardt, et al., 1996). It is too specific to explain the whole variety of alliance levers, especially the non-financial ones. A broader and more recent body of literature has shown that alliances—besides their (4) sourcing advantages—can also lead to advantages concerning access to (1+2) superior distribution as well as (3) technological know-how and legitimacy:

Distribution: Alliances can help firms to gain market power (Hagedoorn, 1993), move quickly into new markets, and create options for future investments (Kogut, 1991). Market power can be improved either because (1) the alliance partner is a customer for the product or because (2) the distribution channel and selling power of the partners can be used or combined (Eisenhardt, et al., 1996).

Almost all case study firms pursue both approaches. An example of a close customer relationship is *Multicharts'* cooperation with *Sparda Bank*, in which it developed a web-based prototype *Aktiensignale* from its DOS-based brokerage tool *Multichart 2000*. A good case example for accessing external distribution channels and selling power is *Gate5's* project, in which it aims to integrate its technology into a module of *SAP's* ERP system to benefit from *SAP's* marketing and distribution power.

The literature summarizes firm' motives for forming distribution alliances into two clusters: (a) internationalization, globalization, and entry into foreign markets and (b) new products and markets, market entry, and expansion of product range. The second category (b) is critical for the NTBFs in this study (see Hagedoorn (1993, p. 373) for a list of recent studies).

⁸³ A detailed discussion on embeddedness follows after the next section

Both TCE and resource dependency arguments can explain case study behavior. As in the case of *Gate5*, the distribution partnerships with *SAP* is cost efficient. Its products, which are based on new technology, are not ready for standardized mass-markets and establishing a big sales force to distribute them to corporate clients is too time consuming and expensive. Using *SAP*'s sales and marketing power is therefore explained by the TCE framework. However, *Gate5*'s behavior can also be explained by resource dependency theory. Being strong in technological development, *Gate5* contracted with *SAP* because it has excellent complementary distribution skills to sell its technology.

Know-how and legitimacy: Alliances can also serve as opportunities for gaining new competencies (Hagedoorn, 1993) and as signals of enhanced legitimacy for firms (Baum, et al., 1991). The close interfirm relationships within alliances can provide specific technology and know-how-based resources (Shan, 1990). In addition, cooperating with another organization can give a firm visibility and signal enhanced status to would-be buyers, suppliers, and employees (Baum, et al., 1991).

In the case of new high technology industries, these two factors are often difficult to separate, because established technology leaders are usually widely reputed and capable of transferring legitimacy. A case example is *Nokia*'s developer program, which was joined by a number of case study, firms such as *Yellowmap* and *e-hotel*. On the one hand, firms access know-how of new technological standards; on the other hand, the partnership with *Nokia* signals legitimacy to network operators in particular.

However, not all technology or know-how partnerships have this legitimacy aspect. *Gate5*'s cooperation with *Location.net*⁸⁴ and *Airweb*'s partnership with *Dialogic*⁸⁵ are purely driven by the desire to access technology. These partnerships are often formed later in the lifecycle, whereas partnerships formed for primarily reputational purposes, such as those with *Siemens*, *Nokia*, and *Alcatel*, were created in the first two stages.

The literature summarizes companies' motives for forming technology alliances, in two clusters: (1) shortening the product life cycle by reducing the period between invention and market introduction, and (2) technology transfer and technological leapfrogging. The focus of the case study firms is mainly on the first category (see, Hagedoorn, 1993, p. 373) for a list of relevant studies). Through the support of technology partners, they try to focus on their core technology, a phenomenon Nakamura (1996) called 'complementary

⁸⁴ *Location.net* offers mapping technology

⁸⁵ *Dialogic* offers text to speech software

specialization'. Thereby the firms close the gap between whole product and product⁸⁶ with the help of alliance partners.

Social network theory offers a good explanation for how alliance partners can provide legitimacy. The close embeddedness with the partner enables the transfer of trust from the well-regarded partner to the NTBF. Such partnerships correspond to a quality certificate (Stuart, 2000).

Resource dependency theory offers an explanation for the motivation behind pure technology partnerships. Required complementary resources motivate these alliances, such as in the case of *Airweb*. *Airweb* requires the complementary resource 'text to speech software'. Aside from its content base and its multi-access mobile platform, this software is a critical element for offering the whole product: mobile speech services. This requirement drove the above-mentioned partnership with *Dialogic*.

Sourcing: Establishing strategic alliances is a central strategy for NTBFs for sourcing resources and sharing risks. This risk and cost sharing eases profit pressures and gives partners the slack they need to ride out difficult times and to learn better ways to compete (Baum, et al., 1991). Kogut (1991) further refined the importance of these resource considerations by suggesting that many alliances and joint ventures occur as options for future expansion and are interim mechanisms by which firms both buffer and explore uncertainty.

The work of Baum and Kogut has two common denominators with respect to when: sourcing partnerships are formed when they are (1) cost efficient or (2) risk reducing. The second aspect is especially important in industries such as pharmaceuticals, telecommunications and commercial aircraft, where capital requirements for development projects are so high that firms need to spread the costs and risks of innovation (Mowery, et al., 1996).

Both of these aspects can be found in the case data. An example of cost effectiveness is *e-hotel's* access to discounted hotel room contingents through its alliance with *INNXS*. This cooperation reduces dramatically its costs to access cheaper hotel fares. An example of risk reduction is *Airweb's* joint mobile content activities with *L'équipe* and *Rheinische Post*, which reduce its own editorial costs as well as its market risks, because the partnership contracts enclose minimum fixed payments for its co-branded information services.

⁸⁶ The distinction between product (firm's own value creation) and whole product (sold product bundle) is explained in chapter 3.2 *Gate5*

In addition to these two reasons, the case study data show a third sourcing alliance motive. Certain resources can only be obtained through a partnership agreement. For this kind of resource, no markets exist, and developing these resources in-house would either financially overstrain the firms or would be simply impossible. Good examples of this third aspect is the sourcing alliance for access to stock quote data from *Deutsche Börse* in the case of *Multichart*, and for access to *Schober's* business address database including regularly updates in the case of *YellowMap*.

All of these sourcing alliances are vehicles for accessing resources rather than for acquiring capabilities; learning is not crucial.

As in the case of distribution motivation, TCE as well as resource dependency argument can explain case study behavior. Cost advantages are best explained with transaction cost economics arguments, yet the sourcing from otherwise not available resources is accounted for by resource dependency theory.

Despite studies that contradict certain performance and motivation aspects, such as Hagedoorn's (1993, p. 381) denial of the relevance of sourcing partnerships for NTBFs, hypothesis #2 is strongly supported by the literature. The resource dependency theory (Pfeffer, et al., 1978) is particularly helpful for understanding the underlying motivation behind the case study alliances (i.e., by answering the question **why** these alliances exist). This finding is in line with the results of Stuart and colleagues (1999), which suggest that NTBFs should actively seek exchange partners. In their articles, they concluded with the following relevant remark:

'...the interesting question is the conditions under which they [NTBFs] will succeed at recruiting such partners. It would greatly improve our knowledge of the organization-building process to understand these relationships' (Stuart, et al., 1999, p. 347)

This is precisely the question that is tackled in the next section, which discusses the following questions: **How** these alliances are formed? Which factors and skills facilitate and ease their formation? **How** do firm attract and acquire partners?

4.1.3 Partner acquisition

Partner acquisition is discussed in literature under the description of alliance formation, for which different scholars have discussed reasons. Kogut (1988) mentions three motivations: transaction costs resulting from small numbers bargaining, strategic behavior that lead firms

to try to enhance their competitive positioning or market power, and a quest for organizational knowledge or learning. These points have been discussed in the preceding section in the discussion of the question of why firms form alliances, and what their performance implications are.

A set of studies on alliance formation focused on the question of how firms build alliances. Scholars examined some additional factors linked with alliance formation. Industry-level aspects included development stages of markets and competitive uncertainty (Eisenhardt, et al., 1996; Shan, 1990). Social network aspects included the importance of social capital (Burt, 1997). Although industry-level aspects cannot be tested with this single industry study, the impact of social capital is of particular relevance.

Ireland, Hitt, and Vaidyanath (2002) summarized the recent stream of research and organized 49 empirical papers according their theoretical rationales. A subset explains how alliance portfolio effectiveness depends on how well the alliance portfolio structure can be adjusted according to resource needs. Different scholars (i.e., Chung, et al., 2000; Gulati, 1999; Hitt, et al., 2000) have suggested partner acquisition skills as an important factor for the effectiveness of alliance portfolios.

Analyzing case study results in the context of the relevant literature

In the case studies, alliance portfolio effectiveness, described as the cost efficient compliance of resources provided by alliance partners with the time and stage dependent resource requirements, is affected by partner acquisition skills. These skills enable the firm to adjust the portfolio by acquiring new partners with critical resources. This context is formulated in tentative hypothesis #3 and the sub-hypotheses #5 through #9. Tentative hypothesis #3 proposes: *The better the partner acquisition capabilities, the faster alliance portfolio structures can be established and adjusted; thereby its effectiveness is increased.* This is in line with the above-mentioned literature (Chung, et al., 2000; Gulati, 1999; Hitt, et al., 2000).

As argued in the case study conclusion (chapter 3.5), partner acquisition skills depend on (1) the strategic skills to select the best partner, (2) the networking skills to contact and win relevant partners (influenced by reputation and interlocking directorates), (3) the project skills to structure partnership and to realize the deals, and (4) the alliance history, which influences alliance opportunities, the company's reputation, and its project realization skills. These points are discussed subsequently.

Partner selection

As formulated in tentative hypothesis #5, the case study results suggest that: *The better the ability to select fitting partners, the better the partner acquisition capabilities.*

This finding is in line with results of other scholars (i.e., Johannisson, 1987; MacMillan, 1983; Reuer, 1999). Reuer (1999) pointed out that deriving value from alliances requires companies to select the right partners and develop a suitable alliance design. Johannisson (1987) showed that effective entrepreneurs are able to chart their present network and to discriminate between production and symbolic ties, both of which demand selection skills. MacMillan (1983) found evidence that effective entrepreneurs were able to view effective networks as a crucial aspect for ensuring the success of their company. This implies that partner selection (an aspect of networking) is a strategic capability that consists of different dimensions—considered at present—relevant for success: some examples are attention to customers, understanding of the business, and market orientation.

From a theoretical perspective, partner selection skills are an important aspect of the resource dependency theory, which attends to the circumstances surrounding alliance formation (Pfeffer, et al., 1978). According this theory, organizations enter partnerships when they perceive critical strategic interdependence with other organizations in their environment, in which one organization has resources or capabilities beneficial to but not possessed by the other. The resource dependency arguments suggest that firms sought out ties with partners who could help them manage such strategic interdependencies (Oliver, 1990). The assessment of strategic interdependence is a critical predecessor to alliance formation. Therefore, strategic partner selection skills are crucial for the resource dependency theory. This hypothesis was empirically supported by Hitt and colleagues (2000), who found that complementary capabilities represented one of the most important criteria used to select strategic alliance partners. In particular, firms search for partners who have specialized resources that are not readily available from others (Stuart, 2000).

A good example of strategic selection capability is *Gate5's* alliance strategy process, as formulated by its CEO:

'Our alliance strategy is directly derived form our corporate strategy. We have three partnership types, and all partnerships are concerned with delivering the "whole product". We form content partnerships, distribution and co-development partnerships and technology partnerships. We do this, because we cannot cover the whole value chain and the whole technology stack. We have picked critical steps we will always cover in-house. ...

We use selective technology partnerships to reduce our real net output ratio under the condition to protect our product differentiation. Analyzing core technologies, our platform comprises location, mapping, routing, navigation, billing, communicating, messaging, and content management. Billing and messaging is technologically not challenging and clearly not our core competency that we could use to differentiate our product. For both technologies, we have built up partnerships ...

When we have found companies capable of providing this technology, we work out an overlap matrix concerning functions, applications, and clients. This matrix tells if the firm is complementary to us, or if we overlap too much.' (Michael Halbherr, CEO Gate5, 2002)

Improper partner selection, the failure of the emergence of anticipated synergies, and variances in expectations about the value that can be created make alliance management difficult later on as do asymmetric alliance objectives and an expectation of learning through private benefits. This becomes obvious in the case of *ApollisInteractive*, which does not work out clear alliance concepts and is very opportunistic in their alliance formation. Its alliance activities are clearly less successful compared to its competition.

In conclusion, other research studies, conceptual considerations of the resource dependency theory, and the case study findings underscore the importance of strategic partner selection for efficient alliance portfolios.

Once specific partners are selected, the next step in the alliance formation process is to find ways to approach them.

Partner access

The case studies' results suggest that two factors primarily influence the accessibility of potential partners: the firm's reputation and the quality of its directorates (agents). The reputation aspect has been formulated in tentative hypothesis #6: *The better the firm's reputation, the better the partner acquisition capabilities.*

Reputation effects have been studied by different scholars in the field of sociology and economics (i.e., Podolny, 1994; Spence, 1974). A corporate reputation is a set of attributes that observers perceive to characterize a firm (Stuart, 2000). Podolny (1994) found evidence that the better this reputation, the wider the organization's access to a variety of sources of knowledge, and the higher its collaborative attractiveness. Strong social positions lead to alliance formation because high status and reputation signal the quality of the firm and attract partners who want to associate with high-status others (Podolny, 1994).

The signaling properties of status are particularly important in uncertain environments, where the attractiveness of a potential partner can be gauged from its status. That is why these signaling effects are so important for NTBFs in young industries. These effects are summarized and discussed in the signaling literature in economics (Spence, 1974).

Evidence for reputation effects can be found in almost all case studies, as exemplified by a statement from *e-hotel's* CEO:

'Meanwhile we are established. When we call and ask for an appointment we get it, and more and more companies call and ask, if we want to do a project together. This was completely different in the beginning, but we reliably realized our projects and that pays off in the long run.' (Matthias Kose, CEO e-hotel, 2002)

Podolny's (1994) work in particular, which adds to the body of social network theory, strongly supports the case study findings. It is mainly social capital, here in the form of reputation, that eases the accessibility of potential partners.

In addition to a firm's reputation, that case study data suggest that directorates and closely linked agents have a positive impact on partner accessibility, as formulated in tentative hypothesis #7: *The better the directorates (higher profile) and closely related agents, the better the partner acquisition capabilities.*

Interlocking directorates (or agents) occur when a person affiliated with one organization sits on the board of directors of another organization. Alternatively, as in the case of agents, they are closely related to the organization. Mizuruchi (1996) gave an overview of the research conducted in this field. He described several explicit and inadvertent reasons for the formation of interlocks such as collusion, cooptation and monitoring, legitimacy, and social reasons. Applied to NTBFs, the most relevant reasons are: (1) cooptation and monitoring, and (2) legitimacy.

Cooptation and monitoring: Directorates reflect attempts by organizations to coopt sources of environmental uncertainty. This idea has spawned a considerable amount of research and continues to influence organizational theory (Mizuruchi, 1996). Pfeffer (1978) and Pennings (1980) examined the extent to which interfirm dependence contributed to the existence of interlocks. Their findings support the view that interlocks are associated with interfirm resource dependence.

Does cooptation work? Do firms that have coopted sources of environmental uncertainty report higher levels of performance than firms that have not coopted? Studies of the relation

between interlocking and profitability have found a generally positive, but minor association between interlocking and profitability (Pennings, 1980).

This study offers two characteristic case examples of cooptation; *Mindmatics* and *12Snap* recruited board members who manage established marketing agencies. Through close interaction with these marketing agencies the case study firms try to reduce market risks. Given the fact that well-established marketing agencies have distribution resources (i.e., excellent client access and, to smaller extent, client media budgets), and mobile marketing firms have the know-how and mobile subscribers to launch marketing campaigns, there exists a resource dependence that may have been the motivation for the creation of these interlocking directorates.

However, in all the other case studies, cooptation appears to play a minor role. No other directorate or agent with the clear focus to reduce (market) uncertainty could be found. Cooptation is a motivator only for investors to judge and reduce the risk of their investment. Almost all VCs have directorates in their portfolio companies. Therefore, cooptation is of minor importance to the NTBFs in this industry.

Legitimacy: Boards of directors perform an important function regarding the reputation of a firm (Selznick, 1957). By appointing individuals with ties to important organizations, the firm signals that it is a legitimate enterprise.

The concept of legitimacy has always played a prominent role in organizational theory (Scott, 1992) and the existing literature on board appointments distinctly implies that the quest for legitimacy underlies the formation of many interlocks (Mizruchi, 1996). Host organizations not only want board members who are capable of providing input and advice to the corporate strategies and have contacts to important costumers or suppliers, but choose based on the prestige they will add to the organization (Mace, 1971).

By the early 1980's, interlock researchers had become increasingly aware of the behavioral consequences of interlocks. This realization coincided with the publication of Granovetter's (1985) important report on network embeddedness. Granovetter argued that economic behavior, like human behavior in general, is socially embedded; that is, economic actors are affected by their relations with other actors. This influence has moved the emphasis on interlocks increasingly towards their value as a communication mechanism rather than as a mechanism of control and cooptation. Davis (1991) found evidence that interlocking directorates is a form of social capital that provides access to information that flows through their ties.

Although interlocking directorates are indirectly important for accessing information, researchers tried to link interlocking directorates to performance directly. Using a cross-lagged panel model on 204 leading Canadian firms, Richardson (1987) examined simultaneously the effect of interlocks in 1963 on profits in 1968. He found virtually no effect of interlocks on subsequent profitability. Other scholars such as Lang and Lockhart (1990) have had similar findings.

Various scholars have criticized the existing body of purely statistical interlock research, because it fails to capture the richness and complexity of broad dynamics and interfirm relations (Davis, et al., 1992; Pettigrew, 1992; Stinchcombe, 1990). Stinchcombe's (1990) primary criticism involves concern about what interlock ties actually represent. Because so little is known about the actual operation of interlocks, he suggests that:

'... we should study what flows across the links, who decides on those flows in the light of what interests, and what collective or corporate action flows from the organization of links, in order to make sense of intercorporate relations.' (Stinchcombe, 1990)

This point is also made by Pettigrew (1992), whose critique is as much a commentary on quantitative research in general as on interlock research in particular. Criticisms of the failure of quantitative work to capture the complexity of human behavior have been around for decades, and it is not surprising that interlock would also be subjected to them.

This study, which clearly shows that interlocking directors act very differently, can support this critique. In the case of *Gate5*, the CEO reports of almost daily e-mail contact with the director Hagen Hultzsch (former CTO of *Deutsche Telekom*) and of other helpful directorates:

'These directorates are extremely important. Our board members are today Hagen Hultzsch, ex-CTO of Deutsche Telekom; Charles Franklin, head of M-Commerce from Vodafone; Hans Huber, CEO of Lucent Europe; Greg Papadopoulos, CTO of Sun; Knut Voekler from Microsoft Networks; and Prodomschef from Sat1. This is an excellent board. We try to recruit two additional members, a top manager from the automobile industry and someone from the media industry in the UK.

You can imagine how helpful these people are. Hagen Hultzsch opens us any door at Deutsche Telekom. I have to say, Hagen Hultzsch is extremely good. He helps me a lot. We e-mail almost every day ...' (Michael Halbherr, CEO Gate5, 2002)

In contrast to *Gate5*, *Airweb's* board consists of three people, only one of them being an industry expert and not in a particular high position. The CEO talks to him on a monthly basis and exchanges industry news. *Airweb* receives far less benefits from its board concerning relevant market information and contacts to potential clients and suppliers.

Therefore, both literature and case study data provide evidence, that directorates can be extremely helpful for accessing potential partners when they are an industry insider, involved in the company, and have a high level position. A simple count of the number of interlocks is not sufficient for understanding their value for partner acquisition.

In conclusion, reputation and interlocking directorates (agents) have the potential to facilitate partner access. Both factors have been discussed regarding their potential influence on social capital. This and other studies suggest that concern for an entrepreneurial venture's reputation and interlocking agents with their personal contacts are the two most important sources of social capital for facilitating partner access.

From a theoretical point of view, social network theory is applicable and helpful for understanding the impact of social capital on the accessibility of partners.

After potential partners have been accessed, the next step in the alliance formation process is the contracting and realization of partnerships.

Partnership realization

Alliances have to be negotiated, and the cooperation has to be structured and contracted. These operative process steps require specific skills – alliance project skills. The case study data suggest, that these alliance project skills affect the partners acquisition capabilities as formulated in tentative hypothesis 8: *The better the alliance project skills, the better the partner acquisition capabilities.*

Incorporating the literature concerning this hypothesis is not an easy task. Despite an extensive literature review, only a few studies contained interesting aspects concerning alliance negotiation, structuring cooperation, and alliance contracting. This lack of information supports a point previously made by Gulati (1998):

'We still do not know enough about the underlying processes concerning alliances.' (Gulati, 1998)

One could argue that alliance project skills are the underlying operational enabler of absorptive capacities (Cohen, et al., 1990). Therefore, following the absorptive capacity

argument, one can assume that alliance project skills result from a prolonged process of investment and knowledge accumulation within the firm, and that its development is path-dependent.

As with other process learning, one can assume that a learning curve effects take place, improving alliance project skills and, therefore, enhancing the partner acquisition capabilities. Case study interviews hint strongly to this relationship. As the CEO of Airweb phrased it:

'We got continuously better in forming, negotiating, and operating partnerships. We learned the process how to do it. Meanwhile our expertise to quickly realize projects is one of our key selling points, which the partners pretty much appreciate.' (Claudius Bertheau, CEO Airweb, 2002)

Further alliance process research is needed to thoroughly understand and prove these effects of learning about the alliance formation process. Neither social network theory, nor TCE or resource dependency theory is capable of providing concepts for this connection.

After a discussion of the alliance formation process from start to finish, the last part in the alliance formation discussion focuses on feedback effects of prior alliance formation.

Alliance history

The effects of the existing alliance portfolio and the cumulative history of prior alliances is summarized in tentative hypothesis 9: *The better the existing alliance portfolio and the more diverse the alliance history the better the partner acquisition capabilities due to (1) better alliance opportunities and (2) better reputation (outside effects), as well as (3) better project skills (interior effect).*

Different researchers have examined the effect of prior alliances and explained these effects with social network theory (i.e., Burt, 1992; Gulati, et al., 1997; Podolny, 1994). Gulati (1997) found evidence that firms with more prior alliances were more likely to enter into new alliances and did so with greater frequency. Other sociologists have argued that when there is uncertainty about the quality of someone or something, evaluations of it are strongly influenced by its affiliations (Podolny, 1994).

Burt (1997) stressed the informal advantages of social networks for firms, which can enable the creation of new alliances by three distinct means: (1) access and referrals (opportunities), (2) timing (Burt, 1992), and (3) process skills. Access refers to information about the capabilities and trustworthiness of current or potential partners with other partner firms, and

referrals can be particularly important in alliance formation, as a firm's existing partners may refer other firms to it for alliances. Timing entails having informational benefits about potential partners at the right time. Process skill refers to the above-mentioned learning effects. These three effects are subsequently discussed in greater detail.

Impact on alliance opportunities: Aside from the strategic need, the underlying logic of alliance formation is social opportunities. These opportunities are greatly influenced by past alliance relationships (Eisenhardt, et al., 1996; Gulati, 1995; Kogut, et al., 1992a). Prior alliances, both direct and indirect, create a social network in which most firms are embedded, and this embeddedness becomes an important source of information for firms about the reliability and capabilities of their current and potential partners. Such information helps firms to learn about new alliance opportunities and also enhances their trust in current and potential partners. Information can be a salient catalyst for alliances that may have significant risks associated with them. By providing conduits for valuable information, the social networks of prior alliances play an important role in shaping future alliance formation (Gulati, 1995).

Discovering new alliance opportunities and finding an appropriate partner that desires an alliance requires very good access to market information. Firms need to know about the reliability of potential partners as well. Information thus serves two purposes. It makes firms aware of viable partners and it serves as a basis for trust between partners. Firms can learn about potential alliance opportunities from many sources, and one important source is their network of prior alliances (Kogut, et al., 1992a).

The social structural model from Burt (1982) points to the important role of social networks in guiding firms' actions. The social network of prior alliances is an active network of information exchange in which firms learn about the reliability and specific capabilities of current and potential partners. This exchange reveals to firms alliance opportunities about which they would otherwise be unaware. The common theme throughout this body of research is that the social networks of ties in which actors are embedded shapes the flow of information between them (Granovetter, 1985).

The relational component of social structure creates closer ties between firms by providing firms with information about each other. This firsthand information is particularly effective because (1) it is cheap, (2) individual firm members have a cognitive bias toward trusting firsthand information, (3) partnering organizations have an economic incentive to be honest, to prevent jeopardizing future ties, and (4) close inter-firm ties become suffused with social elements that enhance the likelihood of trustworthy behavior (Granovetter, 1985). These

aspects can be found one-to-one in the case study data, as two managers in the Mobile Marketing segment reported. In the interview, Ingo Griebel, MD of *12snap*, twice mentioned the importance of alliance opportunities that were created through contacts from prior joint projects. Thorsten Rehfuss, marketing manager of *ApollisInteractive*, explained that his activities in industry associations such as the *DDV* (German direct marketing association) and the *Marketing Club Munich* were directly responsible for the social ties that he formed.

Thus, case study data and literature are quite consistent. The impact of networks is a key element in social network theory, and is confirmed by the case study findings.

Impact on reputation: Alliances can elevate the reputation of participant firms in the eyes of existing and potential customers and the financial community (Rao, 1994). Therefore, interfirm affiliations convey social status (Stuart, 2000) and relationships have reciprocal effects on the reputation of those involved (Stuart, et al., 1999).

The status of an organization in the network affects its reputation and visibility in the system. The greater this reputation, the wider the organization's access to a variety of sources of knowledge. The signaling properties of status are particularly important in uncertain environments, where the attractiveness of a potential partner can be gauged from its status, which in turn depends on the organizations with which it is already tied (Podolny, 1994).

The characteristics of affiliates serving as discernible guides for resolving uncertainty about the quality of a young or unknown entity follows directly from the notion that actors' reputation is constructed in part from the identities of their associates (Blau, 1964). Prominent associates augment the reputation of young companies more than do run-of-the-mill partners because the signal of reliability and trustworthiness implicit in exchange relations is most widely disseminated when a new venture's associates are particularly well known (Stuart, et al., 1999). The social structure of business relationships is a primary consideration in the market's assessment of the quality of the new venture (Stuart, et al., 1999). However, the impact of interorganizational relations is driven more by who a company associates with than by the volume of its relations (Stuart, et al., 1999).

This explains why it was a strategic target for *Airweb* to cooperate with Nokia and become a member of its developer program. This alliance served as a door-opener in the communication industries, because it was known that Nokia thoroughly screened NTBFs before it formed an alliance. This underscores that fact that, concerning reputational effects of prior alliances, the case study results are quite consistent with the existing literature.

Impact on project skills: The literature discussing the impact of alliance history on project skills is weaker still in comparison to the literature discussing the impact of project skills on alliance formation. Studies that specifically examined the process of learning in strategic alliances could not be found. However, Podolny (1994) found evidence that a broad variety of prior alliances improve the collaborative experience, which in turn makes firms more attractive as a potential partner. Case study data indicate that project skill learning heavily depends on the accumulated alliances formed. This would also be consistent with findings on absorptive capacities. Therefore, one could assume that firm's current alliance project skills—following absorptive capacities—are influenced by its historic participation in specific product markets and former alliances (Cohen, et al., 1990).

However, specific literature concerning operative alliance processes is lacking. Further research is required to examine the effects of learning in alliance project skills.

Conclusion on alliance acquisition skills

The associated literature and the case study results support strongly that alliance acquisition skills improve alliance portfolio effectiveness. Three underlying capabilities comprise the alliance acquisition skill: Selection, access, and realization capabilities. Whereas selection and partner access are well-discovered and described contexts, the alliance realization and the required project skill have received almost no research attention and offer an interesting field for further analysis.

In addition, former alliances have an impact on alliance opportunities and the firm's social capital (reputation), which both positively influence alliance formation.

From a theoretical point of view, social network theory is the best applicable theory to explain the impact of social capital (reputation and adjunct agents as directorates) on the formation of alliances. Resource dependency theory explains why selection skills are important and that interlocking directorates reduce uncertainty concerning dependent resources.

However, partner acquisition is only one driver influencing alliance portfolio effectiveness. The management of alliances assures the exchange of resources, which have been made available through the acquisition of relevant partners. The necessary management capabilities are addressed next.

4.1.4 Alliance management

While strategic alliances have the potential to enhance firm performance, doing so is challenging because of the difficulty in managing them. Thus, for various reasons, managing strategic alliances to achieve or maintain firm performance is an important issue warranting further research (Arino, 2001). Effective alliance management is a significant challenge and an under-investigated phenomenon (Hutt, et al., 2000). This study attempts to contribute to the underdeveloped body of alliance management literature.

Analyzing case study results in the context of the relevant literature

The case study data suggest that alliance portfolio management has a significant impact on portfolio effectiveness. It influences how good resources can be exchanged and how abuse and ineffectiveness of management time and other firm resources can be reduced. This occurs either through inefficient alliance portfolio structures or through opportunistic behavior.

As formulated in tentative hypothesis 4: *The better the portfolio management capabilities, the better the alliance portfolio effectiveness because they (1) allow for intensified resource exchange and (2) eliminate alliance portfolio inefficiencies.* Subsequently, these two aspects are discussed in detail.

Managing the resource exchange

Case study data suggest that resource exchange depends on two factors. The overall alliance structure must be perceived fairly, and the exchange relationship must be embedded – thereby communication skills and trust are important aspects. These two factors can be divided using Herzberg's (1959) motivation theory. (a) A fair alliance structure is a 'hygiene factor'; superior resource exchange depends on the 'motivating' ability to (b) embed relations.

Structural aspects: The impact of the hygiene factor – ability to structure alliance fairly and to maintain a fair tradeoff – is formulated in tentative hypothesis 10: *The better the ability to adjust partnerships to maintain win / win situations the better the partner management capabilities.*

Various scholars (i.e., Douma, et al., 2000; Reuer, 1999) have analyzed the impact of alliance structure on its performance. They found evidence for the impact of as fair perceived alliance structures and the flexibility to adjust alliance structures, which is closely linked to perceived fairness. Reuer (1999) suggested that deriving value from alliances

requires companies to adjust the relationship as necessary, and manage the cooperation appropriately. Douma (2000) stressed the importance of maintaining alignment or fit between alliance partners. This fit should be formed in three contexts: strategic, relational, and operational. The alliance manager is expected to verify that resources are allocated in a manner that satisfies all three fit requirements (Douma, et al., 2000).

The case studies provide numerous examples that show that alliance relationships have to be adjusted to remain efficient over time and so that alliances that are perceived as unfair will be terminated. A good example for a structural adjusted partnership is *e-hotel's* cooperation with *Sixt* and *Lufthansa*. *E-hotel* first sourced rental cars and flights from *Sixt* and *Lufthansa* when it built up its mobile travel portal. Later when focusing on hotels, the alliances were rearranged and *e-hotel* started to supply its hotel-room booking service to the travel portals of *Sixt* and *Lufthansa*. The two companies are still two of *e-hotel's* most important partners.

A good example of alliances that were terminated because of perceived unfairness is *Airweb's* realignment of contracts with network operators in the beginning of 2001. After offering its sport content service in the first 18 months for free, the penetration rose and operators started to earn money with *Airweb's* service. At that point, *Airweb* switched its policy, renegotiated the alliance contracts and introduced revenue sharing clauses. Several MNOs such as *T-mobile* and *Mobistar* rejected the new contracts, and as a result *Airweb* terminated the cooperation.

These examples show that the case study results are largely in line with the recent literature discussion on structural aspects of alliances. Structural rearrangements are a necessary for maintaining alliance portfolio effectiveness.

Relational aspects: In addition to the structural aspects, relationship-level variables such as the degree of trust between alliance partners are another set of factors that influence alliance portfolio effectiveness. This relational perspective is covered by tentative hypothesis 11: *The better the ability to embed partnership ties, the better resources can be exchanged and the more stable partnership links are. Therefore, the better the ability to embed partnership ties, as part of alliance management capabilities, the better the alliance portfolio effectiveness.*

The concept of embeddedness is a core element in social network theory (Burt, 1992). Embeddedness refers to the fact that exchanges and discussions within a group typically have a history, and that this history results in the routinization and stabilization of linkages among members. As elements of ongoing social structures, actors do not respond solely to individualistically determined interests. A structure of relations affects the action taken by

individual actors. It does so by constraining the set of actions available to the individual actors and by changing the dispositions of those actors toward the actions they may take.

One way to understand the performance consequences of social networks for alliances and for the firms entering them is to think of social networks as bestowing firms with 'social capital', which can become an important basis for competitive advantage (Burt, 1997). Embedded ties facilitate the exchange of resources because they have fundamentally different characteristics and life courses than those that are not. Embedded ties promote greater frequency of information exchange between partners, which can affect the success of the alliance as well as the performance of firms entering them.

The notion of embeddedness has previously been used to refer to the social and cultural context of economic action. Polanyi (1966) used the concept to describe the social structure of modern markets. Granovetter (1985), in a critique of Williamson's (1983) transaction cost approach, argued that most behavior of individuals is closely embedded in networks of interpersonal relations. Understanding economic behavior requires consideration of the social, cultural, and institutional structures in which the economic actors are embedded. More recently, Uzzi (1997) has used the embeddedness concept to characterize the level of social interaction in interfirm relationships.

Zukin and DiMaggio (1990) have classified embeddedness into four forms: structural, cognitive, political, and cultural. The last three forms mainly reflect the sociological perspectives of embeddedness. Structural embeddedness focuses on how much the quality and the network architecture of exchange relationships influence economic activity (Uzzi, 1997), which is the form of embeddedness that is most relevant for this study.

In the context of NTBFs, the concept of structural embeddedness has been proposed as '*the strength, intensity, and permanence of the links between a new, technology-based firm and its environment*' (Autio, 1995). Structural embeddedness is the quest for information to reduce uncertainty, a quest that has been identified as one of the main drivers of organizational action (Granovetter, 1985).

While the original focus of network research was on understanding how embeddedness of individuals influences their behavior, a similar argument has been extended to organizations (Gulati, 1995). Firms can be interconnected with other firms through a wide array of social and economic relationships, each of which can constitute a social network. These include, for example, supplier relationships, resource flows, trade association memberships, and interlocking directorates (previously discussed in section 4.1.3 alliance formation).

Scholars have begun only recently to explore the implications of the social structure resulting from intercorporate networks on strategic alliances. Strategic alliances are distinctive in that entering one constitutes a strategic action, and their accumulation can also become a social network.

Social capital increases the probability of the success of strategic alliances because of the trust and willingness to share resources among partners. The willingness to share resources may be necessary to ensure that both partners gain from the alliance. Communication skills are important for establishing embeddedness, and trust is one of the most important results of embeddedness. These two aspects are discussed subsequently.

The impact of communication skills on embedding relationships has been formulated in the tentative hypothesis 12: *The better the ability to communicate, the better the ability to embed partnership ties.*

In a recent study, Sivadas and Dwyer (2000) analyzed the impact of communication skills on embeddedness, trust, and the resource exchange. By studying cooperative new product development projects of 95 semiconductor companies, they found evidence that alliance managers who were able to facilitate effective communication (appropriate and timely sharing of meaning) embed alliances in ways that foster trust and accelerate the resource exchange.

Other researchers (i.e., Anderson, et al., 1990; Mohr, et al., 1994) had similar results after analyzing effective communication on alliance success. Anderson and Narus (1990) found that communication – the formal as well as informal sharing of meaningful and timely information between firms – enables goal adjustment, task coordination, and interfirm learning. Mohr and Spekman (1994) found that successful partnerships exhibit better communication quality and information sharing.

Therefore, tentative hypotheses 12 is consistent with the recent literature. Communication skills that help to embed links and thereby foster trust have a positive impact on resource exchange and alliance success.

This thereby implicit relationship between trust, resource exchange and alliance success, which has also been found in the cross case analyses, is formulated in tentative hypothesis 13: *The better the ability to build trust, the better the ability to accelerate the resource exchange.*

Trust is a willingness to accept vulnerability based upon positive expectations of partner behavior (Hutt, et al., 2000). Predictability, dependability, and faith are three key components of trust (Sivadas, et al., 2000). Developing trust between partners is a challenge

in many alliances. Cultural, economic, and institutional differences across organizations increase the difficulty of developing trust between partners.

Developing trust is necessary to gain full cooperation and for resource transfer between partners or to the joint venture to occur. Managing alliances in ways that create trust can lead to a competitive advantage (Barney, et al., 1994). When trust exists, the firm does not fear its partner's action, because the partners can depend on each other to achieve a common purpose. In an alliance context, trust suggests that a partner's action will meet expectations, including the absence of opportunistic behavior. Thus, trust empowers partners to accept risks and positively affects the quality of their relationships. Moreover, trust facilitates strategic flexibility, an important outcome of effective alliances (this finding underscores the structural aspects of efficient alliances formulated in hypotheses 10). Trust strongly influences alliance performance. Kanter (1994) reported trust to be a key element of alliance success in his study of 40 international companies.

In addition to its relevance in social network theory, trust is a common element in transaction cost economics (Young-Ybarra, et al., 1999). It reduces controlling costs, because social control makes direct control of transaction obsolete, thereby lowering transaction cost. As the CEO of *e-hotel* reports:

'...[trust] helps you to warrant the stability of the partnership. That is, your relationship is able to handle a crisis, in the case it arises. ... mutual trust and honesty are important parts to operate alliances efficiently.' (Matthias Kose, CEO *e-hotel*, 2002)

In conclusion, embeddedness or cohesion perspectives on networks stress the role of direct cohesive ties as a mechanism for gaining fine-grained information. Relational embeddedness typically suggests that actors who are strongly tied to each other are likely to develop a shared understanding of the utility of certain behavior as a result of discussing opinions in strong, socializing relations, which in turn influence their actions. Cohesively tied actors are likely to emulate each other's behavior. Cohesion can also be viewed as the capacity for social ties to carry information while at the same time diminishing uncertainty and promoting trust between actors (Granovetter, 1973). Therefore, NTBFs that are able to stabilize and maintain networks increase their effectiveness and their effectiveness. Shared interest in a prolonged relationship motivates the involved parties to solve potential conflicts with "voice", rather than with "exit", and results in superior performance outcomes (Johannisson, 1987).

Thus, sociologists have suggested that economic actors address concerns of opportunism in economic transactions by embedding transactions in the social context in which those transactions occur. Faced with uncertainty about a partner, actors adopt a more social orientation and resort to existing networks to discover information that lowers search costs and alleviates the risk of opportunism. Thereby they embed their network ties.

However, embedding alone is not sufficient. Opportunistic behavior exists even in embedded relationships. In addition, alliance benefits can diminish over time. Therefore alliance controlling is necessary.

Eliminating alliance portfolio inefficiencies

Firms entering alliances face considerable moral hazard concerns because of the unpredictability of partners' behavior and the likely costs from opportunistic behavior incurred by a partner if it occurs. A partner may either be a "free rider" by limiting its contributions to an alliance or by simply behaving opportunistically. In addition, partnership benefits, such as learning or the availability of accessed resources, might decrease over time. Thus, the management effort and other resource inputs might lose their effectiveness.

'Strategic alliances are inherently incomplete contracts in which the property rights associated to alliance output and profits may not be well defined or not measured. As a result, collaborators risk opportunistic exploitation by their partners, including leaking proprietary knowledge to partners or otherwise losing control of important assets' (Hamel, 1991).

Therefore alliance portfolio controlling is crucial for assure its effectiveness as formulated in tentative hypothesis 14: *The tighter the ability to control partnerships according dynamic corporate goals, the better the portfolio management capabilities*

To get the maximum value out of all alliances and to be able to intervene when their performance veers off track, managers should learn to measure alliance fitness on several levels. As Bamford (2002, p. 5) suggests, alliance controlling should measure four aspects: financial, strategic, operational, and relationship fitness.

Very few companies systematically track their alliance performance. Alliances are often run on intuition and incomplete information. One study found that 51% percent of the alliances reviewed had virtually no performance metrics and that only 11% had sufficient metrics (Dyer, et al., 2001). Bamford (2002) reports of an European industrial gas company that

found that 40% of its alliances no longer reflected its current strategic priorities but still received a large amount of senior management's time.

The controlling process – like an annual review of capital spending – should ensure, that the company has a coherent portfolio and is allocating resources among current ventures and potential new deals to maximum effect. This review comprises three considerations: an assessment of the performance of the portfolio as a whole, an assessment of the portfolio configuration, and the strategic review to rank future initiatives in order of priority (Bamford, et al., 2002).

Case study data provide various examples of opportunistic behavior. *Jamba!* copied and distributed *Airweb*'s content without authorization and *Clever.Tanken* reported that several alliances, in which the partners did not fulfill their obligations were subsequently terminated. Facing these alliance hazards, *YellowMap* introduced periodic workshops in which alliance managers are required to report the development of each alliance and the overall alliance strategy is revised.

In conclusion alliance controlling is a crucial part of alliance management. However, relatively little is known about successful alliance controlling processes, key controlling measures, and performance indicators. Process-oriented research on alliance controlling offers a relevant and challenging field for further research.

Conclusion

Literature and case study data provide evidence, that alliance portfolio management skills have a positive impact on alliance performance. Management skills improve the effectiveness of alliance portfolios, by extending the duration of alliance portfolios through flexible adjustment of alliance structures and by the improvement of the exchange of resources because they help to embed alliance links. This embeddedness established through intensive communication (both formal and informal) creates trust, which on one hand is important for the exchange of resources, and on the other hand, important for the reduction of opportunistic behavior. In addition to trust, firms require alliance controlling skills to limit alliance inefficiencies.

From a theoretical point of view, social network theory is very powerful for explain the importance and creation of embeddedness. Structural aspects and their dynamics can be explained through resource dependency theory, when including exogenous shifts in resource requirements. Concerning alliance controlling, theoretical concepts are lacking. Alliance

controlling requires further research to understand the detailed processes of alliance controlling and to derive efficient performance measures and indicators.

4.1.5 Conclusion on alliances and networks

By and large, the associated literature supports the case study results concerning (1) performance outcomes of efficient alliance portfolios, and the impact of (2) partner acquisition skills as well as (3) alliance management skills on alliance portfolio effectiveness.

Efficient alliance configurations – that is, configurations that provide access to the diverse resources and information depending on their required timing and thus produce desired benefits with minimum costs of acquisition, management, conflict, and complexity – prove to be very beneficial to technology based startups. This is consistent with the studies of Baum et al. (2000) and Powell et al. (1996) in particular.

The underlying processes of alliance formation (alliance project skills) and alliance management (in particular alliance controlling) are yet not well researched and documented so far. On this operational level, additional research is required to understand the underlying processes of alliances.

From a theoretical point of view, social network theory is very powerful for explain alliance opportunities, legitimacy, embeddedness and trust, which can be subsumed under the following question: How do alliance portfolios work efficiently? Resource dependency theory is helpful for assessing alliance portfolio structure and for addressing why companies ally with different partners.

Now that it has been clarified, that efficient alliance portfolios provide required resources, and the process by which efficient alliance portfolios can be established and maintained has been discussed, there are two questions that emerge: The first is whether the resources acquired through alliances create a competitive advantage. This question will be discussed in section 4.2. The second question is, what drives the resource requirements that are exogenous input variables to the resource dependency theory? This question will be discussed in section 4.3.

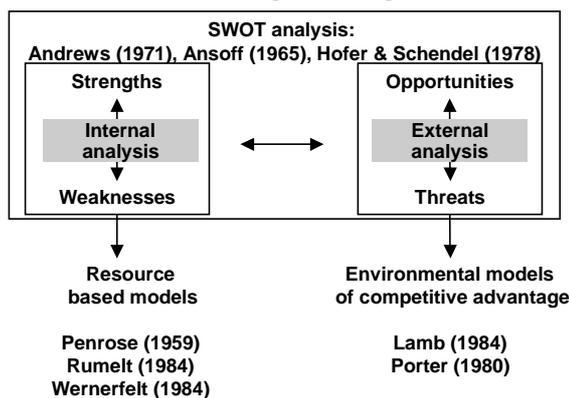
4.2 Resources and their strategic importance

Section 4.1 showed how resources are acquired through alliance networks and how this improved NTBF's performance. This raises the question of whether this form of accessing resources is capable of creating a sustainable competitive advantage. Case data indicate this causal relation, which is formulated in the latter part of hypotheses 15: *The more effective a firm accesses ... rare sustainable inimitable non-substitutable resources, the better the company's performance and, therefore, its competitive advantage.*

Understanding sources of firms' sustained competitive advantage has become a major area of research in the field of strategic management. Since the 1960s, a single organizing framework has been used to structure much of this research, which is depicted in figure 64.

Early strategy scholars in the sixties and seventies (i.e., Andrews, 1971; Ansoff, 1965; Hofer, et al., 1978) developed the SWOT analysis framework, which combines firm internal analysis of strength and weaknesses with the external analysis of opportunities and threats.

Basic models in strategic management



Source: Author, based on Barney (1991)

In the beginning of the eighties the research focus shifted more towards external analysis. Scholars such as Porter (1980) and Lamb (1984) developed environmental models of competitive advantage with the primary focus on analyzing firm's opportunities and threats (Barney, 1991), which placed little emphasis on the impact of idiosyncratic firm attributes on its competitive position.

Figure 64 Research fields in strategic management

This type of strategic research is based on two simplifying assumptions. First, firms within an industry are identical in terms of the strategically relevant resources they control and the strategies they pursue. Second, should resource heterogeneity develop in an industry or group, this heterogeneity will be very short lived because the resources that firms use to implement their strategies are highly mobile.

Both assumptions do not hold true in this study. Firms differ significantly according to strategically relevant resources. In the Mobile Marketing segment, *12snap* has access to 15 million subscribers and *Mindmatics* to more than 2 million, whereas *ApollisInteractive* has no opt-in subscriber base. Furthermore, this heterogeneity is not short lived. It took *12snap* two years to establish its subscriber base. Thereby, it partnered with several key players such

as MNOs and consumer good companies with their own SMS-communities. These partners are no longer accessible for competitors such as *ApollisInteractive*. Therefore, environmental concepts in strategic management are not suitable to explain competitive advantage in the Mobile Internet industry.

In the later eighties, a group of strategy researchers shifted their focus from external factors of competitive advantage to the internal analysis, and developed resource-based models. This shift was motivated and supported through the work of Lippman and Rumelt (1982), Hansen and Wernerfelt (1989) and Rumelt (1991). They showed that intra-industry differences in profits were greater than inter-industry differences in profits, strongly suggesting the importance of firm-specific factors and the relative unimportance of industry effects. Jacobsen (1988) had similar findings.

The resource-based concepts of competitive advantage are most relevant to this study. They examine the link between a firm's internal characteristics and performance. It is the only concept in strategic management capable of tackling the question raised at the close of the last section. According to this approach, resource heterogeneity and immobility are key sources of competitive advantage.

To discuss the applicability of the resource-based view of the firm (RBV) and its derivatives, this section is structured as follows: The first part introduces the basic premises of the RBV, states the critique, and discusses its applicability. Based on the critiques and limitations of its applicability, two advanced resource-based theories are discussed in parts two and three. In part two, the relational view integrates in its analysis a broader view of relevant resources, and the dynamic capability approach (in part three) stresses the requirement of dynamic skills for adjusting the firm's setup to changing environments, which is definitely highly relevant to NTBFs. A summarizing conclusion closes this section.

4.2.1 The Resource-Based View of the firm

Various reasons led to the assessment of the above-mentioned RBV—in contrast to environmental models—as a suitable concept for explaining competitive advantage. Environmental models are particularly irrelevant because the rationale of market power is not suitable: (1) all case studies face similar industry settings, (2) they all interact with the same industry players such as MNOs, equipment manufacturers and VCs, (3) they all have almost no market power due to their size and exchangeability, and (4) their industry segments are still characterized through low entry barriers. Powerful incumbents can easily attack market positions. Whereas, the importance of resources, which has been mentioned

often in interviews and is furthermore underscored by firms' intense alliance activities to access resources, strongly hint as to the relevance of the RBV to explaining competitive advantage. This concept can be characterized as follows:

'This approach focuses on the rents accruing to the owners of scarce firm-specific resources rather than economic profits from product market positioning. Competitive advantage lies 'upstream' of product markets and rests on the firm's idiosyncratic and difficult-to-imitate resources.' Teece (1997, p. 513)

To incorporate the relevant literature on the RBV and discuss its applicability, this section first defines the term resources and provides examples for different resource categories to foster a clear and consistent understanding of the fuzzy term 'resource'. Part two introduces the RBV concept, followed by its critique in part three. Part four considers the case study findings in context of the model and its critique; thereby it assesses its potential applicability. In the last part, the section is summarized and connected to relational and dynamic aspects in the discussion of resources.

Resource definition

According to the basic literature on the resource-based view of the firm (i.e., Barney, 1991; Dierickx, et al., 1989; Penrose, 1959; Rumelt, 1984; Wernerfelt, 1984), firm resources include all assets, capabilities, organizational processes, firm attributes, information, and knowledge controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness (Daft, 1983). Resources are anything that could be thought of as a strength or a weakness of a given firm; more formally, resources are those tangible and intangible assets that are tied semi-permanently to the firm (Caves, 1980). Examples of resources are brand names, in-house knowledge of technology, employment of skilled personnel, trade contracts, machinery, efficient procedures, and capital (Wernerfelt, 1984, p.172).

A number of authors have generated lists of firm attributes that may enable firms to conceive of and implement value-creating strategies. Barney (1991) classified these numerous resources into three categories: physical capital, human capital, and organizational capital resources.

Resource group	Physical capital	Human capital	Organizational capital
Resources types	Physical technology Firm's plant and equipment Geographic locations Access to raw material	Training Experience Judgment Intelligence Relationships Insight of individual managers and workers	Formal reporting structure Formal and informal planning Controlling and coordinating systems Informal relations

Table 28 Resource types

Impact of resources on sustained competitive advantage

According to the RBV, competitive advantage is achieved, when a firm implements a value creating strategy that is not simultaneously being implemented by any current or potential competitor and when other firms are unable to duplicate the benefits of this strategy (Barney, 1991). As an underlying assumption, the RBV assumes resource heterogeneity. When resources are evenly distributed across all competing firms and highly mobile, firms cannot expect to obtain sustained competitive advantages.

The conception and implementation of strategies employ various firm resources (Wernerfelt, 1984). That one firm, in an industry populated by identical firms, has the resources to conceive of and implement a strategy means that these other firms, because they possess the same resources, can also conceive of and implement this strategy. Thus, in this kind of industry, it is not possible for firms to enjoy a sustained competitive advantage. For example, (1) first mover advantages and (2) entry or mobility barriers could not exist, because they require resource heterogeneity to function.

First mover advantage: In some circumstances, the first firm in an industry to implement a strategy can obtain a sustained competitive advantage over other firms. This firm may gain access to distribution channels, develop goodwill with customers, or develop a positive reputation, all before firms that implement their strategies later. Information about an opportunity—such as a unique resource—makes it possible for the better-informed firm to implement its strategy before others. In order to attain a first-mover advantage, firms in an industry must be heterogeneous in terms of the resources they control.

Mobility and entry/mobility barriers: Barriers of entry are only possible if current and potentially competing firms are heterogeneous in terms of the resources they control and if these resources are not perfectly mobile. The heterogeneity requirement is self-evident. For a barrier to entry or mobility to exist, firms protected by these barriers must implement different strategies from firms seeking to enter these protected areas of competition. Firms restricted from entry are unable to implement the same strategies as firms within the

industry. Because the implementation of strategies requires the application of firm resources, the inability of firms seeking to enter an industry or group to implement the same strategies as firms within that industry or group suggests that firms seeking to enter must not have the same strategically relevant resources as firms within the industry or group.

Both effects are based on resource heterogeneity, which, therefore, seems to be a reasonable expectation, because most industries will be characterized by at least some degree of resource heterogeneity. The search for sources of sustained competitive advantage must focus on firm resource heterogeneity and immobility. Both seem to be the case in the Mobile Internet industry, which is illustrated using two characteristic examples:

Source of competitive advantage	Example	Explanation
Heterogeneity	Opt-in user-base of <i>12snap</i> compared to that of <i>ApollisInteractive</i>	In 2002, <i>12snap</i> had 16 million opt-in mobile phone users and <i>ApollisInteractive</i> had no proprietary user base.
Immobility	'Fuel price pilots' of <i>Clever.Tanken</i>	The approximately 45,000 fuel price pilots are tied to <i>Clever.Tanken</i> . They report their prices to <i>Clever.Tanken</i> , check fuel prices on its portal and get their incentive through <i>Clever.Tanken's</i> bonus system. This resource is very difficult to transfer.

Table 29 Exemplary sources of competitive advantage

To understand sources of competitive advantage, Barney (1991) has built a theoretical model. He assumes, that firm resources are heterogeneous and immobile. However, not all resources hold the potential for sustained competitive advantages. To have this potential, a firm resource must have four attributes:

Valuable: Resources are valuable when they enable a firm to conceive of or implement strategies that improve its efficiency and effectiveness.

Rare: Valuable firm resources possessed by a large number of competing or potentially competing firms cannot be the source of either a competitive or a sustained competitive advantage. A firm enjoys a competitive advantage when it implements a value creating strategy that is at the same time not implemented by a large number of other firms. The same applies to bundles of valuable firm resources used to conceive of and implement strategies. Some strategies require a particular mix of physical capital, human capital, and organizational capital resources to be implemented.

Imperfectly imitable: Valuable and rare organizational resources can only be sources of sustainable competitive advantage if firms that do not possess these resources cannot obtain them. In the language developed by Lippmann and Rumelt (1982), these firm resources are

imperfectly imitable. Firm resources can be imperfectly imitable for one or a combination of the following three reasons:

(a) **History dependency:** Firms vary in terms of unique histories and their performance relies heavily on unique historical events as determinants of subsequent actions (Arthur, et al., 1987). Path dependency enables a firm to exploit resources that it has acquired on its path by implementing value-creating strategies that cannot be duplicated by other firms without that path through history.

(b) **Causal ambiguity:** Causal ambiguity exists when the link between resources controlled by a firm and a firm's sustained competitive advantage is not understood or only imperfectly understood (Lippmann, et al., 1982). As Demsetz (1973) once observed, sometimes it is difficult to understand why one firm consistently outperforms other firms. Causal ambiguity is at the heart of this difficulty. In the face of such causal ambiguity, imitating firms cannot know the actions they should take in order to duplicate the strategies of firms with a sustained competitive advantage. However, even if a firm with a competitive advantage understands the link between the resources it controls and its advantages, other firms can also learn about that link, acquire the necessary resources, and implement the relevant strategies. Therefore, ironically, in order for causal ambiguity to be a source of sustained competitive advantage, all competing firms must have an imperfect understanding of the link between the resources controlled by a firm and a firm's competitive advantage. This incomplete understanding is not implausible. The resources controlled by a firm are very complex and interdependent (Nelson, et al., 1982).

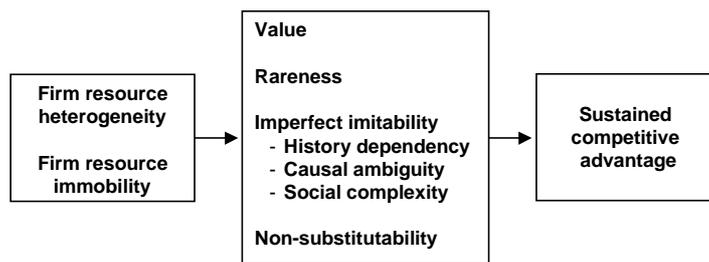
(c) **Social complexity:** A wide variety of resources may be socially complex. Examples include interpersonal relations among managers in a firm, a firm's culture, its reputation among suppliers and customers (Porter, 1980), and the exploitation of complex physical technology. Because understanding that, for example, an organizational culture with certain attributes or quality relations among managers can improve a firm's efficiency and effectiveness does not necessarily imply that firms without these attributes can engage in systematic efforts to create them (Dierickx, et al., 1989).

Substitutability: There must be no strategically equivalent valuable resources that are themselves either not rare or imitable. Resources or bundles of firm resources are equivalent, when they each can be exploited separately to implement the same strategy. Substitutability can take at least two forms. First, though it may not be possible for a firm to imitate another

firm's resources exactly, it may be possible to substitute a similar resource that enables it to conceive of and implement the same strategies. Second, very different firm resources can be strategic substitutes. Of course, the strategic substitutability of firm resources is always a matter of degree. It is the case, however, that substitute firm resources need not have exactly the same implications for an organization in order for those resources to be equivalent from the point of view of the strategies that firms can conceive of and implement.

These aspects are summarized in the RBV framework (Barney, 1991) in figure 65.

Relationship between resources and competitive advantage



Source: Author, based on Barney (1991)

Figure 65 RBV framework

Critique of the RBV

Although there has been little critical evaluation of the RBV as a theoretical system, Priem and Butler (2001) pose two elemental questions: (1) Is the foundational and unembellished RBV actually a theory? (2) Is the RBV likely to be useful for building understanding in strategic management? Other scholars (i.e., Mosakowski, et al., 1997; Williamson, 1999) posed similar questions and concluded that:

- Important factors such as factors determining resource value are exogenous
- Context specificity is not yet described
 - No industry insight is linked to the model, thus a context black box (when, why, how) exists
 - Resources are often defined too broadly and are not operationalizable
- Overly static process black box

Another shortcoming that should be added to this list is:

- Its overly narrow focus concerning resources. The RBV focuses only on resources controlled by the firm and not on all resources that can be accessed by the firm.

These comments are subsequently discussed in greater detail.

Exogenous independent variables

The value of resources is determined by demand-side characteristics that are exogenous to the RBV model. Resources are said to be valuable when they exploit opportunities or

neutralize threats in a firm's environment, or when they enable a firm to conceive of or implement strategies that improve its efficiency and effectiveness. As the competitive environment changes, resource values may change. Thus, resource values are determined from a source exogenous to the RBV. This concept, in effect, holds product and customer factors constant, because if product and customer factors would vary, resource values would also vary, and unpredictable resource value changes would lead to unpredictable outcomes in the resource-based analysis.

One must be aware of this simplifying assumption when drawing conclusions from RBV based analyses. Although partial equilibrium models of factor markets alone or product markets alone can produce considerable insight, these approaches might carry particular risks for conceptualizing complex strategy issues. In this study, the RBV concept is used very carefully because the detailed case studies in chapter 3 have provided numerous examples for changing resource requirements.

Limited context specificity

Relative to other strategy theories, however, little effort to establish appropriate contexts for the RBV has been apparent (Priem, et al., 2001). Two exceptions are the work of Miller and Shamsie (1996) on seven studios in the Hollywood movie industry and the work of Brush and Artz (1999) on services in the veterinary industry. In most other studies, the manner in which strategically important resources lead to competitive advantage is a process black box and resources are often not specified on a detailed level but rather stated very broadly and are overly inclusive.

Process black box: As Miller and Shamsie (1996) asserted, the strategy literature contains numerous references to resources being useful without careful attention to when, where, and how they may be useful. Only a few scholars have started to answer important when, where and how questions about the RBV and firm performance (Priem, et al., 2001).

All inclusive resources: The RBV tendency toward resource classifications that are all inclusive might have made it more difficult to establish contextual boundaries. Several definitions are too broad, such as the one provided by in Wernerfelt (1984), who claims that:

'by a resource anything is meant, which could be thought of as a strength or weakness of a given firm. More formally, a firm's resources at a given time could be defined as those (tangible and intangible) assets, which are tied semi-permanently to the firm.' (Wernerfelt, 1984, p. 172)

According to this definition, virtually anything associated with the firm can be a resource. Prescriptions for dealing in certain ways with certain categories of resources might be operationally valid. Whereas other categories of resources might be inherently difficult for practitioners to measure and manipulate. One good of a resource that might be difficult to measure and manipulate is Polanyi's (1966) notion of tacit knowledge.

This study has categorized the relevant resources into seven groups and provided suitable examples. Concerning measurability, Priem's (2001) critique also applies to this study. Complex or qualitative resources such as reputation could not be measured using a deterministic scale. More detailed research on resources is needed to solve this measurement problem.

Static approach

Although the RBV began as a dynamic approach emphasizing change over time (Dierickx, et al., 1989; Penrose, 1959; Wernerfelt, 1984), much of the subsequent literature has been static in concept. However, this static RBV argument has notable potential limitations for strategic management research:

- (1) The static argument is descriptive: it identifies generic characteristics of regenerating resources without much attention to differing situations or resource comparisons.
- (2) The process through which particular resources generate sustainable rents remains a black box. We do not know, for example, how the resources generate sustainable rents, other than through their heterogeneity.
- (3) In static RBV studies, researchers sometimes take a frequently researched strategy subject area, relabel the independent variables as resources and the dependent variables as competitive advantage and use measures common to much cross-sectional strategy research as operationalizations.
- (4) The static RBV argument suffers from the "In Search of Excellence" problem in that it is quite easy to identify, many valuable resources in high performing firms a posteriori, but not a priori.

Together these issues suggest that the current high level of abstraction found in the static RBV approach might be one aspect that could limit its usefulness for strategy researchers, which is clearly the case when analyzing high velocity industries.

Examining case study results in the context of the literature on RBV

When considering the case study findings in the context of the RBV, the importance of resources is obvious. Two characteristic examples clearly show evidence for the usefulness of the RBV, and are depicted in table 30:

	12snap's opt-in subscriber base	Gate5's MLS platform technology
Valuable	Yes: The subscriber base is an important USP to sell mobile marketing campaigns and the only crucial resource for media selling	Yes: The technology platform is the core component of <i>Gate5's</i> services and applications
Rare	Yes: Biggest client base, only <i>Mindmatics</i> has >1 million users, <i>ApollisInteractive</i> lacks a proprietary subscriber-base	Yes: Unique technology
Imperfectly imitable	Yes	Yes
History dependency	Partly	Yes
Causal ambiguity	No	No
Social complexity	Yes	No
Substitutability	No	Difficult

Table 30 RBV explanation of competitive advantage

There are additional case examples for strategic resources or resource bundles such as *Mindmatics' MrAdGood* service and the 45,000 *Benzin Preis Piloten* of *Clever.Tanken*.

The RBV can also explain why most of the MCS companies do not perform particular well, namely because they are not that distinctive (limited resource heterogeneity). In addition, the critique of the general RBV is only partly applicable, as shown in table 31:

Critique	Validity	Explanation / examples
Exogenous determination of resource value	Applicable Industries develop rapidly, thereby the importance of resources shift	For example, in the MCS segment, technological know-how is very important in the beginning and loses its importance later on.
Missing context specificity	Not applicable This study is very context specific	This study thoroughly analyzes the structure in the Mobile internet industry and the settings in each of the three market segments
Overly static process black box	Applicable ⇒ Resource based theory is enriched by the concept of dynamic capabilities	As shown in chapter 3, the case study companies have to rearrange their resources from development step to development step. It is crucial to understand the change processes.
Overly narrow resource definition	Applicable ⇒ Resource based theory is enriched by the concept of the relational view	Almost all case studies do not control a subset of their crucial resources. <i>Multichart</i> needs content on financial markets from <i>Deutsche Börse</i> and <i>Gate5</i> mapping technology from <i>Location.net</i> .

Table 31 Validity of critique of the RBV

Conclusion on the RBV

Despite the fact that the value of specific resources is determined exogenous, the RBV is generally helpful for analyzing internal sources of competitive advantage. Concerning this study, the classic RBV has two limitations. The approach is too static to explain competitive advantage for NTBFs in fast changing environments, and its resource focus is too narrow to explain competitive advantage in these barely integrated industries.

The RBV is not particularly helpful in explaining, why, when and how the resource requirements shift. In particular, Priem's (2001) argument of a process black box describes this serious problem. The significant shifts in resource needs, as shown in section '3.5 resource requirement' cannot be captured by this theory. Scholars such as Teece, Pisano and Shuen (1997) addressed this problem when they expanded on the resource-based theory with the concept of 'dynamic capabilities', which is discussed following the next section.

In addition, the RBV is concerned with resources controlled by the firm. However, most of the case study companies directly control only a subset of their required resources. Many resources are accessed through alliances. Therefore, one characteristic of alliances is, precisely, that no straight controlling rights are connected to the cooperations. Therefore, the resources are accessed for a period of time without having strict control. Scholars such as Dyer and Singh (1998) addressed this problem when they expanded on the resource-based theory with the concept of 'the relational view', which is discussed in the following section.

4.2.2 Relational view

As mentioned above, the RBV overlooks the important fact that the advantages of an individual firm are often linked to the network of relationships in which the firm is embedded. Proponents of the RBV have emphasized that competitive advantage results from those resources and capabilities that are owned and controlled by a single firm. Consequently, the search for competitive advantage has focused on those resources that are housed within the firm.

Competing firms purchase standardized (non-unique) factors that cannot be sources of advantages, either because these factors are readily available to all competing firms or because the cost of acquiring them is approximately equal to the economic value they create (Barney, 1986). However, a firm's critical resources may extend beyond firm boundaries. Since the seventies, the net output ratio has declined constantly. Recent studies suggest that productivity gains in the value chain are possible when trading partners are willing to make relation-specific investments and combine resources in unique ways (Asanuma, 1989). This

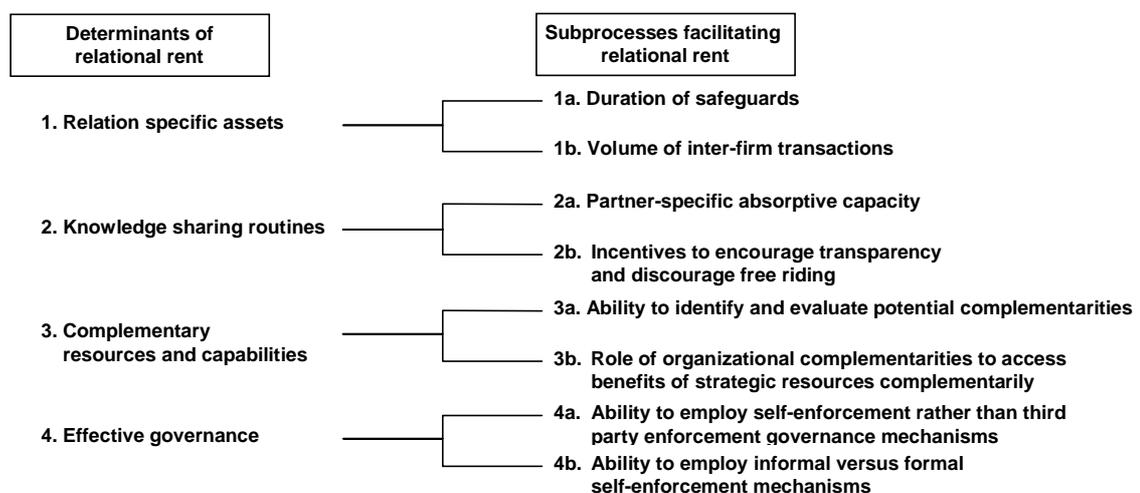
indicates that firms who combine resources in unique ways may realize an advantage over competing firms who are unable or unwilling to do so. Thus, idiosyncratic inter-firm linkages may be a source of relational rents and competitive advantage, as formulated in the first part of hypothesis 15: *The more effectively a firm—through its alliance portfolio—accesses rare sustainable inimitable non-substitutable resources, the better the company's performance and, therefore, its competitive advantage.* Indeed the “explosion in alliances” during the past decade suggests that a pair or network of firms is an increasingly important unit of analysis that deserves more study (Gomes-Casseres, 1994; Smith, et al., 1995).

To introduce the relational view concept and discuss its applicability for analyzing the case study developments, this section is structured in the following way. Literature on (1) sources of relational rents and (2) mechanisms to preserve relational rents is incorporated and analyzed in the context of the case study data to assess for its relevance. The third part compares the relational view with the RBV to clearly detail its differences before discussing its critique in part four. The section is summarized in part five.

Sources of relational rents

Market-like arms-length partnerships are incapable of generating relational rents because there is nothing idiosyncratic about the exchange relationship that enables the two parties to generate profits above and beyond that which other seller-buyer combinations can generate. The relationships are not rare or difficult to imitate.

Determinants of interorganizational competitive advantage



Source: Author, based on Dyer and Singh (1998)

Figure 66 Determinants of relational rents

Alliances generate competitive advantages only as they move the relationship away from the attributes of market relationships. The competitive advantage falls into four categories: (1) investment in relation-specific assets; (2) substantial knowledge exchange, including the exchange of knowledge that results in joint learning; (3) combining of complementary but scarce resources or capabilities (typically through multiple functional interfaces), which results in the joint creation of unique new products, services, or technologies; or (4) lower transaction costs than competitor alliances, owing to more effective governance mechanisms. These categories and its sub-processes are depicted in figure 66 and will be described in the following paragraphs.

Interfirm relation-specific assets

Specialization of assets is a necessary condition for rent. Strategic assets are specialized by their very nature (Amit, et al., 1993, p.39). A firm may choose to seek advantages by creating assets that are specialized in conjunction with the assets of an alliance partner (Teece, 1987). Productivity gains in the value chain are possible when firms are willing to make relation/transaction-specific investments (Williamson, 1985).

Williamson (1985) identified three types of asset specificity: (1) site specificity (successive production stages that are immobile in nature are located close to one another), (2) physical asset specificity (transaction-specific capital investments such as customized machinery and tools), and (3) human asset specificity (know-how accumulated by transactors through longstanding relationships such as dedicated supplier engineers).

Case study data indicate that site specificity is unimportant. No firm collocated its office close to an important supplier or client. Important is the combination of know-how and human asset specificity. For example, the partnership between *Airweb* and *L'equipe* and *Gate5's* cooperation with *DaimlerChrysler* are based on complementary competences and know-how as well as on a long and trustworthy working relationship⁸⁷.

Inter-firm knowledge sharing routines

⁸⁷ Subprocesses are the duration of safeguards (given the fixed-cost nature of some investments that alliance partners need to assess whether or not they will make the necessary return on the investment during the payback period or length of the governance agreement) and the volume of interfirm transactions (the ability to substitute special-purpose assets for general purpose assets is influenced by the total volume [scale] and breadth [scope] of transaction between the alliance partners. Just as firms that achieve production economies of scale are able to increase productivity by substituting special purpose assets for general purpose assets, alliance partners are also able to increase the efficiency associated with interfirm exchanges (compare Williamson, 1985)).

Various scholars have argued that interorganizational learning is critical to competitive success, noting that organizations often learn by collaborating with other organizations (Powell, et al., 1996). Von Hippel (1988) argues that a production network with superior knowledge-transfer mechanisms among users, suppliers, and manufacturers will be able to “cut innovate”. Powell and colleagues (1996) argue that biotech firms who are unable to create (or position themselves in) learning networks are at a competitive disadvantage. Therefore, alliance partners can generate rents by developing knowledge-sharing routines, which are defined as a regular pattern of interfirm interactions that permits the transfer, recombination, or creation of specialized knowledge (Grant, 1996). These are institutionalized interfirm processes that are purposefully designed to facilitate knowledge exchanges between alliance partners.

No strong learning effects have been found in the case study data. Learning could take place in two areas, organizational skills and technological know-how. Organizationally, most partners are considerably older and are either mid-caps or large incumbents; therefore, learning cannot really take place, because the partners are too different (question of absorptive capacities). Technological learning effects are limited as well. All case study firms had severe problems in establishing intense technology partnerships⁸⁸, because cooperation incentives are hard to align (compare table 25 resource dependency of alliance networks and the subsequent paragraphs). These two issues – absorptive capacities and cooperation incentives – are now discussed in greater detail.

Partner specific absorptive capacity: Many scholars divide knowledge into two types: (1) information and (2) know-how (Kogut, et al., 1992b). Information is defined as easily codifiable knowledge that can be transmitted without loss of integrity once the syntactical rules required for deciphering are known. Information includes facts, axiomatic proposition, and symbols (Kogut, et al., 1992b, p. 386). By comparison, know-how involves knowledge that is tacit, sticky, complex, and difficult to codify (Kogut, et al., 1992b; Nelson, et al., 1982). Compared to information, know-how is more likely to result in advantages that are sustainable. As a result, alliance partners that are particularly effective at transferring know-how are likely to outperform competitors who are not.

The ability to exploit outside sources of knowledge is largely a function of prior related knowledge or the absorptive capacity of the recipient, where absorptive capacity is defined as the ability of a firm to recognize the value of new external information, to assimilate it,

⁸⁸ Intensive technology cooperations exist only in the case of partnerships with equity stake, such as in the case of *YellowMap* with *CAS Software*

and to apply it to commercial ends (Cohen, et al., 1990). Alliance partners can increase partner-specific absorptive capacity by designing interfirm routines that facilitate information-sharing and increase socio-technical interactions (Dyer, et al., 1998).

The case study data indicate the importance of partner specific absorptive capacities, as reported by the CEO of Airweb:

'It took us over a year to learn the structure of Deutschen Telekom. To do business with large incumbents, you first have to learn their organization: who is responsible, who has to agree on the deal, etc.' (Claudius Bertheau, CEO Airweb, 2002)

Cooperation incentives: The ability of alliance partners to generate rents through knowledge sharing is dependent on an alignment of incentives that encourages the partners to be transparent to transfer knowledge, and not to free-ride on the knowledge acquired from partners. Various scholars have found that equity arrangements are particularly effective at aligning partner incentives and, therefore, promote greater interfirm knowledge transfers than contractual arrangements (Kogut, 1988).

Case study data show almost no equity arrangement, which is consistent with the findings of a study by Booz Allen Hamilton (2001b). Equity investments are too numb to cope with the challenges of high-velocity industries. Other cooperation incentives exist, such as social embeddedness and trust (compare chapter 4.1.4 Alliance management / embeddedness); however for highly sensitive technology alliances, they might not be strong enough.

In conclusion, in the current status of the Mobile Internet industry, knowledge sharing routines play a role of only medium importance.

Complementary resource endowments

Another way firms can generate relational rents is by leveraging the complementary resource endowments of an alliance partner. In some instances a firm's ability to generate rents from its resources may require that these resources be utilized in conjunction with the complementary resources of another firm. Formation and management of alliances have been discussed widely as a key factor driving returns from alliances (Hamel, 1991; Harrigan, 1985; Hill, et al., 1994; Shan, et al., 1994; Teece, 1987).

Resource endowments are defined as "distinctive resources of alliance partners that collectively generate greater rents than the sum of those obtained from the individual endowments of each partner" (Dyer, et al., 1998, p. 666-667). It is necessary that neither firm in the partnership be able to purchase the relevant resources in a secondary market.

Strategic alliances allow firms to procure assets, competencies, or capabilities not readily available in competitive factor markets.

This is the main driver for relational rent in the Mobile Internet industry. As discussed in section 4.1, the case study firms cooperated with partners to produce and deliver their whole product or service, whereas they produce only a part thereof. Resource dependency theory explains why these forms of cooperations exist. Furthermore,—as discussed in sub-sections 4.1.3 and 4.1.4—alliance formation and alliance management skills determine the alliance portfolio effectiveness and thereby the magnitude of relational rent.

Ability to identify and evaluate potential complementarities: There are several challenges faced by firms attempting to generate relational rents with complementary resources. In particular, they must find each other and recognize the potential value of combining resources. Firms vary in their ability to identify potential partners and value complementary resources for the following primary reasons: (1) differences in prior alliance experience (i.e., Gulati, 1995; Mitchell, et al., 1996; Walker, et al., 1997), (2) differences in internal search and evaluation capability (i.e., Singh, et al., 1997), and (3) differences in their ability to acquire information about potential partners owing to different positions in their social and economic network(s) (i.e., Burt, 1992; Gulati, 1995; Walker, et al., 1997). All three points been discussed previously in section 4.1.3 ‘Partner acquisition’.

Organizational complementarities to access benefits of strategic resources complementarily: Once a firm has identified a potential partner with the requisite complementary strategic resources, another challenge is developing organizational complementarity, which comprises compatibility in decision processes, information and control systems, and culture (Doz, 1996). These points are discussed and confirmed in the analysis on alliance management capabilities in section 4.1.4 ‘Alliance management’.

In summary, both—strategic selectivity and organizational complementarities—are critical for realizing the potential benefits of combining complementary strategic resources.

Effective governance

Governance plays an important role in the creation of relational rents because it influences transaction costs and the willingness of alliance partners to engage in value-creation initiatives. Therefore, it is important for transactors to choose a governance structure that minimizes transaction costs thereby enhancing efficiency (Williamson, 1985).

Governance used by alliance partners can be distinguished in the following ways:

- third party enforcement (Williamson, 1991) versus self enforcement (Telser, 1980), and

- formal (financial and investment hostages (Klein, 1980)) versus informal (goodwill trust, embeddedness (Uzzi, 1997), and reputation (Larson, 1992))

Transactors who are effective at aligning transactions with governance structures, will have an advantage over competing transactors. Effective governance can generate relational rents either by lowering transaction costs or by providing incentives for value-creation initiatives. Due to the scope of this study, governance issues are not included, therefore, the relevant sub-processes are only described and not analyzed.

Ability to employ self-enforcement governance mechanisms: Self-enforcing mechanisms are more effective than third-party enforcement mechanisms at both minimizing transaction costs and maximizing value-creation initiatives for four primary reasons: (1) contracting costs are avoided, (2) monitoring costs are lower, (3) costs associated with complex adaptation are lowered, and (4) superiority at minimizing transaction costs is achieved because they are not subject to the time limitations of contracts. Self-enforcing agreements also call for greater value-creation initiatives on the part of the exchange partners.

Ability to employ informal self-enforcement mechanisms: Informal safeguards have the greater potential to generate relational rents, and they are subject to two key liabilities: (1) they require substantial time to develop because they require a history of interactions and personal ties, and (2) they are subject to the “paradox of trust”.

Conclusion on sources of relational rent

Theory and case study results are consistent in explaining sources of relational rent. Not all theoretical drivers are particularly important in the Mobile Internet industry. Complementary resources are most likely to generate relational rents. Relation specific assets and knowledge sharing routines are of medium importance. Case study data do not provide evidence that governance mechanisms are of very high importance.

After establishing relational rent, the next strategic challenge is to maintain strong strategic positions, which is discussed next.

Mechanisms to preserve relational rent

An explanation of how firms generate relational rents necessarily requires an explanation of why competing firms do not simply imitate the partnering behavior, thereby eliminating any competitive advantages that might be gained through collaboration. There are a variety of isolating mechanisms that preserve the rents generated by alliance partners such as causal ambiguity, time compression diseconomies, inter-organizational asset interconnectedness, partner scarcity (rareness), resource indivisibility (co-evolution of capabilities), or a socially

complex institutional environment. The first two mechanisms have been discussed previously and demonstrated in chapter 4.2.1 'Impact of resources on competitive advantage'. The other mechanisms are discussed now.

Interorganizational asset interconnectedness

The premise of this mechanism is that interorganizational asset interconnectedness occurs in cumulative increments on an existing stock of assets held by a firm or its alliance partner. There is a cumulative effect that is due to the interconnectedness of current relation-specific investments with previous relation-specific investments.

This point has been demonstrated and discussed in the analysis of social capital and the value of prior alliances (compare to section 4.1.3 Partner acquisition / Alliance history).

Partner scarcity

Relational rents are contingent on a firm's ability to find a partner with (1) complementary resources and (2) a relational capability (i.e., firm's willingness and ability to partner). In some cases, a late-comer to the partner scene may find that all potential partners with the necessary complementary resources have already entered into alliances with other firms.

In other instances potential partners may simply lack the relational capability or relation-building skills and process skills necessary to employ effective governance mechanisms to make relation-specific investments or to develop knowledge-sharing routines (Eisenhardt, et al., 1996; Larson, 1992). Firms with collaborative experience have been found to be more desirable as partners and more likely to generate value through partnerships (Gulati, 1995). The key strategic implication of this isolating mechanism is that there are strong first mover advantages for those firms that develop a capability of quickly identifying and allying with partners possessing complementary strategic resources and a relational capability. These capabilities in this study are termed partnership acquisition capabilities.

Due to the fact that most companies have already established over 30 alliances, the complete lack of relational capabilities might not be an issue. However, the impact of advanced partner acquisition capabilities on the alliance portfolio effectiveness becomes obvious in this study. A comparison of *Gate5* with *ehotel* with respect to the different degrees to which an allying process is implemented and how this influences their alliance portfolio effectiveness constitutes an illustrative example.

Resource indivisibility

Partners may combine resources or jointly develop capabilities in such a way that the resulting resources are both idiosyncratic and indivisible. A key strategic implication is that

the partners' resources and capabilities may coevolve and change over time, thereby restricting each firm's ability to control and redeploy the resources. Although value may be generated through the partnership, there is the potential for a loss of flexibility, which should be considered at the outset.

The case study data do not provide many characteristic examples for resource indivisibility. One reason for this could be the barely existing co-development agreements or other forms of intense technology partnering.

Institutional environments

An institutional environment that encourages or fosters trust among trading partners (e.g., has effective institutional "rules" or social controls for enforcing agreements) may facilitate the creation of relational rents (North, 1990). In addition, national or regional "rules" can foster trust among partners; the Japanese automobile industry is a good example (Sako, 1991).

Case study data do not provide characteristic examples of the impact of the institutional environments. Given the fact that all case studies are part of the same industry, cooperate with the same or similar firms, and have the same national background, this is not really surprising.

In conclusion of this argument, relational rents generated by alliance partners are preserved because competing firms:

- Face difficulties when interconnecting their organization with relevant industry partners. Competitors have previously embedded ties to most industry players and established social capital. For newcomers it is hard to imitate practices or investments because of asset stock interconnectedness and because the costs associated with making previous investments are prohibitive.
- Have problems in partnering with important industry players with the required complementary strategic resources or relational capability. Partners are scarce due to oligopolistic structures in the operator and content business.

Case study data show that the other mechanisms listed above are not particularly relevant.

Comparing the relational view with the RBV

The relational view extends the existing literature on resources and their impact on competitive advantage in a number of ways. First, it attempts to integrate what is known regarding the benefits of collaboration by examining the inter-organizational rent generating process. It argues that collaborating firms can generate relational rents through relation-

specific assets, knowledge-sharing routines, complementary resource endowments, and effective governance. Second, it identifies the isolating mechanisms that preserve the relational rents generated through effective inter-firm collaboration (compare table 32).

Dimensions	Resource-Based View	Relational View
Unit of analysis	Firm	Pair or network of firms
Primary source of supernormal profit returns	Scarce physical resources (e.g., raw material inputs) Human resources/know-how (e.g., managerial talent) Technological resources (e.g., process technology) Financial resources Intangible resources (e.g., reputation)	Inter-firm knowledge-sharing routines Complementary resource endowments Effective governance
Mechanisms that preserve profits	Firm-level barriers to imitation <ul style="list-style-type: none"> • Resource scarcity / property rights • Causal ambiguity • Time compression diseconomies • Asset stock interconnectedness 	Dyadic / network barriers to imitation <ul style="list-style-type: none"> • Causal ambiguity • Time compression diseconomies • Inter-organizational assets stock interconnectedness • Partner scarcity • Resource indivisibility • Institutional environment
Ownership/control of rent-generating resources	Individual firm	Collective (with trading partner)

Table 32 Differences between the RBV and the relational view

This study shows—consistent with Dyer and Singh (1998)—that relationships between firms are an increasingly important unit of analysis for explaining supernormal profit returns. The relational view offers a useful theoretical lens through which value-creating linkages between organizations can be examined and explored. One key aspect to organizational survival is the ability to acquire and maintain resources.

Critique of the relational view

As it is closely related to the RBV, the relational view has been criticized for some of the same reasons. The value of the exchanged resources and knowledge is determined exogenous to the model; the relational view is too static, because it does not address the dynamics in relationships and the value of the exchanged resources. In addition, authors (e.g., Molina, 1999) have stated two additional points: (1) the detachment of the relational view from closely related views such as the RBV is not especially helpful, because the competitive advantage does not depend solely on inter-firm knowledge-sharing routines and complementary resource endowments, but also from the value of resources and the skills residing inside the company. Moreover, (2) it requires more work to clarify for which kind of networks the relational view is especially useful.

Conclusion on the relational view

Aside from the critique mentioned above, the relational view takes the resource-based concepts of strategic management a step further and expands them up to the firm's shared environment (Rizzoni, 1993). It is a powerful approach that explains explicitly the circumstances in which relational rent can be generated and instances of how it can be protected.

In the context of this study, the relational view is applicable to the understanding and structure the importance of strategic alliances on competitive advantage

Its shortcoming of being too static is the same as with the RBV, and has been discussed in detail at the end of section 4.2.1. As pointed out in that section, the concept of dynamic capabilities deals with this critique with the aim to enlarge the resource-based theories. Dynamic capabilities are discussed in the following section.

4.2.3 Dynamic capabilities

Strategic theory, including the RBV and the relational view, is replete with analyses of firm-level strategies for sustaining and safeguarding extant competitive advantage, but has performed less well with respect to assisting in the understanding of how and why certain firms build competitive advantage in regimes of rapid change (Teece, et al., 1997). The RBV in particular has not explained adequately how and why certain firms have competitive advantage in situations of rapid and unpredictable change. It breaks down in high-velocity markets in which the strategic challenge is to maintain competitive advantage when the duration of that advantage is inherently unpredictable and when time is an essential aspect of strategy (Eisenhardt, et al., 2000). In particular the

'...battles in high-technology industries such as semiconductors, information services, and software have demonstrated the need for an expanded [dynamic] paradigm to understand how competitive advantage is achieved.' (Teece, et al., 1997, p.516)

High-velocity markets are a boundary condition for the RBV, which is a necessary addition to the theory. The classic RBV overlooks the strategic role of time. Understanding the flow of strategy from leveraging the past to probing the future and the rhythm of when, where, and how often to change is central to strategy in high-velocity markets (Aragon-Correa, et al., 2003; Deeds, et al., 2000; Galunic, et al., 2001; Griffith, et al., 2001; Helfat, 1997; King, et al., 2002; Rindova, et al., 2001; Zollo, et al., 2002), and is captured in hypothesis 16: *The*

better a NTBF is capable of rearranging its alliance portfolio according to changing resource requirements (dynamic capability), the better the company's performance and, therefore, the higher its competitive advantage.

In high velocity markets, dynamic capabilities by which firm managers integrate, build, and reconfigure internal and external competencies to address rapidly changing environments become important (Teece, et al., 1997). The terminology 'dynamic capabilities' emphasizes two key aspects that were not the main focus of attention in previous strategy perspectives. The term dynamic refers to the capacity to renew competencies so as to achieve congruence with the changing business environment; certain innovative responses are required when time-to-market and timing are critical, when the rate of technological change is rapid, and when the nature of future competition and markets are difficult to determine. The term capabilities emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment. Dynamic capabilities are best conceptualized as tools that manipulate resource configurations. Elements of the approach can be found in Schumpeter (1942), Penrose (1959), Nelson and Winter (1982), and Prahalad and Hamel (1990).

The work of these various scholars has led to a flood of different definitions for terms such as 'resources', 'capabilities', 'routines', and 'factors'. Thus, following the introduction, this section will provide definitions for the relevant terms used in this study. In the second part, the dynamic capability concept is described in detail, followed by its limitations and critique. Thereby the key statements are analyzed in the context of case study findings. Part four concludes the section with a summary.

Definitions

To differentiate basic factors of production from resources and activities from core competencies and dynamic capabilities clear definitions are required. This section distinguishes the terms from each other.

Factor of production: These are undifferentiated inputs available in disaggregate form in factor markets. Undifferentiated means that they lack firm-specific components. Land, unskilled labor, and capital are typical examples. Some factors may be freely available, such as public knowledge. In the language of Arrow (1996), such resources must be 'non-fugitive'. Property rights are usually well-defined for factors of production.

Resources: Resources are firm-specific assets that are difficult to impossible to imitate. Trade secrets and certain specialized production facilities and engineering are examples.

Such assets are difficult to transfer among firms because of transaction costs and because the assets may contain tacit knowledge. This definition is much narrower than the definition provided in section ‘4.2.1 – Resource definition’, because it excludes skills, routines, and competencies.

Organizational routines / competences: When firm-specific assets are assembled in integrated clusters spanning individuals and groups so that they enable distinctive activities to be performed, these activities constitute organizational routines and processes. Examples include quality and systems integration. Such competences are typically viable across multiple product lines, and may extend to outside the firm to include alliance partners.

Core competences: Those competences that determine a firm’s fundamental business as a core are defined as core competences. They must accordingly be derived by looking across the range of a firm’s products and services. The value of core competences can be enhanced by combining them with appropriate complementary assets. The degree to which a core competence is distinctive depends on how well-endowed the firm is relative to its competitors, and on how difficult it is for competitors to replicate its competences.

Dynamic capabilities: Dynamic capabilities are defined as the firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly-changing environments. Dynamic capabilities thus reflect an organization’s ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions. They are:

‘... the firms’ processes that use resources—specifically the processes to integrate, gain and release resources—to match and even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die.’ (Eisenhardt, et al., 2000, p. 1107)

Other scholars used different terms for similar context, such as: ‘combinative capabilities’ (Kogut, et al., 1992b), ‘architectural capabilities’ (Henderson, et al., 1994), ‘organizational capabilities’ (Grant, 1996), or simple ‘capabilities’ (Amit, et al., 1993).

Products: End products are the final goods and services produced by the firm based on utilizing the competences that it possesses. The performance (price, quality, etc.) of a firm’s products relative to its competitors at any point in time will depend upon its competences.

As defined above, dynamic capabilities consist of identifiable and specific routines that either integrate, transform, gain, or release resources. Integrating routines are product development and strategic decision-making. Reconfiguration includes transfer processes (routines for replication and brokering), allocation routines (distribution of scarce resources such as capital or manufacturing capacity), and coevolving (e.g., connection of collaboration webs); capabilities related to the gain and release of resources include knowledge creation routines (i.e., Henderson, et al., 1994), alliance and acquisition routines (i.e., Lane, et al., 1998), and exit routines that jettison resource combinations no longer providing competitive advantage (Sull, 1999). In the case study companies, strategic planning, project management, and allying were cited as particularly critical capabilities. As the CEO of *Airweb* reports:

'... [our strengths are] the speed with which we realize and implement new projects and our significant experience in structuring alliances.' (Claudius Bertheau, CEO Airweb, 2002)

Yet what are the implications of dynamic capabilities? How can they be established? How do they create competitive advantage, and how useful is this concept for this study? To answer these questions, the next part describes the model Teece and his colleagues developed from 1991 to 1997 and analyzes the case study results in context of the key statements.

Analyzing the case study results with the concept of dynamic capabilities

What is distinctive about firms is that they are domains for organizing activity in a non-market fashion. Accordingly, competences and capabilities are ways of organizing and getting things done that cannot be accomplished merely by using the price system to coordinate activity. The very essence of most capabilities and competences is that they cannot be readily assembled through markets (Zander, et al., 1995).

The key point is that a portfolio of business units amalgamated only through formal contracts cannot replicate the properties of an internal organization. Many distinctive elements of an internal organization simply cannot be replicated in the market. That is, entrepreneurial activity cannot lead to the immediate replication of unique organizational skills simply by entering a market and piecing the parts together overnight. Replication takes time, and firm capabilities need to be understood in terms of organizational structures and the managerial processes that support productive activity (Teece, et al., 1997).

The degree to which dynamic capabilities generate competitive advantage depends on the degree to which new capabilities can be formed and existing ones can be replicated (generation of competitive advantage). Their sustainability depends on the degree to which they can be imitated or emulated (sustainability of competitive advantage). These two aspects are discussed subsequently.

Generation of competitive advantage

There are many dimensions of business firms that must be understood if one is to grasp firm-level distinctive competences and capabilities. Teece (1997) identified three classes of factors that determine firm's distinctive competence and dynamic capabilities: (1) processes, (2) positions, and (3) paths. Organizational processes, shaped by the firm's asset positions and molded by its evolutionary and coevolutionary paths, explain the essence of the firm's dynamic capabilities and its competitive advantage. In addition, (4) a firm's ability to replicate these capabilities determines the scale of its competitive advantage.

Processes: Managerial and organizational processes are the way things are done in the firm, or what might be referred to as its routines, or patterns of current practice and learning. The essence of competences and capabilities is embedded in organizational processes of one kind or another. Organizational and managerial processes have three roles: coordination / integration, learning, and reconfiguration.

Coordination / integration: Managers coordinate or integrate activity inside the firm. How efficiently and effectively internal coordination or integration is achieved is extremely important. Likewise for external coordination, the growing literature on strategic alliances supplies evidence for the importance of external integration and sourcing. Various scholars provided support for the notion that management's internal organizing skills are the source of differences in firms' competence in various domains (Clark, et al., 1991; Garvin, 1988; Henderson, et al., 1990; Womack, et al., 1991).

The notion that there is a certain rationality or coherence to processes and systems is not the same concept as corporate culture. Corporate culture refers to the values and beliefs that employees hold. Rationality and coherence notions are more akin to Nelson and Winter's (1982) notion of organizational routines.

Case study data provide further evidence that coordination tasks are very important, particularly when firms grow older. All case studies report that the importance of effectiveness grew dramatically from stage two on. However, organizational

effectiveness was not the scope of this study, therefore internal coordination activities have not been analyzed in greater detail.

Learning: Learning is the process by which repetition and experimentation enable tasks to be performed better and quicker. It also enables new production opportunities to be identified (Levitt, et al., 1988). Learning requires common codes of communication and coordinated search procedures. Organizational knowledge generated by such activity resides in new patterns of activity, in routines, or in a new logic of organization. Routines are patterns of interactions that represent successful solutions to particular problems. These patterns of interaction are present in group behavior. The concept of dynamic capabilities as a coordinative management process opens the door to the potential for inter-organizational learning. Researchers have pointed out that collaboration and partnerships can be vehicles for new organizational learning that helps firms to recognize dysfunctional routines and prevents strategic blind spots.

It cannot be said that learning is unimportant. In fact, learning is important in case study firm's alliances, for learning industry rules, organizational structures, and how to ally: however, learning was not the major focus for establishing alliances as discussed previously in chapter 4.1.

Reconfiguration and transformation: In rapidly changing environments, there is obviously value in the ability to sense the need to reconfigure a firm's asset structure, and to accomplish the necessary internal and external transformation. The capacity to reconfigure and transform is itself a learned organizational skill. The more frequently practiced, the easier it is accomplished.

Change is costly. Therefore, firms must develop processes to minimize low pay-off change. The ability to scan the environment, to evaluate markets and competitors and to quickly accomplish reconfiguration and transformation ahead of competition increases the change efficiency.

In examining the case study data, reconfiguration is clearly an issue. In an extreme form, companies restructured their business model, such as *12snap* from mobile auctioning to mobile marketing, or *ApollisInteractive* from MLS to mobile marketing. However, stage-wise changing resource requirements (as discussed in the cross segment analysis—section 3.5) also force firms to rearrange assets and resources. The allying process (analyzed in detail in sections 4.1.3 and 4.1.4) is crucial for reconfiguring the firm's boundary. In addition, reconfiguration within

partnership is an important element for intensifying them and maintaining their duration as formulated in hypothesis 10 (and discussed in section 4.1.4).

Of the three processes, the reconfiguration and transformation processes are without any doubt the most important. Moreover, in support of hypothesis 16, they have the potential to create competitive advantage.

Positions: Processes are shaped significantly by the assets the firm possesses. By positions, Teece (1997) refers to firm's current specific endowments of technology, intellectual property, customer base, and its relationships with suppliers and complementors.

Technological assets: Much technology does not enter a market, either because the firm is unwilling to sell it or because transaction costs are too high. Ownership protection and utilization of technological assets are clearly differentiators among firms. This is also the case with complementary assets that are additionally required to produce and deliver new products and services.

Case study firms invest a great deal in technology and, particularly in MLS segment, technology is a clear differentiator. However, pure technology assets or positions have not been analyzed in this study; thus, nothing can be said about their implications.

Financial assets: A firm's cash position and the degree of leverage have strategic implications, because they limit what a firm can do.

In the case of *12snap*, financial assets can be seen as a competitive advantage, as its CFO Bernd Mühlfriedel, who raised approximately €50 million in VC funding in the year 2000, stated:

"... this was not only me. I worked on this together with the CEO Michael Birkel. But our financial situation is clearly a competitive advantage for us. The question, who is the most creative, is always hard to answer, but the question, who is financially the most powerful, is by far more transparent and easier to answer." (Bernd Mühlfriedel, CFO 12snap, 2002)

Financial assets are important, but as shown in the case of *ApollisInteractive*, which was second only to *12Snap* in the amount of funds received, not enough for a distinctive competitive advantage. In addition, as with technological assets, the implication of financial assets on competitive advantage has not been the focus of this study.

Reputational assets: Reputation often summarizes a good deal of information about firms and shapes the responses of customers, suppliers, and competitors. Reputational assets are best viewed as an intangible asset that enables firms to achieve various goals in the market. It is part of its social capital. Its main value is external.

Case study data clearly indicate the importance of reputation, which is formulated in hypothesis 6. Reputation is gained by reliable project realization and by partnerships with prestigious firms. It is especially important for alliance formation.

Structural assets: The formal and informal structure of organizations and their external linkages have an important bearing on the rate and direction of innovation, and on how competences and capabilities coevolve. The degree of hierarchy and the level of vertical and lateral integration are elements of firm-specific structures.

The strategic importance of these structural assets is clearly evident in the case study data and has been discussed in the previous section on relational rent.

Institutional assets: Institutions are a critical element of the business environment. Regulatory systems as well as intellectual property regimes, tort law, and antitrust laws are part of the environment. So is the system of higher education and natural culture. There are significant local, regional, and national differences, which is one of the reasons why geographic location matters (Nelson, 1994).

Institutional assets have no strategic importance in this study. All firms face the same business environment; they cannot feasibly be differentiated according institutional assets.

Market (structure) assets: Product market positions matter. However a market position is often extremely fragile in regimes of rapid technological change. While important, it is too often overplayed (Teece, et al., 1997).

Market structure assets do not play a significant role in this study, at least not yet. The Mobile Internet industry is highly fragmented and still has low entry barriers. Due to limited market power, market structure assets barely exist (see discussion on concepts in strategic management in the introduction of section 4.2).

Organizational boundaries: The degree of integration (vertical, lateral, and horizontal) is of some significance. Boundaries are important with respect to the nature of the coordination that can be achieved internally as compared to through markets. When, for example, poorly protected intellectual capital is at issue, pure market arrangements expose the parties to contracting hazards. In such

circumstances, hierarchical control structures may work better than pure arms-length contracts (Williamson, 1996, p. 102-103).

Integrating steps along the value chain or consolidating the industry by merging with competitors to gain market power have not been issues for the case study firms. Limited funds and low evaluations largely prohibit the firms from buying other firms. In addition, integrating is the strongest form of cooperation, which seems not to be flexible enough for current market conditions (compare Booz Allen Hamilton, 2001b).

In summary of the strategic impact of position in the Mobile Internet industry, structural and reputational assets are very important. The processes by which they affect competitive advantage have been analyzed in this study and discussed in sections 3.5, 4.1, and 4.3.2. In addition, case study data indicate that technology and financial assets are also important, but the impact of these positions has not been analyzed in greater detail.

The remaining positions, institutional, market and organizational, appear to be strategically unimportant for the case study companies.

Paths: Processes are shaped significantly by the evolutionary path that a firm has adopted/inherited. Choices about domains of competence are influenced by past choices. At any given point in time, firms must follow a certain trajectory or path of competence development. This path not only defines which choices are open to the firm today, but it also puts bounds on what its internal repertoire is likely to be in the future.

Path dependencies: Where a firm can go is a function of its current position and the paths ahead. Moreover, its current position is often shaped by the traveled path. A firm's previous investments and its repertoire of routines constrain its future behavior. Opportunities for learning will be 'close in' to previous activities and thus will be transaction and production specific.

The case study data provide several examples that clearly show how important path dependencies are, especially when looking at external linkages. A characteristic example can be taken from the MCS segment. Content providers form an oligopoly; therefore, only a limited amount of content partners exist. In the case of late industry entry, only small or unattractive partners remained, which causes clear competitive disadvantages. A more general example of path dependency is the impact of the firm's alliance history, which is formulated in hypotheses 9 and discussed in section 4.1.3 'Partner acquisition / Alliance history'. The set of prior formed alliances has a positive impact on alliance opportunities, reputation, and project skills.

The importance of path dependencies is amplified when conditions of increasing returns to adoption exist. New products employing different standards often appear with alacrity in market environments experiencing rapid technological change and incumbents can be readily challenged by superior products and services that yield switching benefits. However, these effects have not been found in the case study data.

Technological opportunities: How far and how fast a particular industry activity can proceed is due in part to the potential future technological opportunities. Technological opportunities may not be completely exogenous to industry, not only because some firms have the capacity to engage in or at least support basic research, but also because technological opportunities are often fed by innovative activity itself. The depth and width of technological opportunities in the area of a firm's prior research activities are thus likely to impact a firm's options with respect to both the amount and level of R&D justified activity.

These technological opportunities exist. They have been crucial for the whole industry to come into existence and they are important for its growth, chiefly in the technology-heavy segments like MLS. However, in the case study data, nothing could be found that indicated that one firm had a clear technological advantage.

Thus, the path dependency argument is most important for understanding, how the history of activities influences the creation of current and future competitive advantage. The scale of this competitive advantage is dependent on how efficiently firms can replicate it.

Replication: Replication involves transferring or redeploying competences from one concrete economic setting to another. Replication and transfer are often impossible without the transfer of people, although this can be overcome if investments are made to convert tacit knowledge to codified knowledge. Often, however, this is simply not possible. Competences and capabilities, and the routines upon which they rest, are usually rather difficult to replicate (Nelson, et al., 1982).

At least two types of strategic value flow from replication: One strategic value is the ability to support geographic and product line expansion; another is that the ability to replicate also indicates that the firm has the foundation in place for learning and improvement because the understanding of processes might lead to the codification of circumstances that would allow scientific and engineering principles to be applied systematically.

Case study data provide two forms of replication: internationalization and copying partnership deals. Concerning internationalization, *I2snap* opened offices in Italy and

Scandinavia using the same market entry strategy that had proved to be successful in the UK.

Replication takes place when parallel partnerships are established, such as *Clever.Tanken* did with several regional radio stations and *YellowMap* did with different city portals. The structure of each partnership is often identical and processes are simply copied.

Nevertheless, these partnerships also bear the risk of losing their competitive advantage. They are often neither exclusive nor especially intense and, therefore, easy to imitate by outsiders. The relevant factors that influence the sustainability of competitive advantage are analyzed next.

Sustainability of competitive advantage

Competences can provide advantages and generate rents only if they are based on a collection of routines, skills, and complementary assets that are difficult to imitate. A set of routines can lose its value if it supports a competence that is no longer of consequence in the marketplace, or if they can be readily replicated or emulated by competitors. Imitation occurs when firms discover and simply copy a firm's organizational routines and procedures. Emulation occurs when firms discover easy alternatives to achieve the same functionality.

Imitation is simply replication performed by a competitor. The ease of imitation determines the sustainability of competitive advantage. Easy imitation implies the rapid dissipation of rents. When the tacit component is high, imitation may well be impossible without the hiring away of key individual and the transfer of key organizational processes. Intellectual property rights, such as patents, trade secrets, and trademarks, also limit imitation.

Case study interviews have shown that imitation is possible and not excessively difficult to realize, especially in the MCS segment where tacit components are limited. Services, suppliers, and distributors are often common knowledge and neither a strong platform technology nor a large opt-in subscriber base limits copying and imitating. Limitation can often only be blocked when services are co-developed with partners who have expensive or even exclusive content, such as *Airweb* did with *L'équipe* in France.

On the other hand, in all three segments, profitable business models are rare and the causal ambiguity of why services are successful is high. The dominant design for most mobile services has not yet found. Therefore, neither imitation nor emulation are major threats in the industry because—using evolutionary theory—selection and not variation is the problem.

Concluding on Teece, Pisano and Shuen's (1997) theory, the discussion has shown that firms can derive competitive advantage from dynamic capabilities. In particular, reconfiguration and transformation processes, as well as reputational and structural assets are key factors that have the potential to create competitive advantage from effectively structured alliance portfolios, which supports hypothesis 16. Replication and imitation exist, but both processes have no major importance.

Limitations and critique

Even before the final version of the paper by Teece and his colleagues was published various scholars (i.e., Collis, 1994; Eisenhardt, et al., 2000) took up the idea of dynamic capabilities and tested its applicability in different contexts. Eisenhardt and Martin (2000) examined the nature of dynamic capabilities, how those capabilities are influenced by market dynamism, and their evolution over time. They found that:

- (1) Dynamic capabilities exhibit commonalities across effective firms—or what can be termed 'best practice'. Therefore, dynamic capabilities have greater equifinality, homogeneity, and substitutability across firms than traditional RBV thinking would imply.
- (2) Effective patterns of dynamic capabilities vary with market dynamism. In the context of a stable industry structure, dynamic capabilities resemble the traditional conception of routines (i.e., Nelson, et al., 1982). In high-velocity markets where industry structure is blurred, dynamic capabilities take on a different character. They are simple, experiential, unstable processes that rely on quickly-created new knowledge and iterative execution to produce adaptive, but unpredictable, outcomes.

Collis (1994) analyzed the source of competitive advantage in a hierarchy of resources and capabilities and tested the applicability of Teece's concept for practitioners. He found that:

- (3) In the hierarchy of resources and capabilities, higher and higher hyper capabilities can always be found that make the competitive advantage of lower level resources and capabilities obsolete.
- (4) The applicability for practitioners is limited, because dynamic capabilities are often not well-defined and difficult to operationalize.

The relevance of these four points is discussed subsequently.

Limited potential for sustainable competitive advantage

Since the functionality of dynamic capabilities, such as effective alliance management, can be duplicated across firms, their value for competitive advantage lies in the resource configurations that they create, not in the capabilities themselves (Eisenhardt, et al., 2000).

Dynamic capabilities can be used to enhance existing resource configurations in the pursuit of long-term competitive advantage.

Commonalities across firms for effective specific capabilities exist, and were named equifinality by which Eisenhardt and Martin (2000). That is, managers of firms that develop an effective dynamic capability such as knowledge creation or allying processes very probably begin the development of that capability from different starting points and take unique paths. Since they end up with capabilities that are similar in terms of key attributes, this suggests that there are multiple paths to the same dynamic capabilities (equifinality). Routines are more substitutable and fungible across different contexts than current theory suggests.

A good case study example is the basic structure of the allying process, which has a similar shape in all case study firms. This supports Eisenhardt and Martin's equifinality argument.

Dynamic capabilities are not likely to be sources of sustained competitive advantage. They are valuable and they might be rare, but they are not sustainable. Equifinality renders inimitability and immobility irrelevant to sustained advantage. Dynamic capabilities must have key features in common to be effective, but they can actually be different in terms of many details. This suggests that dynamic capabilities per se can be source of competitive, but not sustainable, advantage.

Thus, dynamic capabilities are somewhat similar across case studies. For example, the case study firms use very similar allying processes and strategic skills to reshape their business models, which is necessary for the creation of competitive advantage. However, these skills are not sufficient to sustain the created advantage.

Context specificity

When markets are very dynamic—what is termed high velocity—change becomes nonlinear and less predictable. High-velocity markets are those in which market boundaries are blurred, successful business models are unclear, and market players (i.e., buyers, suppliers, competitors, and complementers) are ambiguous and shifting. These characteristics are clearly the case in the Mobile Internet industry, as described in chapter '3.1.1 – Industry overview'.

Dynamic capabilities in high-velocity markets are simple routines that provide enough structure (e.g., semi-structure) so that people can focus their attention, help provide sense making about the situation, and be confident enough to act in these highly uncertain situations in which it is easy to become paralyzed by anxiety (Eisenhardt, et al., 2000).

In high-velocity markets, absence of detailed formal routines is not indicative of extensive use of tacit knowledge or complex social routines that cannot be codified, although these may be present. Rather dynamic capabilities strikingly involve the creation of new, situation specific knowledge. Finally, dynamic capabilities in these markets are characterized by parallel consideration and often partial implementation of multiple options.

In high-velocity markets, dynamic capabilities take on the following character: They are simple (not complicated), experimental (not analytic), and iterative (not linear) processes. They rely on the creation of situation-specific knowledge that is applied in the context of simple boundary and priority-setting rules.

In high-velocity markets, the more crucial aspect of evolution is selection, not variation. Variation happens rapidly in such markets as the Mobile Internet with more than 900 companies (compare Booz Allen Hamilton, 2001b). In contrast, selection is difficult because it is a challenge to decide which experience should be generalized from the extensive situation-specific knowledge that occurs. Dynamic capabilities rely extensively on new knowledge created for specific situations. Routines are purposefully simple, although not completely unstructured, to allow for emergent adaptation. Effective routines are adaptive to changing circumstances. The price of that adaptability is unstable processes with unpredictable outcomes. In cases in which learning can be too rapid, the selection of what to keep from experience is more crucial, and the order of implementation can be critical in dynamic capabilities that are composed of several distinct capabilities.

Eisenhardt and Martin (2000) found that competitive advantage lies in the resource configuration that managers build using dynamic capabilities, not in the capabilities themselves. Effective dynamic capabilities are necessary, but not sufficient, conditions for competitive advantage. This is consistent with the case study findings; competitive advantage lies in the resource configuration, such as in *12snap's* opt-in subscriber base, in *Clever.Tanken's* 40,000+ *Benzin Preis Piloten* or in *YellowMap's* business directory and maps and not in efficient alliance formation and management processes. However, these processes are necessary to build up and configure the underlying resources.

Superseding higher-order capabilities

Collis (1994) argues that positions of competitive advantage based on dynamic capabilities are vulnerable to being superseded by a better, higher-order capability.

Definitions have classified routines and capabilities into three categories, each of which is recognized as possible source of durable firm heterogeneity. (1) Routines (first order categories according to Collis) reflect an ability to perform basic functional activities of the

firm, such as plant layout, distribution logistics, and marketing campaigns more efficiently than competitors. (2) Dynamic capabilities (second order category of capabilities according to Collis) share the common theme of dynamic improvement to the activities of the firm as repeated process or product innovations, manufacturing flexibility, responsiveness to market trends, and short development cycles (Amit, et al., 1993). (3) Hyper capabilities (third order category of capabilities according to Collis), although closely related to dynamic capabilities, comprise the more metaphysical strategic insights that enable firms to recognize the intrinsic value of other resources or to develop novel strategies before competitors.

There are three possible reasons why a position of competitive advantage that an organizational capability can generate today will not be sustained: erosion of the capability as the firm adapts to external or competitive changes; replacement by a different capability; and being surpassed by a better capability. Dynamic capabilities are vulnerable on all three dimensions.

As the capability becomes more sophisticated, it still does not definitely become a source of sustainable competitive advantage because differences in the next-order derivative can always invalidate differences in the order that is the current subject of analysis.

Higher order capabilities decrease the time taken to eliminate a competitive disadvantage until it becomes pointless to consider of any advantage as sustainable because competitors possess the ability to close a competitive gap almost instantaneously. Ironically, the ultimate dynamic capability is, therefore, not a sustainable competitive advantage (Collis, 1994).

There is no clear way to approach a solution to the problem of the multi levels of capabilities. Collis (1994) suggests working on industry-specific solutions. He recognized that although the source of sustainable competitive advantage could be found in any one of the different levels, valuable capabilities are dependent on the context of the industry and the time. At any point in time in any one industry it may, therefore, be possible to identify the capability that currently underpins, or will possibly in the near future underpin, sustainable competitive advantage.

This study is consistent with Collis's critique. While recognizing that higher-order capabilities are necessary, industry specific resources whose configuration and reconfiguration creates competitive advantage are worked out. The focus on the underlying resources has a convenient side effect; these underlying resources are easier to understand, especially for practitioners.

Limited practicability for managers

Dynamic capabilities are complex by nature. Capabilities such as strategic planning, business reorganization, allying, and network restructuring include many input variables and, partly, tacit knowledge. In addition, coherences are often not linear. Thus, these capabilities are not easy to learn or copy. For practitioners in particular, these capabilities are difficult to learn and implement. On the other hand, the limited codifiability reduces imitation, which has a positive implication on firms that have established these dynamic capabilities.

Conclusion

Despite the facts that dynamic capabilities are inherently difficult to understand and implement for practitioners, that the theory is very complex, and that only a priori limited indication can be derived, the notion of dynamic capabilities is powerful when analyzing high velocity industries. Key capabilities such as strategic planning, allying, and project management are necessary for establishing competitive advantage in the Mobile Internet industry. Hypotheses 16 and 19 could be supported with the constraint that the competitive advantage derived from (re)-arranging resources and factors is most likely not sustainable. The dynamic capabilities are necessary, but not sufficient, and capabilities and underlying strategic resources are highly context-specific.

4.2.4 Conclusion on resource based theories

The presented discussion provides evidence that specific strategic resources such as *12snaps* opt-in subscriber base, *Gate5's* platform technology, or *YellowMap's* location data create sustainable competitive advantage. Thereby, resource based models of strategic management arose to be more powerful than environmental models to explain competitive advantage in the Mobile Internet industry.

The basic considerations of the RBV concept are applicable for explaining sources of competitive advantage. Case study firm's resources must be rare, valuable, imperfectly imitable, and not substitutable to create competitive advantage.

The classic RBV must be criticized concerning three aspects: the value of resources is exogenous to the concept, the resource focus is too narrow and the approach is too static. Regarding the last two aspects, the relational view and dynamic capabilities provide interesting expansions of the original RBV concept, especially for small firms in fast-changing industries with barely-integrated value chains. The relational view enlarges the

scope of resource-based theory to all resources accessible for the firm and puts weight on the external linkages providing partner's resources. The dynamic capability approach confirms the case study finding concerning the value derived from effective resources rearrangements. Therefore, this section largely supports hypotheses 15, 16, and 19, which stated that external resources in particular can be sources of competitive advantage and that it is necessary to rearrange alliance portfolios to adjust the external organization to changing resource requirements. The next section discusses the impact of competitive advantage on organizational change and its consequences on resource requirements.

4.3 Organizational evolution and change

In discussing why and how organizations change and develop, this section incorporates the broad literature on organizational change and analyzes the case study findings in the context of the most relevant part of this body of literature. The two critical questions are how competitive advantage influences the frequency and speed of organizational change (hypothesis 17), and how this change defines new resource requirements (hypothesis 18). To discuss these questions, the first part introduces the different schools of organizational change. According to two factors, unit of change and mode of change, the most relevant streams of research are selected: development models and stage models. In the following two sections, the empirical findings are compared with the assumption and logic of these two areas of literature to verify their applicability. A summary of the findings closes this section on organizational evolution and change.

4.3.1 Different schools of organizational change

Explaining how and why organizations change has been a central and enduring quest of scholars in management and many other disciplines (Van de Ven, et al., 1995). To understand how organizations change, management scholars have borrowed many concepts, metaphors, and theories from other disciplines, ranging from child development to evolutionary biology. These concepts include punctuated equilibrium, stages of growth, processes of decay and death, population ecology, functional models of change and development, and chaos theory.

It is the interplay between different perspectives that helps one gain a more comprehensive understanding of organizational life, because any one theoretical perspective invariably offers only a partial account of a complex phenomenon. Moreover, the juxtaposition of different theoretical perspectives brings into focus contrasting views of social change and

development. Working out the relationships between such seemingly divergent views provides opportunities to develop a new theory that has stronger and broader explanatory power than initial perspectives (Van de Ven, et al., 1995).

There are four basic types of process theories that explain how and why change unfolds in social entities: life-cycle, teleological, dialectical, and evolutionary theories. These four types represent fundamentally different event sequences and generative mechanisms to explain how and why changes unfold (Pettigrew, et al., 2001).

For the purposes of this study, a process is defined as the progression (i.e., the order and sequence) of events in an organizational entity's existence over time. Change, one type of event, is an empirical observation of difference in form, quality, or state over time in an organizational entity. Development is a change process. Process theory is an explanation of how and why an organizational entity changes and develops.

Van de Ven (1995) found approximately 20 different process theories that vary in substance or terminology across disciplines, which can be grouped into four basic schools. Table 33 outlines these schools in terms of their member, pioneering scholars, event progressions, generative mechanisms, and conditions under which they are likely to operate.

Family	Life cycle	Evolution	Dialectic	Teleology
Members	Developmentalism Ontogenesis Metamorphosis Stage & cyclical models	Darwinian evolution, Mendelian genetics, Saltationism, Punctuated equilibr.	Conflict theory, Dialectical materialism, Pluralism, Collective action	Goal setting, planning, Functionalism, Social construction Symbolic interaction
Pioneerss	Comte (1798 – 1857) Spencer (1820 – 1903) Piaget (1896 – 1980) Hennan et al. (1977)	Lamarck (1744 – 1829) Darwin (1809 – 82) Mendel (1822 – 84) Gould et al. (1977)	Hegel (1770 – 1831) Marx (1818 – 1883) Freud (1856 – 1939)	Mead (1863 – 1931), Weber (1864 – 1920) Simon (1916 -) March (1958, 1976)
Key Metaphor	Organic growth	Competitive survival	Opposition, conflict	Purposeful cooperat.
Logic	Imminent program, prefigured sequences, compliant adaptation	Natural selection among competitors in a population	Contradictory forces: Thesis, antithesis, synthesis	Envisioned end state, social construction, equifinality
Event progression	Linear & irreversible sequence of prescribed stages in unfolding of immanent potentials present at the beginning	Recurrent, cumulative, and probabilistic sequence of variation, selection and retention events	Recurrent, discontinuous sequence of confrontation, conflict, and synthesis between contradictory values or events	Recurrent, discontinuous sequence of goal setting, implementation, and adaptation of means to reach desired end state.
Generating force	Prefigured program / rule regulated by nature, logic or institutions	Population scarcity, Competition Commensalism	Conflict and confrontation between opposing forces, interests, or classes	Goal enactment consensus on means cooperation / symbiosis.

Table 33 Basic schools of organizational change (based on Van de Ven, et al., 1995)

Life cycle theory

Life cycle theories have adopted the metaphor of organic growth as a heuristic device to explain development in an organizational entity from its initiation to its termination. References to the life cycle of organizations and ventures as well as stages in the development of organizations are used often such as birth, maturity, or death. Life cycle theories include developmentalism, a number of stage theories of child development (i.e., Piaget, et al., 1975), organizational development (i.e., Kimberly, et al., 1980), and new venture development (i.e., Burgelman, et al., 1986).

According to life cycle theory, change is imminent. External environmental events and processes can influence how the entity expresses itself, but they are always mediated by the immanent logic, rules, or programs that govern the entity's development (Van de Ven, et al., 1988).

The typical progression of change events in a life-cycle model is a unitary sequence (it follows a single sequence of stages or phases), which is cumulative (characteristics acquired in earlier stages are retained in later stages) and conjunctive (the stages are related such that they derive from a common underlying process). Each stage of development is seen as a necessary precursor of succeeding stages.

Life-cycle theories of organizational entities often explain development in terms of institutional rules or programs that require developmental activities to progress in a prescribed sequence. Others rely on logical or natural sequences in the development of organizational entities.

Teleological theory

Another school of thought explains development by relying on teleology, or the philosophical doctrine that purpose or goal is the final cause that guides movement of an entity. This approach underlies many organizational theories of change including decision making (March, et al., 1958), adaptive learning (March, et al., 1976), and most models of strategic planning and goal setting (Chakravarthy, et al., 1991).

According to teleology, development of an organizational entity proceeds toward a goal and an end state. The entity is purposeful and adaptive, and it constructs an envisioned end state, takes action to reach it, and monitors the progress. Teleology inherently affords creativity because the entity has the freedom to enact whatever goals it likes.

Unlike life-cycle theories, teleology does not prescribe a necessary sequence of events, but rather implies a standard for judging change; development is something that moves the entity toward its final state.

Once the entity attains its goals, this does not mean it stays in permanent equilibrium. Goals are socially reconstructed and enacted based on past action (Weick, 1979). Influences in the external environment or within the entity itself may create instabilities that push toward a new developmental path. However, the theories that rely on a teleological process cannot specify which trajectory development of an organizational entity will follow.

Dialectical theory

Dialectical theory bases on the Hegelian assumption that the organizational entity exists in a pluralistic world of colliding events, forces, or contradictory values that compete with each other for domination and control (Van de Ven, et al., 1995). The dialectic theory requires two or more distinct entities that embody these oppositions to confront and engage one another in conflict.

In a dialectical process theory, stability and change are explained by reference to the balance of power between opposing entities. Struggles and accommodations that maintain the status quo between oppositions produce stability. Change occurs when these opposing values, forces, or events gain sufficient power to confront and engage the status quo. Over time, a synthesis can become the new thesis as the dialectical process continues. By its very nature, the synthesis is a novel construction that departs from both the thesis and antithesis. In terms of organizational change, maintenance of the status quo represents stability; and its replacement with either the antithesis or the synthesis represents a change.

Evolutionary theory

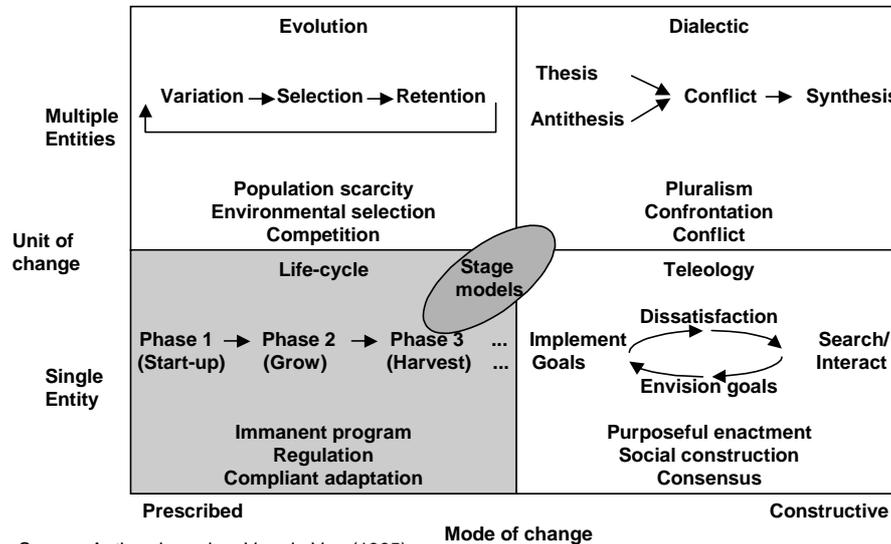
Evolutionary theory examines cumulative changes in structural forms of a population of entities across communities, industries or society at large (Aldrich, 1979; Hannan, et al., 1977). As in biological evolution, change proceeds through a continuous cycle of variation, selection, and retention. Thus, evolution explains change as a recurrent, cumulative, and probabilistic progression. Change is prescribed in the sense that one can specify the actuarial probabilities of the changing demographic characteristics of the population of entities inhabiting a niche. However, one cannot predict which entity will survive or fail. The overall population persists and evolves through time according to the specific population dynamics.

Typology of change processes

Where and when do these theories apply to explain development in organizational entities? In each theory: (1) process is viewed as a different cycle of change events, (2) which is governed by a different generating mechanism that (3) operates on a different unit of analysis and (4) represents a different mode of change. The four basic schools differ along

two analytical dimensions that are useful for classifying these developmental progressions into the four ideal-type process theories: the unit and mode of change (compare to figure 67).

Process Theories of Organizational Development and Change



Source: Author, based on Van de Ven (1995)

Figure 67 Organizational change models

Unit of change

Change and developmental processes can be examined on a single organizational level or on the interaction between two or more entities. This classification highlights two different approaches for studying change at any given organizational level: (1) the internal development of a single entity by examining its historical processes of change, adaptation, and replication, and (2) the relationships between numerous entities to understand ecological processes of competition, conflict, and other forms of interaction (compare Baum, et al., 1994).

Evolutionary and dialectical theories operate on multiple entities because evolutionary forces are defined in terms of the impact they have on populations and because the dialectic requires at least two engaged entities. Conversely, life cycle and teleological theories operate on a single entity. Life cycle theory explains development as a function of potential immanent within the entity. Although environment and other entities may shape how this immanence is manifested, they are strictly secondary. Teleological theories, too, require only a single entity’s goal to explain development.

With respect to this study, organizations undergo change as discrete identities; therefore, single entity models are applicable. Processes of change between several distinct

organizational entities are not examined; also not examined are laws, rules, or processes by which the entities interact.

Mode of change

The four schools can be distinguished in terms of whether the sequence of change events is prescribed a priori by either deterministic or probabilistic laws, or whether the progression is constructed and emerges as the change process unfolds. A prescribed mode of change channels the development of entities in a pre-specified direction, typically by maintaining and incrementally adapting their forms in a stable, predictable way. A constructive mode of change generates unprecedented, novel forms that, in retrospect, often are discontinuous and an unpredictable departure from the past. A prescribed mode evokes a sequence of change events in accord with a pre-established program or action routine. A constructive mode, in contrast, produces new action routines that may create an original formulation or a reformulation of the entity. Life cycle and evolutionary theories operate in a prescribed modality, while teleological and dialectical theories operate in a constructive modality (Van de Ven, et al., 1995).

A prescribed mode tends to create first order change—change within an existing framework that produces variation on a theme (Watzlawik, et al., 1974). These variations are prescribed and predictable because they are patterned on the previous state. A constructive mode tends to generate what Watzlawick and colleagues (1974) termed second-order change, which is a break with the basic assumptions or framework. The process is emergent as new goals are enacted. It can produce highly novel features; the outcome is unpredictable because it is discontinuous with the past.

The organizational changes of the case studies examined follow very similar patterns to those discussed in chapter 3.5.1 ‘Cross segment analysis / Stage characteristics’. Therefore, models with a prescribed mode of change seem to be applicable. Only the significant changes between a few of the periods cause a problem, because they are not in line with the proposed continuity of these models.

According to Van de Ven’s (1995) process theories of organizational development and change framework, organizational life-cycle theories are the most applicable pure form of organizational theories for this study. Therefore, the case findings are considered in the context with the development models that have been created by different scholars starting in the seventies (i.e., Burgelman, et al., 1986; March, 1991; Rumelt, 1981; Utterback, et al., 1975).

In addition to the pure mechanisms, hybrid models that draw on different mechanisms have also been developed. For coping with the significant changes between developmental periods, the interaction of life cycle and dialectical models is very promising. Stage models integrated these two mechanisms. In one of the earliest models, Greiner (1972) proposed five stages of the life cycle of organizational growth. Each of these stages culminates in a different dialectic crisis (of leadership, autonomy, control, red tape, and ‘?’) that propels the organization into the next stage of growth and organizational development. Given the above-mentioned significant changes between periods in the case study data, stage models are promising theories in terms for this study. Therefore, in a next step, the case findings are confronted with these models, which have been developed by various researchers (i.e., Block, et al., 1985; Cameron, et al., 1981; Flynn, et al., 2001; Greiner, 1972; Kazanjian, et al., 1990; Walsh, et al., 1987; Whetten, 1987).

4.3.2 Development theory

Development models include a broad, generic range of models, whose only common denominator is their general concern with change (Stubbart, et al., 1999). Developmental models often identify phases in a process but usually regard them as milestones or landmarks rather than as predetermined outcomes. Developmental models are rather benign descriptive models that seldom make causal references to invariant evolution or to predestined stages. These models often focus on explaining why organizations and industry change, and are less precise in describing how this change happens. Scholars from different fields have contributed to the body of literature on development models such as Kotler and Porter (marketing and strategy), Rumelt and Winter (economics and strategy), and Utterback and March (sociology and organization theory). Table 34 lists a set of important models.

Field of theory	Model Author	Description
Business policy	Towards a strategic theory of the firm (Rumelt, 1981)	Theory of rivalry under conditions of causal ambiguity (“uncertain imitability”). Entrepreneurship is the production of new production functions and generates firm heterogeneity as an outcome. Causal ambiguity inhibits that factors of production can be listed unambiguously, and their marginal contributions can be measured to a far lesser extent. Rumelt’s model explains industry entry and survival and challenges the neoclassical perspective on firms.
Industry evolution ⁸⁹	Industry life cycle (Kotler, 1972; Polli, et al., 1969)	Industries go through several periods: introduction, growth, maturity and decline. Generic model similar to the product life cycle.
	Evolutionary processes (Porter, 1980)	Analysis of the underlying processes that drive industry evolution. Porter isolated 14 processes ranging from long-run changes in growth, to accumulation of experience and product innovation; and to changes in government policy.
	A dynamic model of process and product innovation. (Utterback, et al., 1975).	Firms pass through three different periods, which are characterized through fluid, transitional, specific pattern. Different types of innovations are crucial in these states: product innovation in the beginning, process innovation after that. After a dominant design is found, innovation slows down in both areas.
Organizational learning	Exploration and exploitation in organizational learning (March, 1991)	Exploration (search, variation, risk taking, etc.) and exploitation (refinement, choice, production, efficiency, etc.) lead to different organizational learning. Maintaining an appropriate balance between exploration and exploitation is a primary factor in system survival and prosperity.
Pre-adaptation	Dominance by birthright: Entry of prior radio producers and competitive ramification in the U.S. television receiver industry (Klepper, et al., 2000)	Prior experience in related products lowers the hazard rate in a new industry significantly, and drives product as well as process innovations. Therefore, prior experience has a profound effect on entry and performance.

Table 34 Organizational development models

In the following sections, the most prominent theories are assessed for their applicability.

Industry life cycle models

The grandfather of predicting the probable course of industry evolution is the familiar product life cycle (Porter, 1980). The hypothesis is that an industry passes through a number of phases or stages – introduction, growth, maturity, and decline. Industry growth follows an S-shape curve because of the process of innovation and diffusion of a new product. The flat introductory phase of industry growth reflects the difficulty of overcoming buyer inertia and

⁸⁹ Two additional papers on firms evolution are: ‘Inside corporate innovation: Strategy, structure, and managerial skills’ (Burgelman, et al., 1986) and ‘Issues in the creation of organizations: Initiation, Innovation, and Institutionalization’ (Kimberly, 1979)

stimulating trials of the new product. Rapid growth occurs as many buyers rush into the market once the product has proven itself successful. Penetration of the product's potential buyers is eventually reached, causing the rapid growth to stop and to level off to the underlying rate of growth of the relevant buyer group. Finally, growth will eventually taper off as new substitute products appear. As the industry goes through its life cycles, the nature of competition will shift.

Life cycle models are criticized due to several reasons:

- (1) The duration of stages varies widely from industry to industry, and it is often not clear which stage of the life cycle an industry is in. This problem diminishes the usefulness of the concept as a planning tool.
- (2) Industry growth does not always proceed through the S-shaped pattern. Sometimes industries skip maturity, passing straight from growth to decline. Sometimes industry growth revitalizes after a period of decline, as has occurred in the railroad industry.
- (3) Companies can affect the shape of the growth curve through product innovation and repositioning, thereby extending it in a variety of ways. If a company takes the life cycle as a given, it becomes an undesirable self-fulfilling prophecy.
- (4) The nature of competition associated with each stage of the life cycle is different for different industries. For example, some industries start out highly concentrated and stay that way. Others are concentrated for a significant period and then become less so. Still others begin highly fragmented; of these, some consolidate (e.g., automobiles) and some do not (e.g., apparel retailing). The same patterns apply to advertising, R&D expenditures, degree of price competition, and most other industry characteristic. Divergent patterns such as these call into serious question the strategic implications ascribed to life cycles.

Aside from this critique, the general industry life cycle literature is not particularly relevant for this study. In fact, the notion of change can be found in all case studies, but the model is too long in its scope (case study companies are far away from maturity and decline), not precise enough in terms of when different phases are reached, and too broad in terms of industry perspective.

Porter's evolutionary processes

Instead of attempting to describe industry evolution generically, Porter (1980) suggests that it is more fruitful to look beyond the process to see what really drives it. Like any evolution, industries evolve because some forces are in motion that create incentives or pressure for change. These can be called evolutionary processes.

According to Porter (1980), every industry begins with an initial structure. This structure is usually very different from the configuration the industry will take later in its development. For example, even an industry like automobiles with enormous possibilities for economies of scale started out with labor-intensive, job-shop production operations.

The evolutionary processes work to push the industry toward its potential structure, which is rarely known completely as an industry evolves. It is important to realize that the investment decisions by both existing firms in the industry and new entrants are instrumental in much industry evolution. In response to pressure or incentives created by the evolutionary process, firms invest to take advantage of possibilities for new marketing approaches, new manufacturing facilities, and the like, which shift entry barriers, alter relative power against supplier and buyer, and so on. Industry can potentially evolve in a variety of ways at a variety of different speeds (Porter, 1980).

Although initial structure, structural potential, and a particular firm's investment decision will be industry-specific, Porter generalizes about what the important evolutionary processes are. There are some predictable (and interacting) dynamic processes that occur in every industry in one form or another, although their speed and direction will differ from industry to industry. Porter lists 14 evolutionary processes, from which the 12 that are relevant are listed here:

(1) Long-run changes in growth: Industry growth is a key variable in determining the intensity of rivalry in the industry, leading to structural change. Five important external reasons determine why long-run industry growth changes: demographics, trends in needs, change in relative position in substitutes and in the position of complementary products, penetration of the customer group, and product change.

(2) Changes in buyer segments served: New buyer segments can be penetrated and an additional segmentation of existing buyer segments can take place by creating different products (product differentiation) and marketing techniques for them. A final possibility is that certain buyer segments are no longer served.

(3) Learning by buyers: Through repeat purchasing, buyers accumulate knowledge about a product, its use and the characteristics of competing brands. Products have a tendency to become more like commodities over time as buyers become more sophisticated, and purchasing tends to be based on better information. Thus, there is a natural force reducing product differentiation over time in an industry. Learning about the product may lead to increasing demands by buyers for warranty protection, service, improved performance characteristics, and so forth.

(4) Reduction of uncertainty: Most new industries are initially characterized by a great deal of uncertainty about things such as potential size of the market, optimal product configuration, nature of potential buyers and how they can best be reached, and whether technological problems can be overcome. This uncertainty often leads firms into a high degree of experimentation, with many different strategies adopted that represent different potential scenarios about the future. Rapid growth provides slack to allow these differing strategies to coexist for long periods of time. Over time however, there is a continual process by which uncertainties are resolved. Technologies are proven or disproven, buyers are identified, and indications are gleaned from the industry's growth about its potential size. Hand in hand with such reduction of uncertainty is a process of imitation of successful strategies and the abandonment of poor ones.

(5) Diffusion of proprietary knowledge: Product and process technologies developed by particular firms tend to become less proprietary. Over time, a technology becomes more established and knowledge about it becomes widespread. Diffusion occurs through a variety of mechanisms. Firms can learn from physical inspection of competitor's proprietary products, from suppliers, distributors, customers (each of whom are conduits for such information and often have strong interest in promoting diffusion for their own purposes), and from laterally hired personnel.

From a strategic point of view, the diffusion of knowledge about technology means that to maintain position (1) existing know-how and standardized personnel must be protected, which is very difficult to do in practice, (2) technological development must occur to maintain the lead, or (3) strategic position must be shored up in other areas.

(6) Expansion in scale: Growth is usually accomplished by increases in the absolute size of the leading firms in the industry, and firms gaining market share must be increasing in size even more rapidly. Increasing scale in industry and in a firm has a number of implications for industry structure. It tends to widen the set of available strategies in ways that often lead to increased economies of scale and capital requirements in the industry.

(7) Changes in input costs: Every industry uses a variety of inputs to its manufacturing, distribution, and marketing process. Changes in the cost or quality of these inputs such as wage rates, material costs, cost of capital, communication costs, and transportation costs can affect the industry structure.

(8) Product innovation: Product innovation can widen the market and hence promote industry growth and / or it can enhance product differentiation. Product innovation can also have indirect effects. The process of rapid product introduction may create mobility barriers.

Innovation may require new marketing, distribution, or manufacturing methods that change economies of scale or other mobility barriers. Significant product change can nullify buyer experience and, hence, influence purchasing behavior.

(9) Process innovation: The capital intensity is directly dependent on process innovation, which can increase or decrease economies of scale, change the proportion of fixed costs, increase or decrease vertical integration, affect the process of accumulating experience, and so on. Innovation beyond the size of national markets can lead to industry globalization.

(10) Structural changes in adjacent industries: Since the structure of suppliers' and customers' industries affects their bargaining power with an industry, changes in their structure have potentially important consequences for industry evolution. Although changes in the concentration or vertical integration of adjacent industries attract the most attention, more subtle changes in the methods of competition in the adjacent industries can often be as important in affecting evolution.

(11) Government policies change: Government can influence industry structure through strict regulation of key variables such as entry into industry, competitive practices, or profitability. Less direct forms of government influence of industry structure occur through the regulation of product quality and safety, environmental quality, and tariffs or foreign investment.

(12) Entries and exits: Entry by established firms from other industries particularly affects the industry structure. Firms enter the industry because they perceive opportunities for growth and profits that exceed the cost of entry. Entry follows visible indications such as industry growth, regulatory changes, and product innovation.

Exit changes industry structure by reducing the number of firms and by possibly increasing the dominance of the leading ones. Firms exit because they no longer perceive the possibility of earning returns on their investment that exceed the opportunity cost of capital. This set of evolutionary processes is a tool for predicting industry changes (Porter, 1980).

Porter's work is a listing of change 'motors' rather than a completed theory. It does not have the power to explain how and when change happens. It lists reasons why change happens; but it does not even weigh the importance of the 'motors' in general nor states under which conditions which 'motor' is most relevant.

Six of Porter's evolutionary processes are particularly relevant. His notion on changes in buyer segments (motor 2) is important for analyzing the diversification strategies of the case studies. The processes of learning buyers (motor 3) and reduction of uncertainty (motor 4)

are important for understanding how markets emerge and how business models are shaped. As 12snap's Managing Director Germany stated:

'... in addition, our industry developed. There are core competencies we always want to keep in-house; but there are services, for which an infrastructure is already in place, which we use. Over the time a market established, and we try to leverage know-how others have built up.

In the beginning, we did pioneer a new market. We had to develop everything in-house, because nothing could be sourced from the outside.' (Ingo Griebel, MD 12snap, 2002)

The motors 'product and process innovation (motors 8 and 9)' are interesting for analyzing which kind of innovation takes place. Utterback and Abernathy (1981; 1975) provided a very interesting and fruitful framework for these innovations, which will be discussed in a later section.

Finally, Porter's notion of entries and exits (motor 12) is an interesting notion for explaining, why so many case studies started in late 1999 and early 2000 and entry stopped in mid 2000. In greater detail and with a more sophisticated theoretical foundation, Rumelt (1981) discusses this point, which will be covered in the next part. Rumelt also provides an explanation for motor 3, 'diversification of companies'.

In summary, Porter's evolutionary processes mention a few organizational change 'motors' that are of greater interest for this study but his work lacks the level of detail and causal links to explain why these changes happen.

Rumelts strategic theory of the firm

Rumelt (1981) analyzed organizational change from an economic perspective and occupied the intersection between business policy and economic theory. He aimed to challenge the neoclassical theory of the firm, which was created by assuming that phenomena of primary concern to students of business policy⁹⁰ did not exist, such as: (1) transaction costs, (2) limits on rationality, (3) technological uncertainty, (4) constraints on factor mobility, (5) limits on information availability, (6) markets in which price convey quality information, (7) consumer or producer learning, and (8) dishonest and / or foolish behavior.

⁹⁰ Business policy is concerned with those aspects of general management that have material effects on the survival and success of business enterprises.

In his opinion, the situation with regard to industrial organization has been only marginally better. Within industrial organization, there is a sub-school, which, like business policy, has recorded and commented on a wide variety of real-world business behavior.

'However, the theoretical structure of the field has never encompassed that richness. The traditional model of industry in industrial organization is taken from oligopoly theory, and remains that of identical firms or that are homogenous but for scale. The effect of this modeling assumption has been to reduce the study of industrial competition to the study of relative scale, all other differences being ignored.' (Rumelt, 1981)

In cooperation with other scholars such as Coase, Rumelt set in motion forces that undermined the neoclassical theory. With Williamson (1981), Porter (1980), and others, he showed that economic concepts can model and describe strategic phenomena.

In his theory of “uncertain imitability” entrepreneurship is modeled as the production of new production functions, and generates firm heterogeneity as an outcome rather than as a given (Lippmann, et al., 1982). Ambiguity generates initial heterogeneity and will block homogenization through imitation. Therefore, it is impossible to produce an unambiguous list of the factors of production, much less measure their marginal contribution.

Rumelt modeled industry entry as follows. Any entrant into the industry obtains a cost function and must pay a non-recoverable “entry fee”. All entrants were facing an exogenous industry demand curve. This perspective provides a theory of firm size that does not depend upon diseconomies of scale or control loss and is only tangentially related to the notion of a fixed entrepreneurial factor. However, it explains why entry into the Mobile Internet industry stopped after a certain period quite well—because expected pay-offs dropped in 2000 under the cost of the “entry fee”. In addition, it explains why diversification, which reduces the risk of bankruptcy, is rarely undertaken by those facing the greatest risk—entrepreneurs entering or creating new markets (Rumelt, 1981)—because buying two entry fees bears too high costs. Finally, it explains why firms that are successful in one endeavor will tend to seek out related activities in which their revealed special competences are useful. Hence, profitability and growth will be correlated even when the effects of demand pull are controlled. This explains the diversification of case study companies in period three.

Although Rumelt's theory has the power to explain why industry entry stops and why and when diversification takes place, it gives no answer on the question of how organizations change.

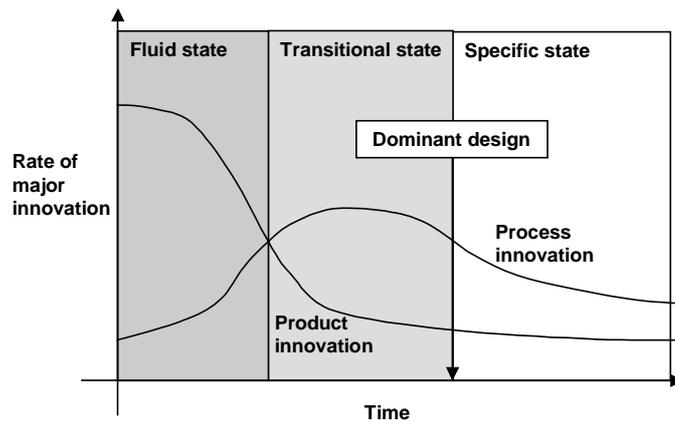
Utterback's model of product and process innovation

Historically, studies of innovation have had a linear viewpoint. That is, they have seen innovation as something that begins with a company possessing a certain technology and then investing in that technology and accompanying ideas, and implementing them in the market. This approach, however, assumes that all innovations occur in the same way in all companies and disregards the fact that organizations change throughout their lifetimes. It also fails to distinguish between product and process innovations, each of which may follow a different path.

Utterback's model describes how change in product innovation, process innovation, and organizational structure occurs in patterns that are observable across industries and sectors. The model allows consideration of the different conditions required for rapid innovation and for high levels of output and productivity.

Utterback claims that the conditions required for rapid innovation are extremely different from those required for high levels of output and productivity; under demands for rapid innovation, organizational structure will be fluid and flexible, whereas under demands for high levels of output and productivity, organizational structure will be standardized and inflexible. Thus, a firm's innovation attempts will vary according to its competitive environment and its corresponding growth strategy. It will also be affected by the state of development of both its production technology and that of its competitor (Abernathy, et al., 1978). Firms that are new to a product area will exhibit a fluid pattern of innovation and structure. As the market develops, a transitional pattern will emerge. Finally, the market stabilizes, fostering a specific pattern of behavior. Figure 68 shows the different states and the relevant innovation rates.

Product and process innovation



Source: Author, based on Abernathy and Utterback (1978)

Figure 68 Product and process innovation

Definition of product innovation

In the fluid phase of a firm's evolution, the rate of product change is expected to be rapid, and operating profit margins are expected to be large. A firm might be expected to emphasize unique products and product performance in anticipation that the new capability will expand customer requirements. The new product technology will often be crude, expensive, and unreliable but will fill a function in a way that is highly desirable in some market niche. Prices and profit margins per unit will be high, because the product often has great value in a user's application.

Technology to meet needs will come from many sources, including customers, consultants, and other informal contacts, because fluid units tend to rely heavily on diverse, external sources of information. However, the critical input will not be state-of-the-art technology but new insights about needs (von Hippel, 1977).

As both producers and users of a product gain experience, target uncertainty lessens and product innovation enters the transitional state. The usefulness of the new product is increasingly better understood, and it may take on a variety of new forms to serve other parts of the market. A greater degree of competition based on product differentiation usually develops, and dominant product designs may begin to emerge. At the same time, forces that reduce the rate of product change and innovation are beginning to be established. As obvious improvements are introduced, it becomes increasingly difficult to improve past performance, because users develop loyalties and preferences, and the practicalities of marketing, distribution, maintenance, advertising, and so forth demand greater standardization. Innovation leading to better product performance becomes less likely unless the improvement is easy for the customer to evaluate and compare.

The emergence of a dominant product design that enforces standardization marks the beginning of the specific state. White (1978) contends that dominant designs can be recognized in the early stages of their development. He suggests that dominant designs will usually display several of the following qualities:

- Technologies that lift fundamental technical constraints on the art without imposing stringent new constraints
- Designs that enhance the value of potential innovations in other elements of a product or process
- Products that ensure expansion into new markets
- Products that build on existing operations rather than replacing them

The dominant design signals a significant transformation affecting the innovation that follows. Product and process design become increasingly more closely interdependent as a line of business develops. Production efficiency and economies of scale become emphasized. As competition increases, production processes become more capital-intensive. Because investment in process equipment is high, and product and process change are interdependent, both product and process innovations in the specific state are usually incremental.

In considering the case study results in the context of Utterback's findings on product innovation, the high profit margins cannot be confirmed, which might be a result of very high VC 'subsidization' of the case study companies. However the other characteristics can be reconfirmed. The rate on product innovation is slowing down from the first two periods to the later ones when the case study companies have found their market niche and start to capitalize their products and services. Furthermore, the different sources of 'technology and market need' information can be related to the intense partnerships created by these ventures.

The ventures are far from reaching the dominant design in their services and products. Therefore, the case study data cannot be confronted with Utterback's finding on product innovation in a specific state.

Definition of process innovation

A production process is the system of process equipment, work force, task specifications, material inputs, work and information flows employed by a unit to produce a product or service (Utterback, 1981). In the fluid state, the emphasis will be on highly skilled and flexible labor, and the process itself will be composed largely or will be un-standardized with manual operations.

When a considerable volume is achieved in one or more product lines to encourage standardization, the production process enters the transitional state. Major process change occurs at a rapid rate. Production systems become increasingly difficult to change.

The production process reaches the specific state when it becomes highly developed and integrated around specific product designs, and as investment becomes correspondingly large. Process redesign typically comes in progressive steps. Unit production costs often decrease in proportion to the cumulative volume of production.

Utterback's patterns of process innovation describe the development in the case studies very well. In the beginning, the ventures are very flexible and processes are un-standardized. Process innovation and subsequent standardization takes place in later periods. As in the product innovation perspective, there is no data for comparing the specific state.

Organizational structure

During periods of high technical and strategic uncertainty (fluid state), a productive unit must be focused to make progress; for a group to be successful in an uncertain environment, individuals in the organization must act together. This type of organizational structure is called organic (Burns, et al., 1961). Such an organization emphasizes, among other things, frequent adjustment and redefinition of tasks, less hierarchy, and more lateral communication. An organic organization is more appropriate for uncertain environments because of its increased potential for gathering and processing information for decision makers (Utterback, 1981).

As transition begins, and individuals and units in the organization become more sequentially interdependent, coordination and control will occur to a greater extent through planning, liaison relationships, and project and task groups. Thus, during transition, organizations are often structured according products, with each division replicating in some respects the earlier entrepreneurial form.

As dominant design emerges and production operations expand rapidly in response to increased demand, the focus of rewards will shift to those who are able to expand production operations, marketing functions, and so forth. Ownership of the unit by this time may be well established, and rewards may be provided in more traditional forms of bonuses, stock options, and other managerial prerequisites.

The innovative capacity of a productive unit viewed in isolation will be low. When production processes are highly integrated in a system, and a high degree of interdependence exists among sub-processes, the disruption and cost associated with major changes will be a primary concern.

In analyzing the case study finding with respect to this theory, highly flexible organic team structures characterize the organizations in the first period, which supports the notion of organic organizations in the fluid state. In addition, the increase in coordination and control through planning and project management can be found in every case study, which consistently reports increases in organizational skills, which subsumes the coordination and control functions.

In summary, Utterback's theory explains how and why organizations change, and is applicable to the case study data. His notion of product innovation and process innovations in particular explains why technological resources decline in importance and organizational skills and market access become more important. There is an interesting link to March's work (1991) on organizational learning. Exploration activities, which can be characterized by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, and innovation are more important in the case studies' first two stages (fluid state). On the other hand, exploitation, which can be characterized by terms such as refinement, choice, production, efficiency, selection, implementation, and execution, proves to be more important in the later stages (transition state). According to March, maintaining an appropriate balance between exploration and exploitation is a primary factor in system survival and prosperity.

Despite these facts, Utterback's theory is not powerful enough to explain in great detail how young organizations change in their first years. Its model is too vague on this perspective.

Conclusion on development models

Development theory is not powerful enough to explain how the NTBFs in this study develop during their first years. As in Utterback's model, only vague phases are determined. Organizational conflicts, problems, and a detailed reasoning for specific development steps are not discussed in detail.

On the other hand, development theory provides interesting insight into why organizations change. In particular, Rumelt's thought on entry, exit, and diversification and Utterback's thoughts on product innovation, efficiency, and organizational skills are applicable for this study and explain the development patterns very well.

4.3.3 Stage models

Stage models are one specific class of development models, which includes dialectical mechanisms to model distinct conflicts and changes. As development, stage models are not

cyclical because they do not tend toward equilibrium, a dominant tendency, or return to an initial starting point. Stage models always describe discontinuous processes, which have been formulated as ‘stepwise change’ in hypothesis 17. That is why they are inappropriate for modeling incremental change. In a stage model, change is characterized as a fixed sequence of static and deterministic stages, separated by predictable, programmed, yet dramatic transformations.

A stage model captures the concept of transformation much more vividly than a general development model. Compared to developmental models, stage models are more clear-cut, more powerful explanations, and therefore more attractive to theorists. However, they bear the risk, that:

‘...too often, dynamic processes are force-fit into rigid “procrustean bed” of a series of prescribed stages.’ (Stubbart, et al., 1999)

Stage models are only applicable, when certain conditions apply. Thus, the following part assesses whether underlying assumptions are fulfilled. To continue the discussion on stage models, the second part introduces the variety of stage models, of which – in part three – the most relevant is selected and compared with the case study data. The results are summarized in the concluding fourth part.

Underlying assumptions of stage models

Despite their apparent differences, stage models gravitate toward central tendencies and have serious limitations. When used inappropriately, stages can misdirect research and impede understanding by placing tight constraints on the change processes involved. Specifically, stage models tend toward the following:

1. Diverting research away from the environmental context

Stage models divert attention from the examination of interactions between the organization or organism and its environment. In effect, the environment is treated as a given factor (Stubbart, et al., 1999). As a result, stage models paint portraits of organizations whose life history can best be explained as a natural result of predetermined factors without reference to human volition, environmental forces, and so on

2. Downplaying the role of human agency, initiative, originality, and innovation in strategic choice.

Strategic choices play a significant role in organizational theory (Child, 1972). Theories that focus on environmental or developmental forces portray managers as in passive, dependent roles. Such characterization is largely inconsistent with much of the literature of Andrews (1971), Ansoff (1965), Child, (1972), and Hofer and Schendel (1978)

3. Highlighting universal experience at the expense of different experiences between subjects
4. Ignoring inconvenient historical facts, contingencies, and random events (Stubbart, et al., 1999)

Because of their underlying logic, stage models have important limitations. These special limitations affect the way that processes are represented through the models and make them more accommodating for some theoretical orientations than for others. Therefore, it is important for researchers to carefully evaluate the inherent trade-offs implied by the underlying tendencies of a stage model, because the attractions of the stage model are deceptive when the brittleness of stage models is neglected (Stubbart, et al., 1999).

Five principal assumptions are implied when an 'ideal' stage model is used to characterize a process:

(1) Stages and transformation represent a preprogrammed process: Change must move in only one direction. All subjects must begin at the first stage and move relentlessly toward the final stage along a predefined path. In its purest form, the stage models represent change as a series of periods of stability punctuated by abrupt transformations. Stage models are deterministic and prone toward pre-set explanations of transformation and discontinuous change.

(2) Stage models specify transformational changes: Change movements are orderly and predictable but not smooth. For stage models to work, there must be predictable yet abrupt transformation between the stages (setting them off against general development models). Transitions are described as difficult, painful events that cannot be accomplished without a major expenditure of energy (Greiner, 1972). Transformations are a necessary pre-condition for stage models.

(3) Stages require one-way movement along designated linear paths: Stage models depict change moving along fixed paths through an invariant sequence of conditions. This unidirectional pattern of movements is predicated on the maturational logic borrowed from biology. Stage models are easily undermined by empirical observations, such as regressing to previous stages, stalling in a particular stage, or recycling.

(4) Stages processes often imply progress: In stage models, change is often synonymous with progress. Consider the connotations of terms such as economic development. Many stage models expressively regard movements through the stages as the equivalent of progressive achievement in the sense of advancement, blossoming, or growing up. This tendency for stage models to equate natural movement through stages with improvement in the condition of the subject has attracted considerable criticism. For example, in keeping with scientific standards of detachment, it is now considered unwise to compare firms and groups on any scale of relative achievements or superiority (Granovetter, 1979).

(5) Stage models minimize the effect of context and history: Reality occurs not as time-bounded snapshots within which causes affect one another, but as stories, or cascades of events. Moreover, events, in this sense, are not single properties or simple things, but complex structures (Stubbart, et al., 1999). When stage models make reference to history, context, or environment, these factors are regarded as mainly fixed. Environmental selection and history hardly matter compared to the prescribed tracks that govern the stages and transformation.

In analyzing the case study data with the assumptions required for stage models, no severe problems could be found that would hamper the application of stage models. The detailed analysis, by assumption, is listed in table 35.

Assumption	Appropriate for case study data	Reasoning
Preprogramed process	More or less	As shown in figures 51 and 52, the organizational characteristics of case studies shift fairly similarly with only limited variation. Therefore, a preprogrammed process could underlie the companies development
Transformational changes	Yes	Between the stages, the firms' characteristics change. However, not all changes are revolutionary or involving major crises like <i>12snap's</i> entry in its fourth stage, in which it terminated a couple of businesses, laid-off employees and refocused its business.
One way movement along linear path	Yes, but downsizing might become a problem	As discussed in section 3.5 all companies constantly add complexity to their organization, Therefore, from an organizational perspective the case studies move linear in one direction. During longer periods things might change, especially when organizations decline.
Implication of progress	Yes	Revenues, alliance portfolios, and organizational skills grow within the stages. Therefore, the notion of progress is justified.
Minimization of context and history	No problem (Yes)	Narrow industry, and narrow company sample, a lot of context and history is contained in the industry stage model. The context determines how fast and whether the next step will be taken, but it has only minimal influence on how the stage characteristics look. Therefore, the minimization of context is no serious problem when analyzing narrow industries.

Table 35 Applicability of stage models

After showing that stage models are generally applicable for explaining organizational change of the case study companies, their variety needs to be introduced and relevant models must be selected.

Variety of stage models

Many researchers developed stage models of organizational and strategic processes. Quinn and Cameron (1983) reviewed more than 30 stage models describing growth of organizations. A few of them and some interesting new approaches are listed in table 36. This table only contains development models; process models as Bower's (1970) 'process model of a project' are not included.

Field of theory	Model Author	Stages in the model	# of stages	Time horizon	Industry focus
Organizational science	Motivation for growth (Downs, 1967)	Struggle for autonomy, rapid growth, deceleration	3	Mid range	General
	Problems lead to evolution & revolution (Greiner, 1972)	Creativity, Direction, Delegation, Coordination, Collaboration	5	Long range	General
	Mentality of members (Torbert, 1974)	Fantasies, investment stage, determination, experiments, predefined productivity, openly chosen structure, foundational community, liberating disciplines	8	Long range	General
	Organizational structures (Katz, et al., 1978)	Primitive system stage, stable organization stage, elaborative supportive structures stage	3	Mid range	General
	Major organizational activities (Adizes, 1979)	Courtship, infant, go-go, adolescent, prime, maturity	6	Mid range	General
	Internal social control, structure of work and environmental relations (Kimberly, 1979)	(1) Marshalling of resources, etc., (2) obtaining support for the external environment, etc., (3) formation of identity, etc., (4) formalized structure, etc.	4	Mid range	General
	Organizational Life Cycles (Quinn, et al., 1983)	Entrepreneurial, collectivity, formalization & control, elaboration of structure	4	Long range	General
Strategy	Critical managerial concerns (Lippitt, et al., 1967)	Birth, youth, maturity	3	Long range	General
	Strategy & structure (Scott, 1971)	Stage 1 (one man rule), stage 2 (functional), stage 3 (diversified-divisional)	3	Mid range	General

Field of theory	Model Author	Stages in the model	# of stages	Time horizon	Industry focus
Entrepreneurship	Milestones of successful venture planning (Block, et al., 1985)	Completion of concept and product testing, completion of prototype, first financing, completion of initial plant test, market testing, production start-up, bellwether sale, first comp. action, first redesign or redirect.	9	Mid range	High technology ventures
	Relation of dominant problems to stages of growth in NTBF (Kazanjan, 1988)	Conception and development, commercialization, growth, stability	4	Mid range	Manufacturing, high-tech ventures
	The stages of growth (Galbraith, 1982)	Proof of principle prototype, model shop, start-up volume production, natural growth, strategic maneuvering	5	Mid range	High technology ventures

Table 36 Stage models in organizational science, strategic management, and entrepreneurship

A number of multistage models have been proposed in which predictable patterns in the growth of organizations are assumed to exist and to unfold as discrete time periods best thought of as stages (i.e., Scott, 1971; Smith, et al., 1985). Examples range from three-stage models (i.e., Blake, et al., 1996; Cooper, 1979; Smith, et al., 1985), and four-stage models (i.e., Hosmer, et al., 1977; Rhenman, 1973) to models of five or more stages (i.e., Adizes, 1979; Miller, et al., 1984; Van de Ven, et al., 1984). A major strength of the literature on life stage models is that it adds to our understanding of the rather complex phenomenon of growth, by describing how growth happens and the effect that it has on organizations (Quinn, et al., 1988).

Selection of relevant stage models and confronting case study data

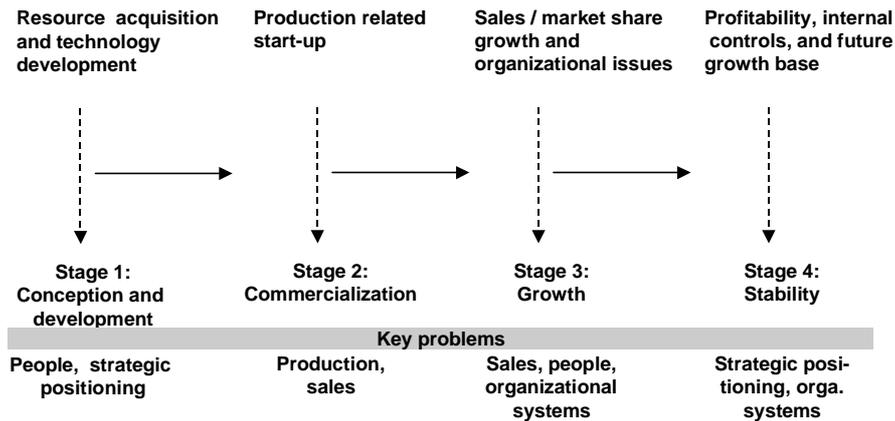
As shown above, a number of multistage models have been proposed. To select the most relevant models for this study, different criteria can be applied to assure similarities beforehand. These criteria are listed in table 37.

Model dimension	Preferred characteristic	Other characteristics
Unit of analysis	Organizational change	Business processes as strategic planning, venture financing, etc.
Field of theory	Entrepreneurship	Organizational science, strategy
Number of stages	Approximately four	Three or larger than six
Model horizon	Mid-range period, the first years of the organization	Total life cycle, models of decline and death
Industry focus	Technology based industries with high growth firms and substantial capital requirements	Slow growth, mature, or declining industries

Table 37 Selection criteria for relevant stage models

According to these criteria, the model of Kazanjian (1988) is the most relevant model in the list depicted in table 36. It is the only model that fulfills all requirements. Based on two in-depth case studies of NTBF, he proposed a four stage model that he tested later in a sample of 105 firms (Kazanjian, et al., 1989). This model is depicted in figure 69. It is consistent with several other models found elsewhere in the literature (i.e., Blake, et al., 1996; Quinn, et al., 1983).

Relation of dominant problems to stage of growth



Source: Author, based on Kazanjian (1988)

Figure 69 Kazanjian's four stage model of growth in NTBF

The stages are characterized as follows.

Stage 1: Conception and development

Before their formal creation, as signified by incorporation or by having gained a major source of financial backing that goes beyond initial seed grants, virtually all ventures go through a period during which the primary focus of the entrepreneur, and possibly of several others, is on the invention and development of a product, service, or technology (Kazanjian, 1988).

Major problems for organizations at this point include construction of a product prototype (Block, et al., 1985) and selling the product and business idea to financial backers.

Identical patterns can be found in the case data. Most companies named this period the 'start-up' stage, in which they tried to establish their organization, developed prototypes, and raised funds. The companies were led by an entrepreneurial or technical manager and technological resources were very important (refer to chapter 3.5 'Cross segment analysis / stage characteristics and resource requirements').

Stage 2: Commercialization

Given financial backing, new ventures go through a period during which their major focus is on developing the product or technology for commercialization. At this point, the

organization largely resembles a new product-development team, with its problems and competences being largely technical. The primary focus is on learning how to make the product work well and on how to produce it beyond the model shop prototype approach of the first stage (Galbraith, 1982). In this period, a single owner or a small number of partners will dominate the venture. Toward the end of this stage, the venture's product is publicly announced or made available for sale. Internal problems such as human resources and organizational systems are minor (Kazanjian, 1988).

In comparing the results of the cross-case and cross-segment analysis with Kazanjian's stage description, the similarities are striking. All case studies, except for Gate5, began to market their product or service in stage two. In addition, "production topics" became relevant such as the scalability of services, sourcing of supply, and defining the difference between 'product and whole product'⁹¹. Human resources and organizational skills still play a minor role. Finally most companies started to transform their organization into a functional structure—a point not mentioned in Kazanjian's description,.

Stage 3: Growth

If the product is technically feasible and achieves market acceptance, a period of high growth will typically result. The major problems of a new venture at this point are to produce, sell, and distribute its product in volume and avoid to being shaken out of the market as ineffective or inefficient (Utterback, et al., 1975). Under pressure to attain profitability, a venture must carefully balance profits against future growth. Most organizational structure and internal systems were initiated at the functional level. Again, each function changed from an informal, non-specialized activity, to a structured, specialized, and formalized organization, typically as a result of the precipitating problems discussed in this section (Kazanjian, 1988). Major problems lie in the areas of sales, marketing, and organizational growth (human resources and organizational systems).

Most case study companies described their third phase as 'professionalization', and stated that their focus was on internal efficiency. An example is the following statement by *I2snap's* Managing Director:

' our operations had to start to run smoothly. We wanted to get rid of this "start-up image" and all these side effects. We wanted very urgently to have calm operations. We wanted to have standardized processes. ... To set up these processes in a way that you don't have to

⁹¹ Partnering along the value chain, compare with the introduction of *Gate5* in section 3.2.2

yearly adjust them is absolutely crucial. Firms, that don't manage this task are inefficient, because they spoil resources internally.' (Ingo Griebel, MD Germany 12snap, 2002)

Thereby, a stronger formalization of the organization was associated. All case study companies had a functional organization and had already established mid term planning procedures.

The next similarities between Kasanjian's model and the case study data are the switch to internal financing '*careful balance between profits and future growth*' (Kasanjian, et al., 1989) and growing problems (resource needs) concerning: access to markets, organizational skills, and human resources.

Aside from problems that have not been measured in this study, such as strategic positioning and external relations, the only difference is that in Kazanjian's model functional organizations are introduced from stage three on. Most companies in this study had already implemented a functional organization in stage two.

Stage 4: Stability

As the growth rate slows to a level consistent with market growth momentum and market position (Moore, et al., 1982), the typical focus becomes the development of a second-generation product. A professionally experienced manager or team of managers may be replaced or may be supporting the original owner.

Before analyzing the case data with Kazanjian's model, its significance should be put into perspective. Only three of nine case studies entered this stage and none of them had already passed it. Nevertheless, a few patterns can be found in the data. In stage four, the sales growth is expected to decline to market growth momentum as in the case of *12snap*:

'The growth rate between 2000 and 2001 has been approximately 400%. The factor for 2002 is between three and four, closer to four. And then our growth will decline. Our revenue base will be too high, the market will make such growth rates impossible.' (Bernd Mühlfriedel, CFO 12snap, 2002)

Most ventures added professional managers on the second level as functional heads (marketing directors, management directors of country organizations). Some have even restructured their top management team such as *Gate5* and *ApollisInteractive*, who both replaced their CEOs and planned further steps.

'...we will execute the "Gründerbruch" [founder break: where founders lose their influence and partly leave the company], and we will selectively increase the quality of our staff [on the top level].' (Michael Halbherr, CEO Gate5, 2002)

However, for most companies, adding managerial expertise was not particularly important. Their founders had strong managerial and business administration skills; a high proportion had formerly been management consultants.

The last similarity between Kazanjian's model and the case study data is the beginning product differentiation, which is similar to Kazanjian's notion of second-generation product. In stage four, the companies broadened their scope to facilitate further growth and to reduce their market risks.

Not included in Kazanjian's model are the organizational implications of this diversification. In this study, all three relevant companies introduced business unit organization to cope with the different market requirements.

Assessment of applicability

Kazanjian's model is applicable to the case study data, four stages can be found with almost identical characteristics. Small differences exist such as the earlier introduction of a functional organization in this study. The case study data are partly complementary and interesting relations between problems in Kazanjian's model and case study resource requirements can be found.

Kazanjian's model Focusing on problems	Author's model Focusing on resource requirements	Relation
Sales/marketing	Access to markets	Direct causal link
People	Human resources	Direct causal link
Organizational systems	Organizational skills	Direct causal link
Production	Technological know-how	Author's study more precise, causal link only medium
	Access to supply	Authors study more precise, causal link only medium
External relations	Reputation	Overlap limited, mediocre causal link

Table 38 Comparison Kazanjian's and authors's model

This study can add several aspects to Kazanjian's model; it lists all organizational dimensions for the stages as, for examples, organizational structure, which are only partly included in Kazanjian's stage description. In addition, the authors included further

organizational aspects such as the communication style, planning horizon, and the management style.

On the other hand, a benefit of Kazanjian's model is that it makes precise specifications on the fourth stage, where this study has only preliminary data. Furthermore, Kazanjian tested his model statistically on a basis of 105 companies.

Kazanjian's model supports hypothesis 18 in its two crucial points: On an overall level, the development stages reached stepwise differ significantly in their prevailing problems, which creates new resource requirements; on a detailed level these problems shift from reputation and technology, to production problems, and to organizational and distribution problems.

4.3.4 Conclusion on organizational change

Now that the literature on organizational change has been enfolded, the following conclusions can be drawn. Life cycle models are most relevant for explaining organizational change within the case study context. Development models (including industry evolution) are not precise enough to specifically explain how organizations change; however, they provide interesting insight as to why organizations change. They have the power to explain developments concerning diversification, product innovation and operational effectiveness.

Stage models are more helpful. Within the case studies sample, they explain the stepwise organizational change precisely and, thereby, support hypothesis 17. Despite the often-cited critique of stage models, they are applicable according to the applicability criteria developed by Stubbart and Smalley (1999). Kazanjian's (1988, 1989, 1990) the stage model is particularly useful for describing and explaining change in organizational characteristics and resource requirements, which shift from reputational and technological resources, to supply and production oriented resources, and to distribution and organizational resources, which is consistent with hypothesis 18. His model can be partly expanded through the case study data. Its major benefit—aside from the description of shifts in resource requirements—is the periodization of continuous events.

According to Clark (2000), this periodization is a major tool in case study research, which has been used extensively in this study for analyzing alliance portfolios, resource requirements, and organizational characteristics. The overall results of these case analyses and their relation to the existing literature, are now finally summarized in the last chapter, the conclusion.

5. Conclusion: the coevolution framework

The last chapter has established a need for an extension of the theory on alliance network dynamics and the creation of a coevolution framework between alliance portfolio and NTBF organization to explain the case study data, which was summarized in a set of tentative hypotheses at the end of chapter 3.

As indicated in the introduction (chapter 1), the task of this final chapter is to tie together the previous chapters. The organizational strategy that has been applied so far can be paraphrased as follows. Chapter 2 outlined the research strategy and discussed the steps that had to be taken until closure could be reached. Chapter 3 examined and condensed organizational and alliance portfolio changes in the Mobile Internet industry into a preliminary coevolution argument. In chapter 4, the contradicting and supporting literature were incorporated. When further discussion of extant literature did not produce additional support for the explanation of the case-based hypotheses, theoretical saturation was reached. This study has reached theoretical saturation concerning the discussion of strategic alliances and networks, resource based theories of strategic management, and models of organizational change.

Finally, chapter 5 will address and apply the supportive inputs for reconciling the tentative status of the basic coevolution argument and the derived hypotheses to create an alliance portfolio - organization coevolution framework. This is the ultimate goal towards which all previous considerations have been directed. To reach this goal, chapter 5 is structured as follows: The first section constructs a theoretical coevolution framework by tying together aspects from five areas of literature: resource dependency theory, social network theory, relational view, life cycle models, and dynamic capabilities. Integrating these arguments represents the theoretical contribution of this research study and is, therefore, more elaborate than the other sections. The second section takes the developed coevolution model back to the level of the case study findings and revisits the tentative hypotheses. Thus, this step serves to ascertain the validity of the new contribution, to detect any potentially remaining weaknesses of the new framework, and to prepare for statistical testing of the final model. The third section discusses the limitations of this study and further research needs; before the last section discusses the implications this study on coevolution between alliance portfolio and NTBF's organization has for practitioners and management.

5.1 Constructing a coevolution framework

The objective is to understand the alliance portfolio phenomenon of NTBFs and to generate an explanation for the large and frequently restructured alliance portfolios that have been observed in the Mobile Internet industry. To do this, Pajek, a new software tool for social network analyses that visualizes multidimensional network structures has been used. In addition, the previous chapters provided detailed descriptions of industry settings and enfolded a variety of literature. Yet how can the large and quite heterogeneous body of information—discussed throughout chapter 3 and 4—be synthesized into an explanation of coevolution?

It is warranted to begin with a short summary of the key inputs of the previous sections. These inputs represent the central line of thinking leading to the proposition of this study's inductively grounded extension of the theory of network dynamics. In chapter 4, the set of tentative hypotheses concerning the alliance portfolio performance implication and structural and organizational change were confronted with extant theories of alliances and networks, resource implications on competitive advantages, and organizational change. Their key implications are summarized in the next section, and then the coevolution model is constructed.

5.1.1 Implication of relevant theories on the alliance portfolios

Thus far, the different analyses and conclusions drawn have come to a point, at which five major cornerstones could be identified determining the strategic relevance of alliance portfolios and their dynamics. The first determinant is resource dependencies, which motivate the alliance formation; the second determinant is social capital (key term in social network theory), which facilitates contacting potential partners and exchanging resource. The third cornerstone is the relational rent argument, which claims that competitive advantage can be created by rare and valuable resources efficiently accessed through interfirm linkages such as strategic alliances. The last cornerstones capture the dynamic aspects: life cycle models—as part of the literature on organizational change—describe how firms develop. This development creates different problems, which have bottom line impact on the alliance portfolio structure; the literature on dynamic capabilities stress the strategic importance of processes such as allying for competitive advantage.

These five areas of literature, which have until now been regarded mostly separately, are linked together to add to the underdeveloped area of the dynamics of alliances. A summary of each and its impact on the coevolution argument is provided in the following paragraphs.

Resource dependency theory

The resource dependency theory (Pfeffer, et al., 1978) builds on the exchange perspective. It suggests that organizations enter partnerships, when they perceive critical strategic interdependence with other organizations in their environment, in which one organization has resources or capabilities beneficial to but not possessed by another. Firms seek out ties with partners who can help them manage such strategic interdependencies. Complementary resources are a key driver of these inter-organizational cooperations (Nohria, et al., 1991).

Resource dependency theory is powerful for explaining, why the NTBFs in the Mobile Internet industry establish alliances with different types of partner and what kind of resources they want to access. In addition, resource dependency theory provides the link for understanding that changing resource requirements lead to structural changes of the alliance portfolio.

Resource dependency theory is less powerful in explaining, how alliances are formed and what influences the quality of an alliance link. These aspects are covered by social network theory.

Social capital (social network theory)

Social network theory suggests that the firm's strategic actions are affected by the social context in which they and the firms are embedded (Burt, 1997). The firm's social context includes inter-organizational resource relationships.

Social capital is required to move within the social context. Social capital comprises the firm's reputation, the history of prior alliances, and alliance process capabilities. As laid out in social network theory, social capital is important for contacting potential partners, embedding alliances, building trust, and fostering the resource exchange. Social capital is crucial for understanding how alliances are formed and intensified.

However, social network theory does not provide an explanation for, how intense interfirm linkages can create competitive advantage. This is argued in the relational view.

Relational view

Alliances generate competitive advantage (relational rent) when firms access valuable, rare, imperfectly imitable, non-substitutable resources. This can only be the case when firms move the relationship away from the attributes of market relationships (i.e., by embedding ties, building trust) (Dyer, et al., 1998). In the case of Mobile Internet firms, competitive advantage can be created through combining complementary resources and capabilities, which results in the joint creation of unique new products, services, or technologies. Other

factors—theoretically also generating relation rent—such as knowledge sharing routines and the investment in relation-specific assets (i.e., collocation of operation) are not as relevant.

These first three cornerstones—linked together—explain very well why NTBFs in the Mobile Internet industry form extensive alliance portfolios. However, the theory cannot explain why these alliance portfolios change rapidly. This dynamic part of the coevolution argument is covered by theories on organizational change, in particular life cycle models, and on dynamic capabilities.

Life cycle models

Life cycle models are very powerful for explaining organizational change of NTBFs in the Mobile Internet industry. These models describe change as a discontinuous process that is characterized by a fixed sequence. In contrast to other models of organizational change, they are very precise in explaining how organizations change. Despite the often-cited critique of being a ‘procrustean bed’, they are applicable in the study’s setting according the detailed applicability criteria developed by Subbart and Smalley (1999) because they are applied in a narrow industry segment covering a limited time-frame.

Of the broad variety of stage models, Kazanjian’s model (Kazanjian, 1988; Kazanjian, et al., 1989; Kazanjian, et al., 1990) is particularly useful for describing and explaining the changes in a NTBF’s organizational characteristics and resource requirements when NTBFs proceed through the conception and development, commercialization, growth, and stability stages. They shift from reputational and technological resources, to supply and production oriented resources, and to distribution and organizational resources.

A major benefit of these models—aside from the illustrative description of organizational change—is the periodization of continuous events. This periodization is a major tool in case study research (Clark, et al., 1991), which has been used in this study to melt down the continuous streams of organizational and alliance portfolio changes into four characteristic snapshots of organizational characteristics, resource requirements, and alliance portfolio structure. Thereby, the amount of data could be compressed to a manageable amount, which allows for a vivid depiction of the structural changes.

Dynamic capabilities

Dynamic capabilities are defined as the firm’s ability to integrate, build, and reconfigure internal and external resources to address rapidly changing environments. Dynamic capabilities thus reflect an organization’s ability to achieve new and innovative forms of

competitive advantage through its processes, factoring in path dependencies and market positions (Teece, et al., 1997).

Dynamic capabilities are important for firms in dynamic environments such as the Mobile Internet industry, because they are tools for manipulating resource configurations. Strategic planning, allying, and project management skills are key capabilities in the Mobile Internet industry. They are necessary for building up competitive advantage. However, they are not sufficient for two reasons. In the cases of strategic planning, allying, and project management, best practices exist and the efficient firms do not differ considerably in their processes. This suggests that these processes can be learned and imitated and, thus, that their induced advantage is not sustainable. In addition, the overall competitive advantage heavily depends on underlying resources such as *I2snap*'s opt-in subscriber base, which cannot be superseded or replaced by dynamic capabilities.

By linking these five cornerstones, one can conclude the theoretical discussion that alliances evolve in response to firm's changing resource needs in and resource acquisition challenges as they move through the life cycle stages of conception and development, commercialization, growth, and stability. Overall, as firms respond to the resource challenges of the first four development stages, their networks evolve from small, loosely tied, reputation-seeking networks in the conception phase, to supply focused networks with a few stronger ties in the commercialization stage, and to large, calculative, distribution-focused networks, with a few very strong ties, from the growth stage on. The shifts correspond to shifts in the strategic context of the firms (Hite, et al., 2001). This evolution of the network thus enables the NTBF to successfully adapt to changes in its context and to obtain the necessary resources for successful performance throughout the early development stages.

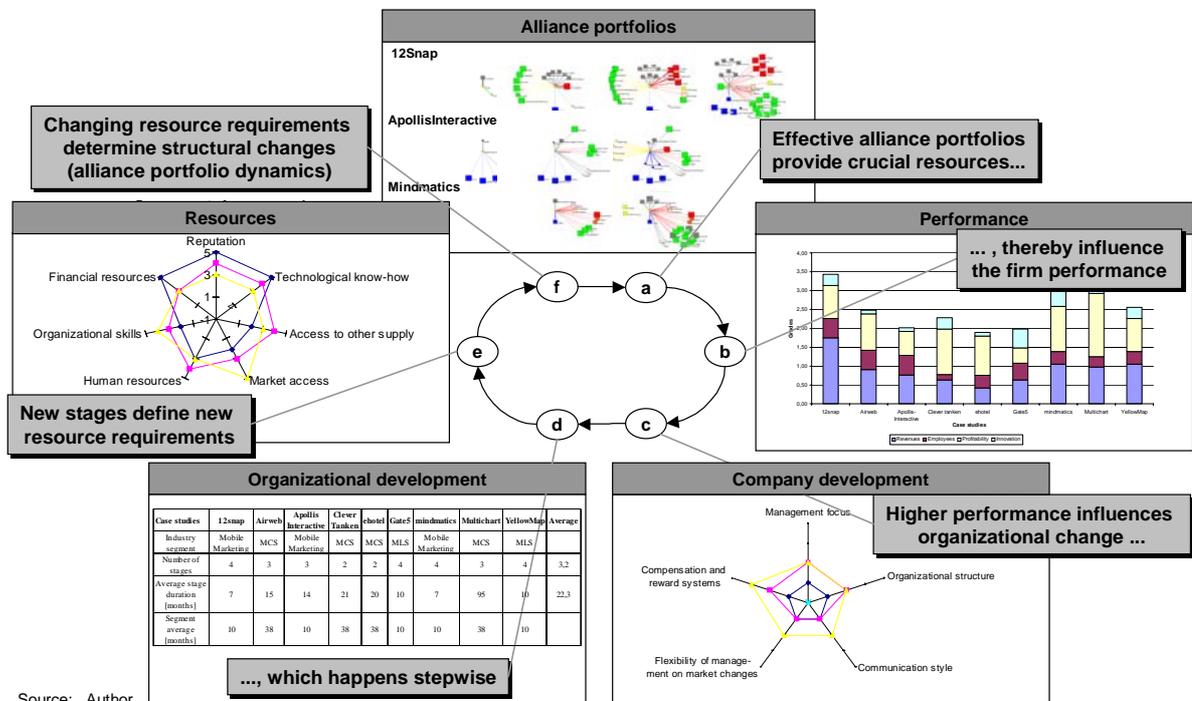
The logic of these five perspectives helps in understanding the rational and the strategic importance of large and frequently changing alliance portfolios in the Mobile Internet industry. Thereby they contribute to the answer of the key question posed by this study: 'Why and how do alliance portfolios change over time and what is the strategic implication of this change?' This question is now used for constructing a framework of alliance portfolio and NTBFs' organization coevolution.

5.1.2 Constructing a new approach: the coevolution framework

This section presents a coevolution framework of alliance portfolio and NTBFs' organization, explains the relations, which exist within the model, and discusses its

contribution. The proposed coevolution framework comprises six steps explaining the interdependencies between alliance portfolios and firms' organizational development, which are depicted in figure 70.

Coevolution of alliance portfolio and NTBF's organization



Source: Author

Figure 70 Coevolution framework

In a coevolution framework it is always difficult to find a starting point, as in the chicken or the egg problem. Discussion of the coevolution framework begins by examining the impact of an NTBF's alliance portfolio on its performance, and moves on to an analysis, how organizational change induced by growth impacts the alliance portfolio. The six-step coevolution model can be described as follows:

- a) NTBFs establish alliance portfolios to access resources that they depend on but do not control. No efficient markets exist for these resources, and they are either too expensive to produce in-house or simply not producible by NTBFs. The better NTBFs manage the portfolio by embedding interfirm linkage, the more intense resources can be accessed. Alliance portfolio controlling skills are required for supervising the exchange effectiveness and portfolio alignment with the overall strategy.
- b) Effective alliance portfolios improve the performance of NTBFs in terms of growth (in terms of revenue and employees), profitability, and innovation by providing

reputation, cost-efficient supply (such as content and technology), and access to superior distribution channels.

- c) Higher performance, or rather growth, leads to organizational change. Firms have to cope with new problems. After setting up the company and developing a prototype in the conception phase, setting up a production process and establishing the first distribution channels in the commercialization phase, installing efficient internal processes and establishing solid distribution channels are the major challenges in the professionalization and growth period and thereafter.
- d) Firms react to these new problems by changing the organizational setup in a stepwise fashion. They add complexity to their organization and adjust their strategic goals. Therefore, higher performing firms go through these development stages faster.
- e) Stage-induced new problems and strategies define new resource requirements. Reputational and technological resources that are very important in the beginning lose their importance from the commercialization phase on, and access to supply becomes significantly more important. Access to markets and organizational resources are constantly gaining importance and become relevant especially in the growth stage and later.
- f) These changing resource requirements trigger structural changes in the alliance portfolio. The better NTBFs can adjust their alliance portfolio through alliance formation capabilities, which heavily depend on social capital, the better the firm's performance. Thereby, social capital is built through the firm's reputation, personal networks of closely related people such as interlocking directorates, alliance project skills, and the history of prior alliances.

The overall logic of the presented framework is similar to what Darwin (1859) describes in his discussion of the origin of species. Survival or, in this case, performance depends on how well the organism or organization can adapt itself according to boundary conditions. Therefore, this coevolution framework resembles 'Alliance Darwinism'.

The central implication of the coevolution framework is the perspective emphasizing the advantages of highly adaptive networks. The adaptability is supported by alliance formation skills and social capital that foster trust and enable firms to intensify interfirm linkages. The alliance portfolio strategically serves a NTBF in different strategic contexts. The final result of this evolution through the different life cycle stages is that a firm increases its ability to actively manage its external network.

Resource challenges on network evolution do not represent unidirectional impact, as network evolution, in turn, also influences the nature of the firm's future resource challenges. As Koza (1998) previously stated, there is a coevolutional aspect to the way networks and firms evolve. The essence of coevolution is feedback—an action or activity initiated by someone or something sets in motion activities or responses by others, which then affect the original activity (Baum, et al., 1994, p. 387). Coevolution is set in motion when resource challenges require networks to adapt because network adaptation then ameliorates the resource requirements, which consequently increases the firm's competitive advantage and its speed of progression through the development stages. A firm's success in building a network with well-known incumbents in the conception stage, for example, allows it to acquire reputation, which is required in the commercialization stage for attracting production and supply partners, which in turn are crucial in this second step. Thus, these new resource challenges drive the evolution toward a new network configuration consisting of a larger network with a few very strong ties.

More generally, as a firm strategically evaluates and adapts its network to meet the changing needs and challenges of each context, the firm will be better positioned to acquire additional requisite resources and asset stocks, thereby ensuring the continued survival and growth of the firm. Successful and sufficient resource acquisition, in turn, enables the firm to continue to progress to subsequent stages or contexts of performance (Larson, et al., 1993). Thus, there is an upward spiraling progression pattern in the coevolution of alliance portfolios and the organization—its resource requirements, characteristics, and challenges.

In the next step, this final conclusion—formulated in the coevolution framework—is checked against the tentative hypotheses formulated in section 3.5.

5.2 Revisiting tentative hypotheses

This step serves two purposes. It assures the validity of the proposed framework by comparing it with the information extracted from the case study findings; and it revises the tentative hypotheses—when required—to facilitate their testing and further discussion. First, for any type of empirical work—whether it is case study work or purely quantitative surveys—the establishment of internal validity is an important factor. For the purpose of this study, internal validity can be paraphrased in the following way. Does the coevolution model of alliance portfolios and NTBFs organization interdependency actually explain why and how NTBFs partnership networks change dynamically over time? Second, scholarly processing of results, which is often done either by statistically testing the model by testing

its underlying hypotheses or by checking its external validity by comparing its hypotheses with other academic findings, requires precisely defined hypotheses that are coherent with its theoretical context. Thus, hypotheses are reshaped so that statistical testing can be simplified or so that their comprehensibility considering the theoretical context can be improved.

The appropriate method for serving these two purposes is to close the feedback loop between empirical results and what has been published in the literature. In this iteration, the results of the study's analytical generalizations are matched against the observed phenomena. Then the tentative hypotheses are rephrased when appropriate. The revised hypotheses then have the ability to identify and support what the novel approach explains in an unambiguous manner. Equally importantly, this comparison can show where the model remains unclear or where it does not hold explanatory power. The function of identifying weaknesses is all the more important because this study uses exploratory case-based methodology and is, therefore, subject to future improvement.

Chapter 3 presented a set of 19 tentative hypotheses. For an easier examination of the coevolution framework of alliance portfolios and NTBF organization that adheres to the understanding of interdependencies of network structure and firm development, the tentative hypotheses are presented in the same logical order that is used in the model. Table 39 provides a classified overview of the tentative hypotheses.

	No.	Tentative hypothesis
Coevolution	# 1	<i>The better an alliance portfolio is adjusted to the stepwise changing resource requirements, the faster the firm develops. (Alliance Darwinism)</i>
Alliance portfolio performance implication	# 2	<i>The better the firm can (1) leverage its resources, (2) access superior distribution channels, (3) access external product / service technologies, and (4) access superior supply via alliances, the better the companies performs in terms of (a) growth, (b) profitability and (c) technological innovation.</i>
Portfolio effectiveness due to partner acquisition capabilities	# 3	<i>The better the partner acquisition capabilities, the more effective the alliance portfolio.</i>
	# 5	<i>The better the ability to develop alliance concepts and select fitting partners, the better the partner acquisition capabilities.</i>
	# 6	<i>The better the firm's reputation, the better the partner acquisition capabilities.</i>
	# 7	<i>The better the directorates (higher profile) and closely related agents, the better the partner acquisition capabilities.</i>
	# 8	<i>The better the alliance project skills, the better the partner acquisition capabilities.</i>

	# 9	<i>The better the existing alliance portfolio and the more diverse the alliance history, the better the partner acquisition capabilities due to (1) better alliance opportunities and (2) better reputation (outside effects), as well as (3) better project skills (interior effect).</i>
Portfolio effectiveness due to alliance management capabilities	# 4	<i>The better the portfolio management capabilities, the better the alliance portfolio effectiveness because (1) resources exchange can be intensified and (2) alliance portfolio inefficiencies can be eliminated.</i>
	# 10	<i>The better the ability to adjust partnerships to maintain win/win situations, which requires flexible alliance contracts, the better the partner management capabilities.</i>
	# 11	<i>The better the ability to embed partnership ties, the better resources can be exchanged and the more stable are partnership links. Therefore, the ability to embed partnership ties as part of alliance management capabilities has a positive impact on alliance portfolio effectiveness.</i>
	# 12	<i>The better the ability to communicate, the better the ability to embed partnership ties.</i>
	# 13	<i>The better the ability to build trust, the better the ability to accelerate the resource exchange.</i>
	# 14	<i>The tighter the ability to control partnerships according to dynamic corporate goals, the better the portfolio management capabilities</i>
Strategic importance of resources Relational rents Dynamic capability	# 15	<i>The more effective a firm accesses rare sustainable inimitable non-substitutable resources through the alliance portfolio, the better the companies' performance and, therefore, its competitive advantage.</i>
	# 16	<i>The better a firm is capable of rearranging its alliance portfolio according to changing resource requirements (dynamic capability), the better the companies performance and, therefore, its competitive advantage.</i>
	# 19	<i>Shifts in resource requirements lead to changes in alliance portfolios. This is facilitated and enabled through allying capabilities, a dynamic skill.</i>
Organizational change	# 17	<i>The higher the competitive advantage, the faster the organizational growth, which happens stepwise.</i>
	# 18	<i>New development stages are characterized through new challenges and problems, which create additional resource requirements. The problems shift from reputation and technology issues in the beginning, to supply questions, and to distribution and market access problems.</i>

Table 39 Tentative hypotheses

The hypothesized coevolution relationships between alliance portfolio and NTBF organization do not represent a homogeneous group. The hypotheses can be grouped in four clusters. Aside from the overall coevolution argument formulated in hypothesis # 1, the different hypotheses address alliance portfolio effectiveness (influenced by alliance formation and management), the strategic importance of resources, organizational change, and alliance portfolio dynamics.

Alliance portfolio effectiveness aspects encompass two issues: alliance formation and alliance portfolio management. After describing the general performance implications in tentative hypothesis 2, the impact of alliance formation on the effectiveness of alliance

portfolios is described in tentative hypotheses 3 and 5 through 9. Hypotheses 4, and 10 through 14 focus on alliance management. Thereby, hypotheses 2, 3, and 4 describe the impact of alliance formation on firm performance on overall strategic level, and hypotheses 5 through 14 describe the underlying relations on a process level.

The proposed coevolution framework is clearly consistent with the hypotheses on the strategic level. Hypothesis 2 formulates the strategic importance of NTBFs' alliance portfolios, and hypothesis 4 states the importance of alliance portfolio management capabilities for exchanging resources; both aspects are covered by 'step a'. The last strategic level hypothesis—hypothesis 3—contains the importance of alliance formation capabilities that is reflected in 'step f'.

The process level hypotheses 5 through 14 support the strategic level hypothesis 3 and 4, but not all of them are depicted in the coevolution framework for reasons of clarity. Trust (13) and embeddedness (11)—two important arguments in the discussion on alliance management—are mentioned in 'step a'; social capital, established by reputation (6), interlocking directorates (7), alliance project skills (8), and the prior alliance history (9), is included in 'step f'. However, a two layer model could better integrate these process level hypotheses, because it would add a process layer to the developed strategic coevolution framework. In particular, the partner selection skills (5) that comprise tools such as overlap matrixes are underrepresented in this coevolution framework. However, further research is needed to develop a consistent lower process layer model.

The next step in confronting the coevolution framework with the tentative hypotheses covers hypothesis 15, 16, and 19—aspects that discuss the importance of resources and how they are arranged. Both hypotheses support and are well represented by the coevolution framework. Hypothesis 15 states the core argument of the relational view, which is included in 'step b'. This hypothesis was fully supported by the theory discussion and was directly integrated into the model. Hypotheses 16 and 19 state the necessity of capabilities that rearrange resources to adjust the firm's setup according to changing boundary conditions. The essence of this hypothesis can be found in two steps of the coevolution model. 'Step e' explains why a firm developing in a stepwise manner is confronted with the problem of rearranging its resources. 'Step f' formulates how the dynamic capability of allying can help the firm to achieve a competitive advantage.

The last group of hypotheses to be confronted with the coevolution model raises issues of organizational change. Hypothesis 17 states that higher performance accelerates change,

which happens stepwise. Hypothesis 18 attests that new development steps create new strategic challenges and problems, which again create new resource needs. Both hypotheses are included in the model. Hypotheses 17 has been split and formulated in steps c and d, which state that performance leads to organizational change and new strategic challenges and that NTBFs react to these stepwise changing conditions by adding organizational complexity. Hypothesis 18 is represented by 'step e', which describes how resource requirements shift from reputational and technological resources in the beginning, to production oriented resources (supply) in the commercialization phase, and to distribution and organizational resources in the growth stage and later.

The aim of this section was to test the coevolution model against the case-based tentative hypotheses to increase the model's internal validity. The comparison performed in this final iterative loop resulted in a substantial confirmation of the new model. It offers substantial explanations of almost all hypotheses. Yet, results of exploratory research are often not as clear-cut as one would like. This coevolution model does not cover a few process level hypotheses, because it would require adding an extra process layer that is not yet understood for all process steps. However, one of the reasons this iteration was performed was to detect shortcomings and to uncover needs for future refinement. The following section will deal with this topic in more detail.

Despite this process level shortcoming, the coevolution model has proven its strong explanatory power for explaining interdependencies of NTBFs' organizations and alliance portfolios. This was achieved by utilizing an inductively-grounded approach on the basis of cases and theoretical deliberations. The results extend extant literature on alliance dynamics by linking life-cycle concepts with the literature on alliance formation and management as well as resource based models of strategic management. The model's implications for management and practitioners will be discussed after the following section.

5.3 Limitations and directions for further research

This study has explored interdependencies between alliance portfolios and NTBFs' organizations and has found upward spiraling coevolution effects. By using the methodological procedure of comparative case-study research, this study has led to the identification of several common patterns and topics that are of crucial importance in the context of network dynamics. These observations were assembled to form a six-step coevolution framework. This proposed framework has some limitations in its applicability

and some of its aspects require further research. The first part of this section will discuss the framework's limitations, some of which indicate the need for further research to broaden the model's scope and increase its external validity. The second part takes up these needs for future research, adds requirements that became apparent when examining the case study data with the extant literature, and deduces consequent directions for further research.

Limitations

The proposed alliance portfolio - organization coevolution model was founded based on nine case studies in the high velocity Mobile Internet industry by analyzing data on alliance portfolio changes and their strategic importance and comparing them with the extant literature. Its applicability is limited for two potential reasons: the framework's origin lies in one specific industry (Mobile Internet) and its status is tentative, because the framework is not yet statistically tested.

The model was constructed from Mobile Internet case study data, in which two industry characteristics prevail: highly dynamic industry settings and significant importance on strategic alliances as a form of interorganizational cooperation. Thus, it is very likely that the framework may lose some of its applicability in less dynamic industries, in cases in which change does not play such an important role, and in highly integrated or in old established commodities-industries, in which alliances are not such a relevant form of inter-organizational linkage.

In steady industries, transition periods are less numerous and less frequent. Strategies and resource requirements shift more slowly and the ability to rearrange resources is of less value. Therefore, core elements of the proposed models such as alliance formation and other processes concerning the adaptability of alliance portfolios are less crucial and less important for predicting competitive advantage.

Besides the industry's development speed, an alliance's strategic importance is the second cornerstone of the proposed coevolution framework. In highly integrated industries (i.e., law firms, management consulting firms) alliances are less crucial and therefore the coevolution model is of less value; this is also the case in established commodity industries such as basic materials (i.e., coal, metal, gas) and basic financial securities, where efficient markets exist. Efficient markets make the need for complex forms of inter-organizational cooperation, such as strategic alliances, obsolete. These two industry characteristics diminish the applicability of the proposed model.

In addition to industry-specific arguments, that proposed model's preliminary status limits its explanatory power. Although there is always a temptation to apply research findings normatively, this study has tried to refrain from proposing such recommendations due to its exploratory nature. In order to develop normative statements from the alliance portfolio - organization coevolution model, it is inevitable that additional case studies in other high velocity industries such as semi-conductors or biotechnology are carried out and large-scale quantitative measurements of the model's hypotheses are conducted. These tests to increase the validity of the model are one direction for further research, which is laid out in the next part.

Further research

The testing of the coevolution framework to establish ultimate validity and a normative status for this model clearly constitutes one path for further research. In addition, by incorporating the literature, this study has uncovered three weaknesses in the current literature that require further research to be thoroughly understood: the knowledge about underlying alliance processes, the influence of financial resources on organizational change, and the measurement of resources. The subsequent paragraphs explain these research requirements.

Reaching validity: For the coevolution framework to reach normative status, its applicability in other high-technology industries such as multi-media, semi-conductors, nanotechnology and biotechnology calls for special attention. Additional case studies in these industries should be conducted to allow for cross-industry tests. In addition, the formulated hypotheses must still be proven by statistical tests with sufficiently large samples.

Alliance processes: That alliance processes require further research became obvious through the multi-level set-up of this study. Although much is known about how alliances influence competitive advantage on a strategic level, very little is known about the underlying process level. Issues such as alliance controlling procedures are hardly explored despite their strategic relevance (Bamford, et al., 2002). This is also true for alliance project management. On an operational level, detailed research is required to understand the underlying activities and processes that make alliances work. In addition, this research is needed to close the gap between theoretical findings and implementation. Without the process know-how, management cannot implement strategic level results. The last section will focus on this implementation issue in greater detail.

Impact of financial resources: An additional issue that is not adequately addressed is the role that financial resources play in the development of NTBFs. Empirical studies and the case study interviews consistently underscore the importance of financial resources for NTBFs to prosper. However, in this research study, the requirement for financial resources could not be integrated into the life-cycle grid—which could be consistently applied for all other resources. In addition, many life cycle concepts such as Kazanjian's (1988; 1989; 1990) four stage model make no statement concerning financial resources and their development. Thus, a third direction for future research is the detailed analysis of financial resources, VC's financing rounds, and their interdependencies with organizational change and life cycle stages.

Resource measurement: On a basic level, more must be learned about specific resources and their operationalization. Literature (i.e., Barney, 2001) has provided a broad classification of resources, but studies that provide insight into how to measure resources are lacking. The resource 'technological know-how' is especially hard to operationalize; therefore, resource-based models are consistently hard for practitioners to understand and implement.

Not all four points—guiding further research—are new or innovative. The last point in particular has been stated very often after the publication of internally focused models of strategic management, starting in the mid 1980s. It is nevertheless still valid. This is also the case with the problem that theoretical findings are often difficult for practitioners to implement when underlying processes are not yet described. The next section discusses this point in greater detail.

5.4 Implications and directions for management

The coevolution framework of alliance portfolio and NTBF organization has demonstrated its contribution in extending the literature on alliance dynamics. This new framework has thus advanced the theoretical understanding of alliance portfolios and their strategic impact on NTBF performance.

Apart from contributing to the body of literature on alliance dynamics, what can the model offer that is of value to practitioners of management? All too often this question remains unresolved in academic management literature. Scholars such as MacMillan (2000) do not tire of emphasizing the need for '*implementable research with real life implications.*'

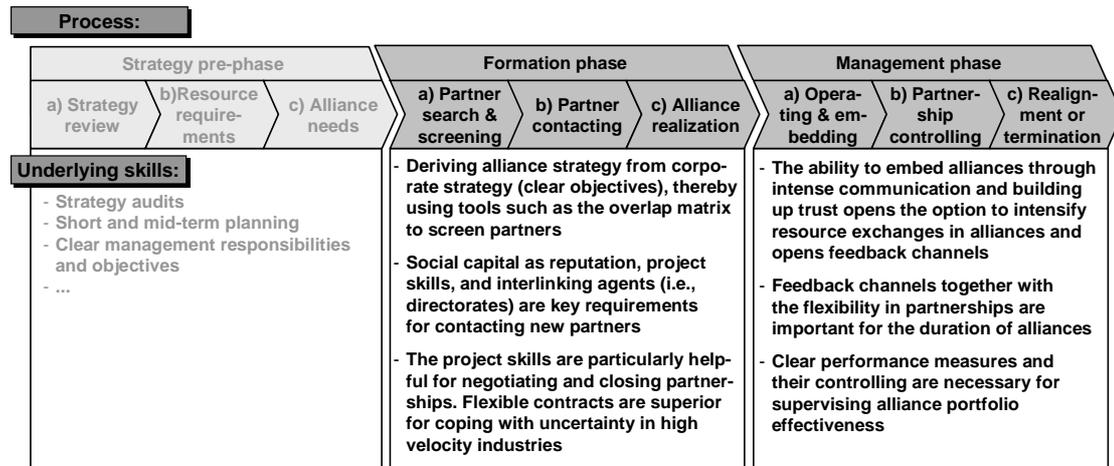
This study makes an explicit effort to emphasize several findings that may serve as valuable inputs for managerial decision-making. While these findings are not intended to provide 'ready to use' solutions for specific business problems, they do qualify as points of departure for developing such solutions. A question that quickly comes to mind in this context is whether a case-based study can offer any substantial input for management practice. Two reasons are warranted. First, the idea of deriving recommendations from closely observing the behavior of other companies, be it competitors or unrelated firms, has a long tradition in management. Activities such as competitive intelligence, reverse engineering, and benchmarking rest on this type of observation. Second, the contribution of this study is not based exclusively on the case findings. The proposed coevolution model rests on the observations of the case firms, several industry reports, and on an in-depth discussion of various lines of management literature that have been found to enhance the case findings.

Perhaps the most obvious implication to be drawn from the coevolution framework of alliance portfolio and NTBF organization is the clearly-documented fact that alliances are not a crucial for NTBFs in the Mobile Internet industry. They are established to copy others as a method for coping with uncertainty (i.e., the 'me too'-syndrome), but have the power to create competitive advantage.

The next implication is that these alliance portfolios must change over time, because they are related to organizational characteristics of NTBFs that develop as these young firms grow. Therefore, alliance portfolios must change over time, and managing them proactively creates value. Step by step, alliance portfolios have to provide different resources—from reputation and broad technological know-how in the conception stage, to supply and production resources in the commercialization stage, and to distribution resources in the growth stage and thereafter. In the later stages, only specific, intense technology and supply relations maintain their strategic importance.

In addition to these two high-level conclusions, which a few managers might perceive as too generic, too broad, and too abstract, this study offers additional insight on a process level by providing insights about what a best practice allying process looks like; which factors are important for alliance formation; and which factors are important for alliance management. These insights are depicted in figure 71.

Allying process



Source: Author

Figure 71 Allying process

The allying process consists of two major steps—alliance formation and alliance portfolio management—and is closely related to the overall strategy process. In a strategy pre-phase, NTBFs develop a corporate strategy, in which they decide on which products to develop and which markets to enter. They work out a mid-term tactic for how they want to reach their targets, which problems they will have to solve, and which resources they will require. In a last strategic step, NTBFs decide on which resources they source via markets, which resources they produce in-house, and which resources they try to access via alliances. This last decision on the sourcing tactic kicks off the allying process, which is made up of the formation and the management phase.

Alliances are formed in a three-step phase: partner search and screening, contacting, and contracting and partnerships realization. First, in the search and screening step, it is important to select and prioritize potential partners according to clear objectives—derived from the corporate strategy. Tools such as the overlap matrix (on products and clients) help to evaluate the strategic fit. Second, appropriate partners must be approached. The success rate depends heavily on a NTBF’s social capital. Social capital consists of its reputation, its alliance project skills, and personal ties of interlinking agents (i.e., directorates). Membership in industry associations and prior alliances can foster social capital as well. The last step in the alliance formation process is realizing the partnership, which, in business terms, means: closing the deal. Alliance project skills—established through prior alliances—are particularly helpful for negotiating and closing partnerships deals. These deals should be flexible enough to cope with uncertainty in high velocity industries.

Flexibility in partnerships extends their duration and has a positive impact on the resource exchange. Both aspects are taken into consideration in the alliance management sub-process. The alliance management sub-process also has three steps: operating and embedding the partnership, controlling alliance portfolios, and realigning partnerships. The ability to embed alliances through intense communication and the establishment of trust opens the option to intensify resource exchanges in alliances and opens feedback channels. These feedback channels, together with flexible partnership agreements, are important for the duration of alliances because perceived unfairness is one of the most important reasons that alliances are terminated, especially between NTBFs and incumbents. Clear performance measures and their controlling are necessary for supervising alliance portfolio effectiveness, managing the deployment of resources such as management time, and terminating inefficient relationships that cannot be revitalized.

As pointed out earlier, the above-mentioned managerial implications should not be misconstrued as representing a guide to the correct way of forming and managing alliance portfolios. Variations certainly apply depending upon the specific type of an emerging high-technology industry a firm is operating in and as a function of numerous other specific circumstances. There is always a danger of being too quick to generate normative statements from a new model. This critique has rightly been raised in the context of many frameworks such as the discussion of diversification of pure players in the beginning of the nineties that caused *DaimlerChrysler's* very unsuccessful entry into other transportation businesses with *ADtrans*, *Dornier*, etc. and the focus on core competencies and core business units in the late nineties that put extreme pressure on conglomerates such as *GE* and *Siemens*. This mistake should not be repeated here. Nevertheless, the findings of this study do show that firms that have acted in a way explained by the proposed coevolution framework received higher returns *and* developed faster. These findings are substantiated by an in-depth discussion of theoretical contribution. Hence, while the new model should not be applied as a blueprint for forming and managing alliance portfolios, it implies the intriguing value of proactively adapting alliance portfolios in emerging high-technology industries.

6. References

- A.T.Kearney, and University of Cambridge, 2002 "Mobinet Index #5." 1-38.
- Abbott, Andrew, 1988 *The system of professions - an essay on the Division of Expert Labor*. Chicago: University of Chicago Press.
- Abernathy, William J., and James M. Utterback, 1978 "Patterns of innovation in technology." *Technology Review*, 80: 40-47.
- Adizes, Ichak, 1979 "Organizational Passages: Diagnosing and Treating Lifecycle Problems of Organizations." *Organizational Dynamics*, 8: 2-25.
- Adler, Paul, 1993 "The Learning Bureaucracy: New United Motor Manufacturing, Inc." *Research in Organizational Behavior*, 15: 111-194.
- Aldrich, Howard, 1979 *Organizations and environments*. Englewood Cliffs NJ: Prentice Hall.
- Amit, Raphael, and Paul J. H. Schoemaker, 1993 "Strategic assets and organizational rent." *Strategic Management Journal*, 14: 33-46.
- Anderson, James C., and A. James Narus, 1990 "A model of distributor and manufacturer firm working partnership." *Journal of Marketing*, 54: 42-58.
- Andrews, Kenneth R., 1971 *The concept of corporate strategy*. Homewood: Dow Jones-Irwin.
- Ansoff, Igor H., 1965 *Corporate Strategy*. New York: McGraw Hill.
- Aragon-Correa, J. Alberto, and Sanjay Sharma, 2003 "A contingent resource-based view of proactive corporate environmental strategy." *Academy of Management. The Academy of Management Review*, 28: 71-88.
- Arino, Africa, 2001 "To do or not to do? Noncooperative behavior by commission and omission in interfirm ventures." *Group & Organization Management*, 26: 4-23.
- Arrow, Kenneth J., 1996 "Technical information and industrial structure." *Industrial and Corporate Change*, 5: 645-652.
- Arthur, W. Brian., et al., 1987 "Path dependent processes and the emergence of macro structure." *European Journal of Operations Research*, 30: 294-303.
-

- Asanuma, Banri, 1989 "Manufacturer-supplier relationships in Japan and the concept of relation-specific skill." *Journal of the Japanese and International Economies*, 3: 1-30.
- Auster, Ellen R., 1994 "Macro and strategic perspectives on interorganizational linkages: A comparative analysis and review with suggestions for reorientation." In Shrivastava, et al. (eds.), *Advances in Strategic Management*: 3-40. Greenwich, CT: JAI Press.
- Autio, Erkko, 1995 "Measurement and evaluation of technology transfer: Review of technology transfer mechanisms and indicators." *International Journal of Technology Management*, 10: 643-664.
- Bamford, James, and David Ernst, 2002 "Managing an alliance portfolio." *The McKinsey Quarterly*, 11: 8.
- Barney, Jay B., 1986 "Strategic factor markets: Expectations, luck, and business strategy." *Management Science*, 32: 1231-1241.
- 1991 "Firm Resources and Sustained Competitive Advantage." *Journal Of Management*, 17: 99-120.
- 2001 "Is the resource-based "view" a useful perspective for strategic management research? Yes." *Academy of Management. The Academy of Management Review*, 26: 41-60.
- Barney, Jay B., and M. Hansen, 1994 "Tustworthiness as a source of competitive advantage." *Strategic Management Journal*, 25: 175-190.
- Baum, Joel A. C., et al., 2000 "Don't go it alone: Alliance network composition and startups' performance in Canadian biotechnology." *Strategic Management Journal*, 21: 267-294.
- Baum, Joel A. C., and C. Oliver, 1991 "Institutional linkages and orgnizational mortality." *Administrative Science Quarterly*, 36: 187-218.
- Baum, Joel A. C., and J. V. Singh, 1994 *Evolutionary dynamics of organizations*. New York: Oxford University Press.
- Birley, Sue, 1986 "The role of networking in the entrepreneurial process." *Journal of Business Venturing*, 1: 107-117.
- Blake, Robert R., et al., 1996 *Corporate darwinism*. Houston: Gulf Publications.
- Blau, Peter M., 1964 *Exchange and power in social life*. New York: Wiley.
-

Block, Zenas, and Ian C. MacMillan, 1985 "Milestones for successful venture planning." *Harvard Business Review*, 63: 184-189.

Booz Allen Hamilton, 2001a "Delivering on the Promise - Turning Wireless Data into a Success."

2001b "Nurturing the New Innovators -a global survey of the emerging wireless application development industry-."

Bortz, Jürgen, and Nicola Döring, 1995 *Forschungsmethoden und Evaluation*, 2nd. ed. Berlin: Springer.

Borzo, Jeanette, 2002 "Advertisers begin dialling for Dollars." *The Asian Wall Street Journal*.

Bower, Joseph L., 1970 *Managing the resources allocation process*. Cambridge, MA: Harvard University Press.

Brown, John S., and Paul Duguid, 1991 "Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning and Innovation." *Organization Science*, 2: 40-57.

Brunninge, Olof 2000 "SME's in strategic networks: the example of Swedish entrepreneurs reorganising insurance distribution." *Research in Entrepreneurship and Small Business XIV*: 27-31. Prague.

Brush, Thomas H., and Kendall W. Artz, 1999 "Toward a contingent resource based theory: The impact of information asymmetry on the value of capabilities in veterinary medicine." *Strategic Management Journal*, 20: 223-250.

Burgelman, Robert A., and Leonard R. Sayles, 1986 *Inside corporate innovation: Strategy, structure, and managerial skills*. New York: Free Press.

Burns, Tom, and George M. Stalker, 1961 *The Management of Innovation*. London: Tavistock.

Burt, Ronald S., 1982 *Toward a structural theory of action*. New York: Academic Press.

1992 "Structural holes: The social structures of competition." Cambridge, MA: Harvard University Press.

1997 "The contingent value of social capital." *Administrative Science Quarterly*, 42.

- Cameron, Kim S., and David A. Whetten, 1981 "Perception of organizational effectiveness over organizational life cycles." *Administrative Science Quarterly*, 26: 525-544.
- Caves, Richard E., 1980 "Industrial Organization, Corporate Strategy and Structure." *Journal of Economic Literature*, 18: 64-92.
- Chakravarthy, Bala S., and Peter Lorange, 1991 *Managing the strategy process*. Englewood Cliffs, NJ: Prentice Hall.
- Chandler, Alfred, 1992 "Organizational Capabilities an the Economic History of the Industrial Enterprise." *Journal of Economic Perspectives*, 6: 79-100.
- Child, John, 1972 "Organizational structure, environment and performance: The role of strategic choice." *Sociology*, 6: 1-22.
- Chung, Seungwha, et al., 2000 "Complementarity, status similarity and social capital as drivers of alliance formation." *Strategic Management Journal*, 21: 1-22.
- Clark, Kim B., and T. Fujimoto, 1991 *Product development performance: Strategy, Organization and Managemen in the world auto industries*. Cambridge, MA: Harvard Business School Press.
- Clark, Peter A., 2000 *Organisations in action: competition between contexts*. London: Routledge.
- Coase, Ronald H., 1960 "The Problem of Social Cost." *Journal of Law and Economics*, 3: 1-44.
- Cohen, Wesley M., and David A. Levinthal, 1990 "Absorptive capacity: A new perspective on learning and innovation." *Administrative Science Quarterly*, 35: 128-152.
- Collis, David J, 1994 "Research note: How valuable are organizational capabilities?" *Strategic Management Journal*, 15: 143-152.
- Conway, Steve, and Fred Steward, 1988 "Mapping innovation networks." *International Journal of Innovation Management*, 2: 234-254.
- Cooper, Arnold C., 1979 "Strategic management: new ventures and small business." In Schendel, and C. (eds.), *Strategic Management: a new view of business policy and planning*: 316-327. Boston: Little, Brown & Co.
- Daft, Richard L., 1983 *Organization theory and design*. New York: West.
- Darwin, Charles, 1859 *On the Origin of Species*. London: John Murray.
-

- Das, T. K., and Bing-Sheng Teng, 2000 "A resource based theory of strategic alliances." *Journal of Management*, 26: 31-61.
- Datamonitor, 2002 "Mobile Banking."
- Davis, Gerald F., 1991 "Agents without principles? The spread of the poison pill through the intercorporate network." *Administrative Science Quarterly*, 36: 583-613.
- Davis, Gerald F., and Walter W. Powell, 1992 "Organization-environment relations." In Dunnette (ed.), *Handbook of Industrial and Organizational Psychology*: 315-375. Palo Alto: Consulting Psychology.
- de Nooy, Wouters, et al., 2003 *Exploratory social network analysis with Pajek*. New York: Cambridge University Press.
- Deeds, David L., et al., 2000 "Dynamic capabilities and new product development in high technology ventures: An empirical analysis of new biotechnology firms." *Journal of Business Venturing*, 15: 211-229.
- Dierickx, Ingemar, et al., 1989 "Asset Stock Accumulation And Sustainability Of Competitive." *Management Science*, 35: 1504-1514.
- Douma, Marc. U., et al., 2000 "Strategic alliances: Managing the dynamics of fit." *Long Range Planning*, 33: 579-598.
- Downs, Anthony, 1967 *Inside Bureaucracy*. San Francisco: Little, Brown and Rand Corporation.
- Doz, Yves L., 1996 "The evolution of cooperation in strategic alliances: Initial conditions or learning processes." *Strategic Management Journal*, 17: 55-83.
- Doz, Yves L., and Gary Hamel, 1998 *Alliance advantage: The art of creating value through partnering*. Boston, MA: Harvard Business School Press.
- Dubini, Paola, and Howard Aldrich, 1991 "Personal and Extended Networks Are Central to the Entrepreneurial Process." *Journal Of Business Venturing*, 6: 305-303.
- Durlacher, 1999 "Mobile Commerce."
- 2001 "UMTS Report- An Investment Perspective."
- Dyer, Jeffrey H., et al., 2001 "How to make alliances work." *Sloan Management Review*, 42: 37-42.
-

Dyer, Jeffrey H., and Habir Singh, 1998 "The relational view: Cooperative strategy and sources of interorganizational competitive advantage." *Academy of Management Review*, 23: 660-679.

Dyer, W. Gibb, and Alan L. Wilkins, 1991 "Better Stories, not better constructs, to generate better theory: A rejoinder to Eisenhardt." *Academy of Management Review*, 16: 613-619.

Eisenhardt, Kathleen M., 1989 "Building theories from case study research." *Academy of Management Review*, 14: 532-550.

1991 "Better Stories, not better consturcts, to consturct better theory (answer to Dyer & Wilkins)." *Academy of Management: The Academy of Management Review*, 16: 613-627.

Eisenhardt, Kathleen, M., and Jeffrey Martin, M., 2000 "Dynamic capabilities: What are they?" *Strategic Management Journal*, 21: 1105-1121.

Eisenhardt, Kathleen M., and Claudia B. Schoonhoven, 1990 "Organizational growth: Linking founding team, strategy, environment, and growth among U.S: semiconductor ventures, 1978-1988." *Administrative Science Quarterly*, 35: 504-529.

1996 "Resource-based view of strategic alliance formation: Strategic and social effects in entrepreneurial firms." *Organization Science*, 7: 136-150.

EITO, 2002 "European Information Technology Observatory (EITO)."

Flynn, David, and Andrew M. Formann, 2001 "Life cycles of new venture organizations: Different factors affecting performance." *Journal of Developmental Entrepreneurship*, 6: 41-58.

Frank H. Magid Associates, and Upoc, 2002 "Upco's mobile lifestyle and wireless usage study."

Galbraith, John Kenneth, 1982 "Stages of growth." *Journal of Business Strategy*, 3: 70-79.

Galunic, D. Charles, and Kathleen M Eisenhardt, 2001 "Architectural innovation and modular corporate forms." *Academy of Management Journal*, 44: 1229-1249.

Gartner, 2001 "Wireless Advertising: The Ad in Your Pocket."

2002a "Overview of the mobile payment market 2002-2007."

2002b "Wireless services Germany, France, UK."

- Gartner by Monica Basso, 2002a "Mobile location service market: Drivers and obstacles."
- Gartner by Willian Clark, 2002b "Mobile Applications Can Locate You in 2003."
- Gartner, et al., 2002c "Clarify MLS Benefits for Consumers."
- Gartner by Gareth Owen, 2001 "Mobile Location Services: No Mass Market in Europe Until 2007."
- Gartner by Rochelle Shaw, 2002d "Customer Relationship Management (CRM): Overview."
- Garvin, David A., 1988 *Managing Quality*. New York: Free Press.
- Gavetti, Giovanni, and Davit A. Levinthal, 2000 "Looking forward and looking backward: cognitive and experiential search." *Administrative Science Quarterly*, 45: 113-137.
- Gersick, Connie J., 1988 "Time and Transition in work teams: Toward a new model of group development." *Academy of Management Journal*, 31: 9-42.
- Glaser, Barney G., and Anselm L. Strauss, 1967 *The discovery of grounded theory, strategies for qualitative research*. Chicago: Aldine Pub. Co.
- Gomes-Casseres, Benjamin, 1994 "Groups versus groups: How alliance networks compete." *Harvard Business Review*, 72: 4-11.
- 1997 "Alliance strategies of small firms." *Small Business Economics*, 9: 33-44.
- Gottschalk, Wolf, 1969 *Aspekte der Stabilitäts- und Wachstumspolitik*. Berlin: Duncker & Humboldt.
- Grandori, Anna, 1999 *Interfirm networks: organization and insustrial competitiveness*. London: Routledge.
- Granovetter, Mark, 1973 "The strength of weak ties." *American Journal of Sociology*, 78: 1360-1380.
- 1979 "The idea of advancement in theories of social evolution and development." *American Journal of Sociology*, 85: 489-515.
- 1985 "Economic action and social structure: The problem of embeddedness." *American Journal of Sociology*, 91: 481-510.
- Grant, Richard M., 1996 "Prospering in dynamically-competitive environments: Organizational capabilities as knowledge integration." *Organization Science*, 7: 375-387.
-

- Greiner, Larry E., 1972 "Evolution and Revolution as organizations grow." *Havard business review*, 50: 37-46.
- Griffith, David A., and Michael G. Harvey, 2001 "A resource perspective of global dynamic capabilities." *Journal of International Business Studies*, 32: 597-606.
- Gründel, Niels 2002 "Mobile Banking: Killeranwendung?" *Spiegel Online*.
- Gulati, Ranjay, 1995 "Social structure and alliance formation patterns: A longitudinal analysis." *Administrative Science Quarterly*, 40: 619-652.
- 1998 "Alliances and networks." *Strategic Management Journal*, 19: 293-317.
- 1999 "Network location and learning: The influence of network resources and firm capabilities on alliance formation." *Strategic Management Journal*, 20: 397-420.
- Gulati, Ranjay, and M. Gargiulo, 1997 "Where do interorganizational networks come from?" Working paper, INSEAD.
- Hagedoorn, John, 1993 "Understanding the rationale of strategic technology partnering: Interorganizational modes of cooperation and sectoral differences." *Strategic Management Journal*, 14: 371-385.
- Hagedoorn, John, and J. Schakenraad, 1994 "The effect of strategic technology alliances on company performance." *Strategic Management Journal*, 15: 291-309.
- Hamel, Gary, 1991 "Competition for Competence and Inter-Partner Learning Within International Strategic Alliances." *Strategic Management Journal*, 12: 83-103.
- Hannan, Michael T., and John Freeman, 1977 "The population ecology of organizations." *American Journal of Sociology*, 82: 929-964.
- Hansen, Gary S., and Birger Wernerfelt, 1989 "Determinants of firm performance: The relative importance of economic and organizational factors." *Strategic Management Journal*, 10: 399-411.
- Harrigan, Kathryn Rudie, 1985 *Strategic flexibility*. Lexington, MA: Lexington Books.
- Harris, Stanley G., and Robert I. Sutton, 1986 "Functions of parting ceremonies in dying organizations." *Academy of Management Journal*, 29: 5-30.
- Helfat, Constance E., 1997 "Know-how and asset complementarity and dynamic capability accumulation: The case of R&D." *Strategic Management Journal*, 18: 339-360.
-

- Henderson, Rebecca M., and Kim B. Clark, 1990 "Architectural Innovation: The Reconfiguration Of Existing." *Administrative Science Quarterly*, 35: 9-30.
- Henderson, Rebecca M., and Iain M Cockburn, 1994 "Measuring competence? Exploring firm effects in pharmaceutical research." *Strategic Management Journal*, 15: 63-84.
- Herzberg, Frederick, et al., 1959 *The Motivation to Work*, 2nd ed. New York: John Wiley & Sons.
- Hill, Robert C., and Don Hellriegel, 1994 "Critical contingencies in joint venture management: Some lessons from managers." *Organization Science*, 5: 594-607.
- Hite, Julie M., and William S. Hesterly, 2001 "The evolution of firm networks: From emergence to early growth of the firm." *Strategic Management Journal*, 22: 275-286.
- Hitt, Michael A., et al., 2000 "Partner selection in emerging and developed market context: Resource-based and organizational learning perspectives." *Academy of Management Journal*, 43: 449-467.
- Hofer, Charles W., and Dan Schendel, 1978 *Strategy formulation - analytical concepts*. St. Paul: West.
- Hosmer, Larue T., et al., 1977 *The entrepreneurial function*. Englewood Cliffs: Prentice-Hall.
- Huber, Wolfgang 2002 "Ingo Lippert der CEO des Münchner Mobile-Marketing-Spezialisten Mindmatics hat BBDO-Chef Rainer Zimmermann als Aufsichtsratsmitglied gewonnen." *Werben und Verkaufen*.
- Hutt, Michael D., et al., 2000 "Defining the social network of a strategic alliance." *Sloan Management Review*, (Winter): 51-62.
- IDC, 2002 "Mobile location-based services - putting mobile on the map."
- Ireland, R. Duane, et al., 2002 "Alliance management as a source of competitive advantage." *Journal of Management*, 28: 413-446.
- IZT, et al., 2002 "Werkstattbericht Nr. 49: Entwicklung und zukünftige Bedeutung mobiler Multimediadienste."
- Jacobsen, R., 1988 "The persistence of abnormal returns." *Strategic Management Journal*, 9: 415-430.
-

- Jansen, Dorothea, 1999 Einführung in die Netzwerkanalyse: Grundlagen, Methoden, Anwendungen. Opladen: Leske und Budrich.
- Jarillo, J. Carlos, 1989 "Entrepreneurship and Growth: The Strategic Use of External Resources." *Journal Of Business Venturing*, 4: 133-148.
- Jick, Todd D., 1979 "Mixing qualitative and quantitative methods: triangulation in action." *Administrative Science Quarterly*, 24: 602-611.
- Johannisson, Bengt, 1987 "Beyond processes and structure: Social exchange networks." *International Studies of Management & Organization*, 17: 75-87.
- Kahnemann, Daniel, and Amos Tvesky, 1973 "On the psychology of prediction." *Psychological Review*, 80: 237- 251.
- Kamada, Tomihisa, and Satoru Kawai, 1989 "An algorithm for drawing general undirected graphs." *Information Processing Letters*, 31: 7-15.
- Kanter, Rosabeth Moss, 1994 "Collaborative advantage." *Harvard Business Review*, 72: 96-108.
- Katz, Daniel, and Robert L. Kahn, 1978 *The social psychology of organizations*. New York: Wiley.
- Kazanjian, Robert K., 1988 "Relation of dominant problems to stages of growth in technology -based new ventures." *Academy Of Management Journal*, 31: 257-279.
- Kazanjian, Robert K., and Robert Drazin, 1989 "An Empirical Test Of A Stage Of Growth Progression Model." *Management Science*, 35: 1489-1503.
- 1990 "A State-Contingent Model of Design and Growth for Technology Based New Ventures." *Journal Of Business Venturing*, 5: 137-150.
- Kimberly, John R., 1979 "Issues in the creation of organizations: Initiation, Innovation, and Institutionalization." *Academy of Management Journal*, 22: 437-457.
- Kimberly, John R., and R. Miles, 1980 *Organizational life cycle*. San Francisco: Jossey-Bass.
- King, Andrew A., and Christopher L. Tucci, 2002 "Incumbent entry into new market niches: The role of experience and managerial choice in the creation of dynamic capabilities." *Management Science*, 48: 171-186.
-

- Klein, Benjamin, 1980 "Transaction cost determinants of "unfair" contractual arrangements." *American Economic Review*, 21: 297-326.
- Klepper, Steven, and Elizabeth Graddy, 1990 "The Evolution of New Industries and the Determinants of Market Structure." *Rand Journal of Economics*, 21: 27-44.
- Klepper, Steven, and Kenneth L. Simons, 2000 "Dominance by birthright: entry of prior radio producers and competitive ramifications in the U.S. television receiver industry." *Strategic Management Journal*, 21: 997-1016.
- Knoke, David, et al. 2002 "Dynamics of Strategic alliance networks in the global information sector, 1989-2000." 18th EGOS Colloquium. Barcelona.
- Knyphausen-Aufseß, Dodo zu, 1995 *Theorie der strategischen Unternehmensführung: State of the Art und neue Perspektiven*. Wiesbaden: Gabler.
- Kogut, Bruce, 1988 "Joint Ventures: Theoretical And Empirical Perspectives." *Strategic Management Journal*, 9: 319-332.
- 1991 "Joint Ventures and the Option to Expand and Acquire." *Management Science*, 37: 19-33.
- Kogut, Bruce, et al., 1992a "The make-or-cooperate decision in the context of an industry network." In Nohria, and Eccles (eds.), *Networks and Organizations*. Cambridge, MA: Harvard Business School Press.
- Kogut, Bruce, and Udo Zander, 1992b "Knowledge of the firm, combinative capabilities, and the replication of technology." *Organization Science*, 3: 383-397.
- Kotler, Philip, 1972 *Marketing management; analysis, planning, and control*, 2nd edition ed. Englewood Cliffs - New Jersey: Prentice-Hall.
- Koza, Mitchell P., and Arie Y. Lewin, 1998 "The co-evolution of strategic alliances." *Organization Science*, 9: 255-264.
- Lamb, Robert B., 1984 *Competitive strategic management*. Englewood Cliffs: Prentice-Hall.
- Lane, Peter J., and Michael Lubatkin, 1998 "Relative absorptive capacity and interorganizational learning." *Strategic Management Journal*, 19: 461-477.
- Lang, James R., and Daniel E. Lockhart, 1990 "Increased environmental uncertainty and changes in board linkage patterns." *Academy of Management Journal*, 33: 106-128.
-

- Larson, Andrea, 1992 "Network dyads in entrepreneurial settings: A study of the governance of exchange relationships." *Administrative Science Quarterly*, 37: 76-104.
- Larson, Andrea, and Jennifer A. Starr, 1993 "A network model of organization formation." *Entrepreneurship: Theory and Practice*, 17: 5-15.
- Leonard-Barton, Dorothy, 1990 "A dual methodology for case studies: Synergistic use of a longitudinal single site with replicated multiple sites." *Organization Science*, 1: 248-266.
- Leonard-Barton, Dorothy, and Isabelle Deschamps, 1988 "Managerial influence in the implementation of new technology." *Management Science*, 34: 1252-1265.
- Levitt, Barbara, and James G. March, 1988 "Organizational learning." *Annual Review of Sociology*, 14: 319-340.
- Lippitt, Gordon L., and W. H. Schmidt, 1967 "Crises in a developing organization." *Harvard Business Review*, 45.
- Lippmann, Steven A., and Richard P. Rumelt, 1982 "'Uncertain Imitability': An analysis of interfirm differences in efficiency under competition." *Bell Journal of Economics*, 13: 418-438.
- Mace, Myles L., 1971 *Directors: Myth and reality*. Boston: Harvard Business School Press.
- MacMillan, Ian C., 1983 "Politics of new venture management." *Harvard Business Review*, 61: 8-12.
- MacMillan, Ian C., and Rita McGrath, 2000 *The Entrepreneurial Mindset*. Boston: Harvard Business School Press.
- Madhok, Anoop, and Steve B. Tallmann, 1998 "Resource, transactions and rents: Managing value through interfirm collaborative relationships." *Organization Science*, 9: 326-339.
- March, James G., 1991 "Exploration and exploitation in organizational learning." *Organization Science*, 2: 71-87.
- March, James G., and J. P. Olsen, 1976 *Ambiguity and choice in organizations*. Bergen, Norway: Universitetsforlaget.
- March, James G., and H. A. Simon, 1958 *Organizations*. New York: Wiley.
- Miles, Matthew B., and A. Michael Huberman, 1994 *Qualitative data analysis: an expanded sourcebook*. Thousand Oaks, CA: Sage.
-

Miller, Danny, and Peter H. Friesen, 1982 "The longitudinal analysis of organizations: A methodological perspective." *Management Science*, 28: 1013-1034.

1984 "A Longitudinal Study of the Corporate Life Cycle." *Management Science*, 30: 1161-1183.

Miller, Danny, and Jamal Shamsie, 1996 "The resource-based view of the firm in two environments: The Hollywood film studios from 1936 to 1965." *Academy of Management Journal*, 39: 519-543.

Mintzberg, Henry, 1979 "An emerging strategy of "direct" research." *Administrative Science Quarterly*, 24: 582-589.

Mintzberg, Henry, and Alexandra McHugh, 1985 "Strategy Formation in an Adhocracy." *Administrative Science Quarterly*, 30: 160-198.

Mitchell, Will, and Kulwant Singh, 1996 "Entrenched success: The reciprocal relationship between alliances and business sales." *Proceedings of the Academy of Management*: 31-35.

Mizruchi, Mark. S., 1996 "What do interlocks do? An analysis, critique and assessment of research on interlocking directorates." *Annual Review of Sociology*, 22: 271-298.

Mobile Metrix, 2002 "The saviour of 3G: The leading 100 mobile application and content providers - Strategies for success." 1-30.

Mohr, Jakki, and Robert Spekman, 1994 "Characteristics of partnership success: Partnership attributes, communication behavior, and conflict resolution techniques." *Strategic Management Journal*, 15: 135-149.

Molina, Javier, 1999 "On the relational view." *Academy of Management. The Academy of Management Review*, 24: 184-185.

Moore, William L., and Michael L. Tushman, 1982 "Managing innovation over the product life cycle." In Tushman, and Moore (eds.), *Readings in the management of innovation*: 131-150. Boston: Pitman Press.

Mori Polls, and Lori Worley, 2001 "Customers willing to pay up to 35 DEM per month to use location-based services."

Mosakowski, Elaine, and Bill McKelvey, 1997 "Predicting rent generation in competence-based competition." In Heene, and Sanchez (eds.), *Competence-based strategic management*: 65-85. Chichester: Wiley.

- Mowery, David C., et al., 1996 *Strategic Management Journal*, 17: 77-91.
- Nakamura, Masao, et al., 1996 "An empirical investigation of joint venture dynamics: Evidence from US-Japan joint ventures." *International Journal of Industrial Organization*, 14: 521-541.
- Nelson, Richard R., 1994 "The Co-Evolution of technology, industrial structure, and supporting institutions." *Industrial and Corporate Change*, 3: 47-63.
- Nelson, Richard R., and Sidney Winter, 1982 *An evolutionary theory of economic change*. Cambridge, MA: Harvard University Press.
- Nisbett, Richard, and Lee Ross, 1980 *Human inference - strategies and shortcomings of social judgment*. Englewood Cliffs: Prentice-Hall.
- Nohria, Nitin, and Carlos Garcia-Pont, 1991 "Global strategic linkages and industry structure." *Strategic Management Journal*, 12: 105-124.
- Nokia, 2002 "The history of mobile communication."
- North, Douglass C., 1990 *Institutions, institutional change and economic performance*. Cambridge, England: University Press.
- Oliver, Christine, 1990 "Determinants of interorganizational relationships: Integration and future directions." *Academy of Management Review*, 15: 241-265.
- Ovum, 2001 "3G Survival Strategies: Build, Buy or Share."
- Parise, Salvatore, and John C. Henderson, 2001 "Knowledge resource exchange in strategic alliances." *IBM Systems journal*, 40: 908-924.
- Pennings, Johan M., 1980 *Interlocking directorates*. San Francisco: Jossey-Bass.
- Penrose, Edith T., 1959 *The theory of the growth of the firm*. London: Basil Blackwell.
- Pettigrew, Andrew M., 1979 "On studying organizational cultures." *Administrative Science Quarterly*, 24: 570-581.
- 1988 *The management of strategic change*. Oxford and Cambridge, MA: Basil Blackwell.
- 1990 "Longitudinal field research on change: Theory and practice." *Organization Science*, 1: 267-292.
- 1992 "On studying managerial elites." *Strategic Management Journal*, 13: 163-182.
-

Pettigrew, Andrew M., et al., 2001 "Studying organizational change and development: Challenges for future research." *Academy of Management Journal*, 44: 697-713.

Pfeffer, Jeffrey, and Gerald R. Salancik, 1978 *The external control of organizations: A resource dependence perspective*. New York: Harper & Row.

Philips 1999 "Philips Semiconductors and Ericsson Mobile Communication join forces to bring Bluetooth-base products to market." Philips Press Release 7.12.1999.

2000a "Philips Semiconductors and Addvalue Communications form strategic cooperation to develop Bluetooth solutions and products." Philips Press Release 29.5.2000.

2000b "Philips Semiconductors form strategic alliance with Inventel Systemes to develop Bluetooth products." Philips Press Release 4.12.2000.

2000c "Philips Semiconductors form strategic alliance with WIDCOMM to develop Bluetooth products." Philips Press Release 5.10.2000.

2001a "Philips Semiconductors and Stonestreet One form alliance to deliver Bluetooth products." Philips Press Release 15.3.2001.

2001b "Philips Semiconductors and Tality partner to provide complete embedded Bluetooth system solutions." Philips Press Release 31.5.2001.

2001c "Philips Semiconductors joins forces with Allgon to develop Bluetooth modules with integrated antennas." Philips Press Release 31.5.2001.

2002 "Joint venture to deliver TD-SCDMA chip reference designs." Philips Article.

Piaget, Jean, and Barbel Inhelder, 1975 *The origin of the idea of chance in children*. New York: Norton.

Podolny, Joel M., 1994 "Market uncertainty and the social character of economic exchange." *Administrative Science Quarterly*, 39: 458-483.

Polanyi, Michael, 1966 *The tacit dimension*. Gloucester, MA: Peter Smith.

Polli, Rolando, and Victor J Cook, Jr., 1969 "Validity of the Product Life Cycle." *Journal of Business*, 42: 385-400.

Porter, Michael E., 1977 "The structure within industries and companies' performance." *The review of economics and statistics*, 61: 214 - 227.

- 1980 *Competitive strategy: Techniques for analyzing industries and competitors*. New York: The Free Press.
- Powell, Walter W., et al., 2002 "Practicing Polygamy with Good Taste: The Evolution of Interorganizational Collaboration in the Life Sciences." 79.
- Powell, Walter. W., et al., 1996 "Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology." *Administrative Science Quarterly*, 41: 116-145.
- Prahalad, C. K., and Gary Hamel, 1990 "The core competence of the corporation." *Harvard Business Review*, 68: 79-91.
- Priem, Richard L., and John E. Butler, 2001 "Is the resource-based "view" a useful perspective for strategic management research?" *Academy of Management. The Academy of Management Review*, 26: 22-40.
- Quinn, Robert, and Martha S. Baldi, 1980 "Education and Job Satisfaction." *Vocational Guidance Quarterly*, 29: 100-111.
- Quinn, Robert E., and Kim S. Cameron, 1983 "Organizational Life Cycles and Shifting Criteria of Effectiveness: Some Preliminary Evidence." *Management Science*, 29: 33-51.
- 1988 *Paradox and transformation: Toward a theory of change in organization and management*. Cambridge: Ballinger Publications.
- Rao, Hayagreeva, 1994 "The social construction of reputation: certification contests, legitimization, and the survival of organizations in the American automobile industry." *Strategic Management Journal*, 15: 29-44.
- RealNetworks 2002 "Hitachi, Moxi Digital, NEC, Philips Semiconductors, STMicroelectronics, and TiVo adopt RealNetworks' realone player for wide-spread market deployment in consumer electronic devices." RealNetwork Press Release 8.1.2002.
- Reuer, Jeffrey J., 1999 "Collaborative strategy: The logic of alliances." *Mastering Strategy*, October 4: 12-13.
- Rhenman, Eric, 1973 *Organization theory for long range planning*. London: Wiley.
- Richardson, R. Jack, 1987 "Directorship interlocks and corporate profitability." *Administrative Science Quarterly*, 32: 367-386.
-

- Rindova, Violina P., and Suresh Kotha, 2001 "Continuous "morphing": Competing through dynamic capabilities, form, and function." *Academy of Management Journal*, 44: 1263-1280.
- Rizzoni, Giorgio, 1993 *Principles and applications of electrical engineering*. Homewood: Irwin.
- Roberts, Edward B., 1991 *Entrepreneurs in High Technology*. New York: Oxford University Press.
- Rosenthal, Robert, 1966 *Experimenter effects in behavioral research*. New York: Appleton-Century-Crofts.
- Rumelt, Richard P., 1981 "Towards a strategic theory of the firm." *Conference on "Non-traditional Approaches to Policy Research"*: 557-570.
- 1984 "Towards a strategic theory of the firm." In Lamb (ed.), *Competitive strategic management*: 556-570. Englewood Cliffs, NJ: Prentice Hall.
- 1991 "How much does industry matter?" *Strategic Management Journal*, 12: 167-185.
- Rumpf, Maria, and Andreas M. Zaby, 1997 "Der Fallstudienansatz in der Prozeßforschung im Bereich des Internationalen Managements." Discussion paper, series A, Nr. 97/05. Jena: Friedrich-Schiller-Universität Jena.
- Sako, Mari, 1991 "The role of "trust" in Japanese buyer-supplier relationships." *Ricerche Economiche*, XLV: 449-474.
- Sapient, 2002 "Mobile Entertainment Study."
- Scherer, Frederic M, and David Ross, 1990 *Industrial Market Structure and Economic Performance*, 3rd ed. Boston: Houghton Mifflin.
- Schumpeter, Joseph A., 1942 *Capitalism, Socialism, and Democracy*. New York: Harper.
- Scott, Bruce R., 1971 *Stages of corporate development*. Boston: Harvard Business School.
- Scott, W. Richard, 1992 *Organizations: Rational, natural, and open systems*, 3rd. ed. ed. Englewood Cliffs, NJ: Prentice-Hall.
- Selznick, Philip, 1957 *Leadership in administration*. New York: Harper & Row.
-

- Shan, Weijian, 1990 "An empirical analysis of organizational strategies by entrepreneurial high-technology firms." *Strategic Management Journal*, 11: 129-139.
- Shan, Weijian, et al., 1994 "Interfirm cooperation and startup innovation in the biotechnology industry." *Strategic Management Journal*, 15: 387-394.
- Singh, Habir, and Maurizio Zollo, 1997 "Learning to acquire: Knowledge accumulation mechanisms and the evolution of post-acquisition integration strategies." Working paper, The Wharton School, University of Pennsylvania, Philadelphia.
- Sivadas, Eugene, and F. Robert Dwyer, 2000 "An examination of organizational factors influencing new product success in internal and alliance-based processes." *Journal of Marketing*, 64: 31-49.
- Slatter, Stuart, 1992 *Gambling on growth: How to manage the small high-tech firm*. Chichester: John Wiley & Sons Limited.
- Smith, Ken G, et al., 1985 "Top level management priorities in different stages of the organizational life cycle." *Academy of Management Journal* (pre-1986), 28: 799-820.
- Smith, Ken G., et al., 1995 "Intra- and Interorganizational cooperation: Toward a research agenda." *Academy of Management Journal*, 38: 7-23.
- Spence, A. Michael, 1974 *Market signaling*. Cambridge, MA: Harvard University Press.
- Spiller, Ralf 2002 "Die Branche für Multimediaanwendungen konsolidiert sich." *Handelsblatt*.
- Stinchcombe, Arthur L., 1990 "Weak structural data." *Contemporary Sociology*, 19.
- Stuart, Toby E, 2000 "Interorganizational alliances and the performance of firms: A study of growth and innovation rates in a high-technology industry." *Strategic Management Journal*, 21: 791-811.
- Stuart, Toby E., et al., 1999 "Interorganizational endorsements and the performance of entrepreneurial ventures." *Administrative Science Quarterly*, 44: 315-349.
- Stubbart, Charles I., and Roger D. Smalley, 1999 "The deceptive allure of stage models of strategic processes." *Journal of Management Inquiry*, 8: 273-286.
- Sudman, Seymour, and Norman M. Bradburn, 1982 *Asking questions*. San Francisco: Jossey-Bass.
- Sull, Donald N., 1999 "Why good companies go bad." *Harvard Business Review*, 77: 42-52.
-

- Sutton, Robert I., and Anita L. Callahan, 1987 "The Stigma of Bankruptcy: Spoiled Organizational Image and its Management." *Academy of Management Journal*, 30: 405-436.
- Teece, David, J., 1987 "Profiting from technological innovation: Implication for integration, collaboration, licensing and public policy." In Teece (ed.), *The competitive challenge: Strategies for industrial innovation and renewal*: 185-219. Cambridge, MA: Ballinger.
- Teece, David, J., et al., 1997 "Dynamic capabilities and strategic management." *Strategic Management Journal*, 18: 509-533.
- Telser, Lester G., 1980 "A theory of self-enforcing agreements." *Journal of Business*, 53: 27-44.
- The Kelsey Group, and SkyGo, 2001 "Ideas & Strategies for Implementing Mobile Marketing."
- Torbert, William R., 1974 "Pre-bureaucracy and post-bureaucracy stages of organizational development." *Interpersonal Development*, 5: 1-25.
- UBS-Warburg, 2002 "What has caused the crisis in the telecom sector and how long will it last?"
- Utterback, James, M., 1981 "Innovation and industrial evolution in manufacturing industries."
- Utterback, James, M., and William J. Abernathy, 1975 "A dynamic model of process and product innovation." *OMEGA*, 3: 639-656.
- Uzzi, Brian, 1996 "The source and consequences of embeddedness for the economic performance of organizations: The network effect." *American Sociological Review*, 61: 674-698.
- 1997 "Social structure and competition in interfirm networks: The paradox of embeddedness." *Administrative Science Quarterly*, 42: 35-67.
- Uzzi, Brian, et al., 2002 "Emergence: The origin and evolution of career networks in the Broadway musical industry, 1877 to 1995." Working paper, Kellogg School of Management, Northwestern University.
- Van de Ven, Andrew H., et al., 1984 "Designing New Business Startups: Entrepreneurial, Organizational, and Ecological Considerations." *Journal of Management*, 10: 87-108.
-

Van de Ven, Andrew H., and Marshall S. Poole, 1988 "Paradoxical requirements for a theory of organizational change." In Quinn, and Cameron (eds.), *Paradox and transformation: Toward a theory of change in organization and management*: 19-80. New York: HarperCollins.

1995 "Explaining development and change in organizations." *Academy of Management. The Academy of Management Review*, 20: 510-528.

VDZ, and Sapient, 2003 "Paid Content: Der Markt für Online Inhalte." 1-47.

Vodafone, 2003 "Connected by Vodafone press clipping."

von Hippel, Eric, 1977 "The dominant role of the user in semi-conductor and electronic subassembly process innovation." *IEEE Transactions on Engineering Management EM*, 24: 60-71.

1988 *Sources of innovation*. New York: Oxford University Press.

Walker, Gordon, et al., 1997 "Social capital, structural holes and the formation of an industry network." *Organization Science*, 8: 109-125.

Walsh, James P., and Robert D. Dewar, 1987 "Formalization and the organizational life cycle." *The Journal of Management Studies*, 24: 215-231.

Wassermann, Stanley, and Katherine Faust, 1994a *Social network analysis: Methodes and applications*. Cambridge: Cambridge University Press.

Wassermann, Stanley, and Joseph Galaskiewicz, 1994b *Advances in social network analysis*. Thousand Oaks, CA: Sage Publications.

Watzlawik, Paul, et al., 1974 *Change: Principles of problem formation and problem resolution*. New York: Norton.

Weick, Karl E., 1979 *The social psychology of organizing*, 2nd ed. Reading MA: Addison-Wesley.

Wernerfelt, Birger, 1984 "A Resource-Based View of the Firm." *Strategic Management Journal*, 5: 171-180.

Whetten, David A., 1987 "Organizational growth and decline processes." *American Sociology Review*, 13: 335-358.

White, Douglas R., and Frank Harary, 2001 "The cohesiveness of blocks in social networks: Node connectivity and conditional density." *Sociological Methodology*, 31: 309-359.

- Williamson, Oliver E., 1981 "The economics of organizations: The transaction cost approach." *American Journal of Sociology*, 87: 548-577.
- 1983 "Credible commitments: Using hostages to support exchange." *American Economic Review*, 73: 519-535.
- 1985 *The economic institutions of capitalism*. New York: Free Press.
- 1991 "Comparative economic organization: The analysis of discrete structural alternatives." *Administrative Science Quarterly*, 36: 269-296.
- 1996 *The mechanisms of governance*. New York: Oxford University Press.
- 1999 "Strategy research: Governance and competence perspectives." *Strategic Management Journal*, 20: 1087-1108.
- Windhover, 1999 "Windhover's Pharmaceutical Strategic Alliances, Vol. X." 1-9.
- 2002 "Windhover's Pharmaceutical Strategic Alliances, Vol XIII." 1-9.
- Womack, James P., et al., 1991 *The machine that changed the world*. New York: Harper-Perennial.
- Yin, Robert K., 1984 *Case study research: design and methods*. Beverly Hills, CA: Sage Publications.
- Yli-Renko, Helena, and Erkko Autio, 1998 "The network embeddedness of new, technology-based firms: Developing a systemic evolution model." *Small Business Economics*, 11: 253-267.
- Yli-Renko, Helena, et al., 2001 "Social capital, knowledge acquisitions, and knowledge exploitation in young technology-based firms." *Strategic Management Journal*, 22: 587-613.
- Young-Ybarra, Candace, and Margarethe Wiersema, 1999 "Strategic flexibility in information technology alliances: The influence of transaction cost economics and social exchange theory." *Organization Science*, 10.
- Zaby, Andreas M., 1999 *Internationalization of high-technology firms: Cases from biotechnology and multimedia*. Wiesbaden: Gabler.
- Zander, Udo, and Bruce Kogut, 1995 "Knowledge and the speed of the transfer and imitation of organizational capabilities: An empirical test." *Organization Science*, 6: 76-91.
-

Zenger, Todd R., and William S. Hesterly, 1997 "The Disaggregation of Corporations: Selective Intervention, High-powered Incentives, and Molecular Units." *Organization Science*, 8: 209-222.

Zollo, Maurizio, and Sidney G. Winter, 2002 "Deliberate learning and the evolution of dynamic capabilities." *Organization Science*, 13: 339-351.

Zukin, Sharon, and Paul DiMaggio, 1990 *Structure of capital: The social organization of the economy*. Cambridge, MA: Cambridge University Press.

7. Appendices

7.1 List of Interviews and Affiliations of Interviewees

Name	Company	Job title	Interview date/place
Bernd Mühlfriedel	12snap AG	Chief Financial Officer	04/22/2002 Munich
Ingo Griebel	12Snap AG	Managing Director Germany	04/22/2002 Munich
Claudius Bertheau	Airweb AG	Chief Executive Officer	02/21/2002 Bludenz 12/23/2002 Bludenz
Jörg Miller	Airweb AG	Chief Financial Officer	07/05/2002 Mönchengladbach
Thorsten Rehfuß	Apollis Interactive	Director of Marketing and PR	06/19/2002 Munich
Stefan Block	Clever.Tanken	Chief Executive Officer	04/03/2002 Nuremberg
Matthias Kose	e-hotel	Chief Executive Officer	04/18/2002 Berlin
Michael Halbherr	Gate 5	Chief Executive Officer	05/07/2002 Berlin
Ingo Lippert	Mindmatics	Chief Executive Officer	02/18/2002 Munich
Anja Dönrke-Bartling	Multichart	Director of Marketing	05/10/2002 Kassel
Dr. Bernhard Kölmel	YellowMap	Head of Business Development	04/04/2002 Karlsruhe

7.2 Alliance intensity of Mobile Internet industry segments

Mobile Internet segments	Alliance drivers					Total
	Reaching new markets	Plug the skill gap	Building nodal positions	Creating new opportunities	Accessing superior supply	
	0,125	0,25	0,25	0,125	0,25	Weight
MCS	3	3	4	4	5	3,88
MLS	1	5	4	5	4	4,00
Mobile Marketing	4	3	5	4	1	3,25
mCommerce	2	4	2	3	3	2,88
Music and Entertainment	2	2	4	3	5	3,38
m-Learning	3	4	2	2	3	2,88
m-Office	3	3	3	4	1	2,63
m-Health and wellness services	1	2	2	3	1	1,75
m-Games	2	5	2	4	1	2,75
Personalization	1	2	4	1	1	2,00

Scale	1 = low to 5 = high
-------	---------------------

7.3 Revenue forecast for Mobile Internet industry segments

Mobile Internet segments	Revenues 2001	Revenues 2006	CAGR
MLS	200,0	4066,7	83%
MCS	200,0	3200,0	74%
Mobile Marketing	20,0	1400,0	134%
mCommerce	40,8	483,4	64%
Music and Entertainment	140,1	1965,5	70%
m-Learning	16,0	288,0	78%
m-Office	80,0	1223,8	73%
m-Health and wellness services	10,7	93,6	54%
m-Games	140,1	3275,9	88%
Personalization	840,6	3275,9	31%
Total	1688,2	19272,7	63%

7.4 Interview Transcripts

Please see separate volume