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ORIGINAL PAPER

Crisis and crisis management in the Upper Franconian textile industry

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Abstract

Crises are becoming the new normal in the twenty-first century. This impression arises when one looks at the last decades' political, economic, social, or ecological developments. Companies operating in this heterodox and dynamic environment are required to act quickly and in an adapted manner. The more closely companies are integrated into the macroeconomic context, the more they are affected by changes in the environment. Especially small and medium-sized enterprises, which are considered more vulnerable to crises (Detarsio et al. 2016), need appropriate strategies to survive them. The study examines which methods small and medium sized enterprises (SMEs) used to survive crises and if there were similar reactions to the same crisis scenarios. The textile industry in Upper Franconia is strongly integrated into the macroeconomic context and consists predominantly of small and medium-sized enterprises. This industry was hit by various crises between 1972 and 2008. The multiple crisis scenarios and the close link between the companies and their environment require a pluralistic perspective. Companies from other sectors that are confronted with similar crisis scenarios can use the study results to better position themselves against crises.

Keywords Evolutionary Economics · New Economic History · Regional Development History · Polycrisis · Adaption Strategies · Schumpeterian

JEL Classification N 94 · B 52

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1 Introduction

Shorter innovation cycles and the increasing complexity of global economic interrelationships demand constant adaptation processes on the part of companies. Added to this are political and climatic changes, as well as the increasing risk of pandemics (Porak and Reinke 2024; Brink et al. 2022). Small and medium-sized enterprises, which are of high importance for the creation of jobs, have to learn to deal with the changes (North 2016). This variation and diversity of crises leads to increasing uncertainty (Schulz et al. 2024).

The traditional industries from the capital and consumer goods sectors are subject to constant cyclical fluctuations. Therefore, these industries have developed operational capabilities to cope with them. A prominent example is the textile industry. With the increasing liberalization of world trade, its European locations were already questioned at the beginning of the 1970s (Donath and Szegfü 2021). The accusation of being too small in size with its medium-sized structure turned out to be an advantage over time. This follows the findings of Massis et al. 2018; Wilhelm et al. 2022. They found out that SMEs are more flexible and have a good adaptive capacity. With its size structure, the textile industry corresponds to the European economic structure, which consists largely of micro, small, and medium-sized enterprises (Katsinis et al. 2023). These companies are mainly active in the non-financial business sector (NFBS) (Katsinis et al. 2023). When it comes to market sustainability SMEs have a disadvantage in "effective management systems and tools" (Garagorri 2016). Although they are more flexible, they are more susceptible to crises due to their small size (Detarsio et al. 2016). This results from their lower level of human and financial capital (North 2016; Detarsio et al. 2016).

This paper intends to show with which strategies SMEs react to crises. In principle, crises can only be predicted shortly before they occur, which is why companies only have short reaction times. Similar to heterodox economics, the business environment is understood as dynamic. This perspective identifies the many external influencing factors (political, social, and environmental) that have an impact on corporate development. These factors are similar to the exogenous shocks in institutions (Micelotta et al. 2017). Companies that consistently deal with their environment find adequate answers and strategies even in times of crisis. These solutions often have a more sustainable and social character and thus follow the aspirations of plural economics.

Through an examination of crises and their corresponding adaptation strategies, valuable insights can be learned regarding the root causes and underlying mechanisms of such crises (Dhingra 2022). This will enable companies and decision-makers to develop early warning systems to be able to react appropriately to similar scenarios. The knowledge thus gained contributes to the development of appropriate crisis management strategies (Fligstein and McAdam 2012). Furthermore, a more targeted assessment of strategic decisions regarding diversification and investments can be made. Studying the historical data enables the identification of any potential overlaps (Wilderom and van Venrooij 2019) and provides

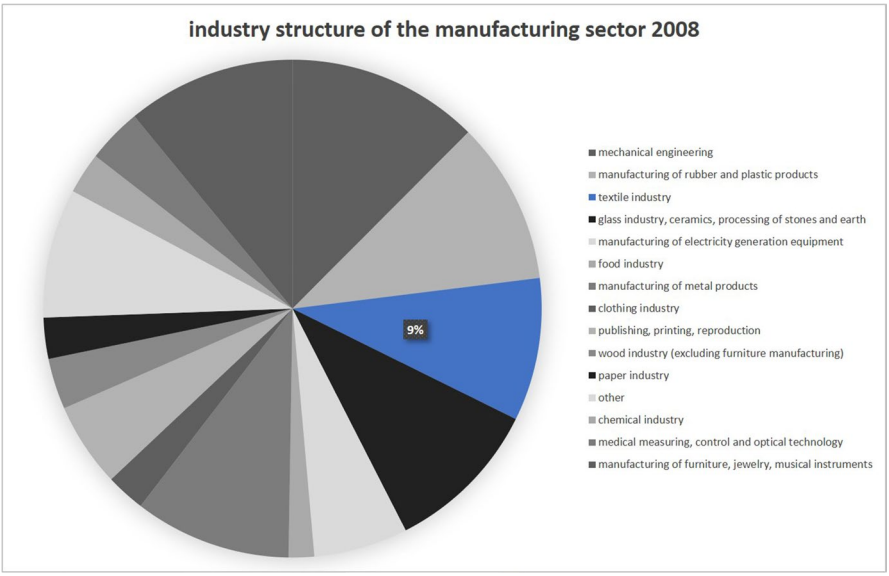

Fig. 1 Sector structure of the manufacturing industry in Upper Franconia 2008. Own representation, according to data from the Bavarian State Office for Statistics, only companies with more than 20 full-time employees are included

a deeper understanding of the spatial structure of the industry. The analysis of historical crises can be utilised as a crucial process for enhancing the resilience of SMEs in the face of future challenges.

With its diverse sector structure (see Fig. 1) and the high proportion of SMEs (IHK für Oberfranken Bayreuth 1992), the Upper Franconian economic area is a regional reflection of the European economic structure.

In the past, this economic area had to overcome numerous crises. The drawing of the inner-German border alone cut close entrepreneurial ties and relations with the Vogtland. Such (political) crises forced companies in all sectors to take action. These adaptation processes can be observed particularly well in the textile industry. Not only does it have a long tradition[1] in Upper Franconia, but it also consists mainly of SMEs (Murr 2018). Therefore, these companies have similar (financial and personnel) prerequisites for developing adaptation strategies. With 8140 employees and 73 companies in 2008, it forms the center of the Bavarian textile industry. From 1972 to 2008, the industry was hit by many and various economic crises. These forced the industry to adapt quickly to hold its own in the changing competitive market. The

[1] Since 1414, when Burgrave Johann IV of Nuremberg proclaimed the barchent trade at Plassenburg Castle in Kulmbach, the commercial production of textile products became established (Stromer 56). The initial trade developed into an export-oriented industry. It experienced its heyday in the nineteenth century (Murr 44).

results of the analysis of the textile industry contribute to a better understanding of the challenges faced by SMEs and identify different adaptation strategies that could be transferred to other industries.

In the first two parts of the paper, the basic lines of my approach will be explained. The details and data analysis are presented in Chapters 4 and 5. The final section summarizes the paper and puts the adaptation strategies into a broader perspective on current issues in economic research and how to deal with crises.

2 Theoretical background

2.1 Crisis concept

The environment in which companies operate is dynamic. Accordingly, the business environment is the "pattern of all external conditions and influences affecting the life and organizations development" (Mintzberg et al. 2002). This means that social, environmental, technological, political and climatic changes affect the market environment. The increasing complexity of global economic interrelationships as well as shorter innovation cycles require companies to engage in continuous adaptation processes (North 2016; Di Bella et al. 2023; Katsinis et al. 2023). Depending on the degree of influence, these factors can be fully, partially, or not at all anticipated.

Etymologically, the term crisis comes from ancient Greek and means a turning point or decision. The choice made at the moment of decision has irreversible consequences (Clasen 1992). Due to its complex meaning, it is necessary to define the term crisis for each application. For example, corporate crises have different levels of significance than national state crises or international crises. Contrary to its original permanent dimension, the term crisis is now also used for temporary phenomena.

Three concepts can be identified for the SMEs of all industries operating in this environment. Firstly, shocks that could not be foreseen (industrial crisis), secondly, industrial adaptations and thirdly, continuous changes (industrial change). What all three have in common is that they are closely intertwined and can represent both an event and a reaction. They express the need for individuals, organizations, and societies to be responsive and adaptive.

An industrial crisis is usually understood as an event that disrupts normal operations (Delli Gatti et al. 2011). It can occur suddenly or develop slowly. It usually represents a decisive turning point. In most cases, a deterioration of the situation is observed over a longer period, which goes beyond the normal level of a cyclical fluctuation. This can be seen in the collapse of macroeconomic indicators such as the price level and employment (Reimann 2024). Nevertheless, a crisis can also be a reaction to an event. Industries that are overwhelmed by market developments, for example, make unreflective and thus crisis-ridden decisions.

Industrial adaptation is not an event in the classical sense. However, if there is an external trigger that requires adaptation and systems or processes are developed that must be implemented by all companies, this adaptation represents an event. This is the case, for example, with new legislation for which there is

already a prescribed implementation procedure. All affected companies must apply this procedure. No company can avoid this adaptation, the companies are affected almost simultaneously. If the adaptation is understood as an event, the development of its processes and strategies is therefore not possible. Otherwise, it would only represent a reaction to this trigger and would thus only be investigable in retrospect.

In addition to the conceptual ambivalence, the industrial crisis and industrial adjustment have their temporal dimension in common. Neither is characterized by permanence. This does not mean, however, that they cannot be transformed into permanent structures. In this case, however, the term industrial change should be used as a generic term. Industrial change is commonplace in a market economy and refers to a permanent change in the industry (Beutl 2002). For this change, changes in the external influencing factors are anticipated and reaction instruments are developed.

Companies and organizations need to understand and respond to (institutional) change. Their ability to adapt is crucial. With new approaches and early action, they can emerge stronger from the crisis (Micelotta et al. 2017; Brink et al. 2022). Companies generate competitive advantages through strategic development (Fligstein and McAdam 2012).

This study is based on a concept of crisis that only defines external changes as crises. This means that internal crises caused by changes in management or personnel, as well as those triggered by erroneous changes in strategy or bad reputation, are excluded from further investigation.

2.2 The textile industry — special features

As one of the "oldest and most traditional industries of all […], the textile industry represents a heterogeneous conglomerate of different, yet closely interwoven companies operating in different submarket" (Lauschke 2004). It includes all production steps from the preparation of raw materials to the production of textile surfaces and yard goods to the finishing of the products (Breitenacher 1971). The companies in the textile industry are highly specialized and usually cover only one production stage (Breitenacher 1989). Characteristic of the textile industry is its location in peripheral rural areas, as well as the predominantly medium-sized company structure (Lauschke 2004; Hauff 1995). Traditional textile regions include the Westmünsterland, the Rhineland, the Zollernalbkreis, South Swabia, and Upper Franconia (Lauschke 2004; Hauff 1995; Mietzner 2013). With its former border location, the economic region of Upper Franconia represents an interesting study area, because, despite economic crises, the textile industry located there is an important employer in the manufacturing sector. The companies operate in a highly competitive environment. In addition to price, quality, response time, service, distance, or reputation determine the success or failure of a company. As part of the consumer goods industry, it is subject to constant economic fluctuations (Breitenacher 1971; Arlitt 1975). Therefore, the next step is to clarify how crisis events differ from cyclical or continuous developments.

3 Methodology

To answer the research question, I chose a mixed methods approach. This allows a more detailed examination of SMEs. The results are therefore more differentiated (Porak and Reinke 2024). In the first step, I analyzed quantitative data to find out the importance of the industry for the region of Upper Franconia. Furthermore, this data was used to identify crises. For a similar approach, see also the work of Wilderom and van Venrooij (2019).

In the second step, a structured questionnaire was used to investigate which strategies the companies used to react to crises. Eleven companies were analyzed. These companies all fulfil the defined criteria.

This questionnaire served both as a guide for interviews with company management and the analysis of archive material. In those cases where interviews could be conducted, the statements were compared with the annual reports and archive documents. The aim was to validate the statements. In cases where no interview partner was available, press reports and company websites were evaluated in addition to the annual reports.

3.1 Selection of the cases

The 11 companies were selected according to the following criteria:

Criterion 1- *Company headquarters:* The company headquarters and the production facility or the predominant part of the production must be in Upper Franconia. This ensures that entrepreneurial measures affecting the production chain are also covered by the study.
Criterion 2- *Duration of market activity*: An identification of crisis management strategies is only possible if the company was already active on the market before the identified crises. Companies that only entered the market afterwards were not included in the sample.
Criterion 3- *SMEs:* As the study region is part of the EU-27, the EU recommendation on the definition of SMEs is used. According to this definition, the main criteria for classifying the size of a company are the number of employees and the balance sheet total or annual turnover (see Table 1).

Table 1 EU recommendation on the classification of small and medium-sized enterprises. Own presentation according to the recommendation of the Commission of the European Communities, 2003. (Kommission der europäischen Gemeinschaften 2003)

Company category	*Employees*	*Turnover in EUR*	*or balance sheet total in EUR*
micro	*< 10*	*< 2 million*	*< 2 million*
small	*< 50*	*< 10 million*	*< 10 million*
medium	*< 250*	*< 50 million*	*< 43 million*

This criterion ensures that they have similar (financial and personnel) prerequisites for developing crisis management strategies. Due to their small size, they are also flexible and have a good adaptive capacity (Massis et al. 2018; Wilhelm et al. 2022). In innovation research, flat hierarchies in particular are seen as a good prerequisite for innovation (Schamp 1989; Althen 1996).

Table 2 provides an overview of the companies analyzed. Only companies with more than 20 employees are part of the sample. This ensures that the crises identified based on the statistics also affected the companies examined. This is important because the statistical reporting obligation only applies to companies with more than 20 employees.

Criterion 4- *Textile industry:* The companies are all assigned to the textile industry according to the NACE classification.[2] The manufacture of textiles (NACE class 13) includes, for example, not only weaving but also the finishing of textiles and clothing as well as the manufacture of technical textiles. For reasons of data protection, the detailed market segments are not listed in Table 2. Some might assume that the statistically identified crisis only hit large firms which served the mass market. However, small and medium-sized companies also serve the mass market, for example in the home textiles sector. To show that the statistically determined crises also affected SMEs, a distinction is made between the mass market and the niche market.

Another factor, which is not a criterion in its own right, is data access. The companies evaluated were those to whose data I had access, or those companies where the decision-makers were willing to grant me insight into the documents and business processes.

3.2 Data sources

The survey was conducted at the management level (managers, CEOs, or employees with decision-making authority). The small and medium size of the companies allows for flat hierarchies, which means that even (senior) employees with many years of service gain comprehensive knowledge of the company's decisions. At the time of the identified crises, however, they had to have already been working in the company, or at least have witnessed the effects and reactions to the crisis. The interviews lasted an average of 45 min. I conducted the interviews myself. They were recorded and analyzed. Notes taken during the interviews as well as visits to the websites supplemented the data collection. Furthermore, archival material was collected for the study, including annual reports, evaluations of interest groups, and press releases related to the companies studied.

[2] NACE—*Nomenclature statistique des activités économiques dans la Communauté européenne (Offical Journal of the European Union 2023).*

Even if the companies analyzed were active on the market until 2008, this does not mean that they are still active today. It was therefore not always possible to interview a responsible person. Companies for which it was not possible to conduct an interview were analyzed based on archive material. Interviews could be conducted in 8 out of 11 cases. One interviewed company had already left the market before the end of the survey period. Three companies were analyzed based on archive material. Two of them were active throughout the reviewed period. Companies that exited the market in the 1990s and 2000s did so shortly before the end of the period. They are included to avoid survivorship bias.

The archive data encompasses a diverse range of materials, including annual reports, financial statements, business correspondence, and newspaper articles. The material was sourced from various archives, including those in Kulmbach, Münchberg, and Hof, as well as the state archive in Bamberg and the main state archive in Munich. In addition, material from the Bavarian Economic Archive of the Chambers of Industry and Commerce was examined, and the local archive of the Chamber of Industry and Commerce for Upper Franconia, Bayreuth, was visited. Furthermore, documents from the textile museum in Helmbrechts were utilised.

3.3 Questionnaire

To create a guideline for the interviews and to analyze the archive material the same research questions were used. The questionnaire was divided into two parts. Firstly, information was collected about the company (employee size category, served market, etc.) and the interviewee's position. The second and main part was divided into four time periods. These correspond to the crises. Interviewees were asked which crises they were affected by. Various crisis scenarios were suggested to them, which they could complete independently. After each crisis, they were asked what measures were taken to deal with it. A decision matrix was used to present various strategies which were already subdivided according to dynamic, organizational and dual competencies.

According to the interviews, the archival material was searched for crises which affected the company and strategies the management implemented. In the cases in which both an interview and the analysis of archive material took place, it was found that the interview data hardly differed from the archive sources. For this reason, the gap in the number of interviewees was closed using the archive material. Those printed data sources were searched for keywords that allowed conclusions to be drawn about crises and strategies (Table 2).

The strategies and actions of companies can be divided into three categories based on their type. Dynamic capabilities, Organizational capabilities, and Dual capabilities. A summary of the categories is shown in Table 3.

Table 2 Information on the companies analyzed and the sources used

Company	*Size class of employees according to* Table 1	*Data source (interview or archival material)*	*Served market*	*Continuously active in the market from 1972 to 2008?*
A	> 50 < 250 *medium*	archival material • annual reports • newspaper articles	mass market	yes
B	> 50 < 250 *medium*	archival material • annual reports • newspaper articles	mass market	yes
C	> 50 < 250 *medium*	interview • managing director • commercial management • technical management	niche market	yes
D	> 50 < 250 *medium*	interview • managing director • commercial management	niche market	yes
E	> 50 < 250 *medium*	archival material • annual reports • newspaper articles	mass market	no
F	> 50 < 250 *medium*	interview • managing director	mass market	yes
G	> 50 < 250 *medium*	interview • managing director • commercial management archival material • annual reports • newspaper articles	mass market	yes
H	> 50 < 250 *medium*	interview • managing director archival material • annual reports • newspaper articles	niche market	yes
I	> 10 < 50 *small*	interview • managing director	mass market	no
J	> 10 < 50 *small*	interview • managing director	mass market	yes
K	> 10 < 50 *small*	interview • managing director • technical management	niche market	yes

4 Crises

To distinguish crises from cyclical fluctuations, an interdisciplinary approach is necessary. This helps to grasp them in all their complexity and to develop appropriate counter-reactions. Quantitative and qualitative methods are used to analyze the various indicators and variables of an industrial crisis. Quantitative measures include the

use of economic indicators such as production volume, turnover, employment figures, profits, and losses of companies in the industry concerned. To gain insight into the causes and effects of the crisis, qualitative data can be collected through case studies, and interviews with industry experts and company managers. With this combination, the many aspects of industrial crises can be scientifically recorded and analyzed.

4.1 Indicators of industrial crises

One of the signs of an industrial crisis is a significant decline in the production output of a sector or region (Schulze 1993). This manifests itself in a decline in the number of employees, the number of companies, and in declining production figures (Hauff 1995). But overcapacity can also indicate a crisis. If demand falls while production output remains unchanged, this can lead to a drop in prices. This in turn weakens the financial basis of the company. The result is falling financial ratios (declining turnover, profits, and returns) and, in the worst case, an increase in insolvencies (Beutl 2002; Delli Gatti et al. 2011). The latter also leads to an increase in unemployment figures or mass layoffs in the crisis-affected sector. These ratios are perceived most strongly by the public. However, a decline in investment or investment backlogs can also indicate an industrial crisis.

4.2 Triggers for industrial crises

The causes of industrial crises are manifold and depend on the industry under investigation, the economy, trade policy, regional conditions and more dimensions (Sahebalzamani et al. 2023). Companies producing in countries with high social security contributions are inferior to competitors from low-wage countries in terms of production costs. This increased competition leads to an increase in the technology used, making production and business models obsolete (North 2016). As a result, this can lead to another crisis. In addition to labor market factors, strict environmental regulations for the textile industry in industrialized countries also have a significant impact on its competitiveness. Competitiveness is also influenced by changes in trade agreements, tariffs, and other trade restrictions. However, changes in legislation, as it was observable in 2004 with the World Textile Agreement. Other factors are financial crises, lack of political support, and changes in the consumer behavior which can also hurt companies' business activities (Delli Gatti et al. 2011).

4.3 The crises of the Upper Franconian textile industry

Various indicators were used to identify the crises in the Upper Franconian textile companies. On the one hand, the development of price-adjusted foreign sales (Fig. 2), the number of employees (Fig. 3), and the number of companies over time (Fig. 4). The number of enterprises in Figs. 2 and 3 corresponds to the number of enterprises in Fig. 4. The data set also includes large companies (more than 250 employees). However, these do not lead to a distortion of the identified crises. This

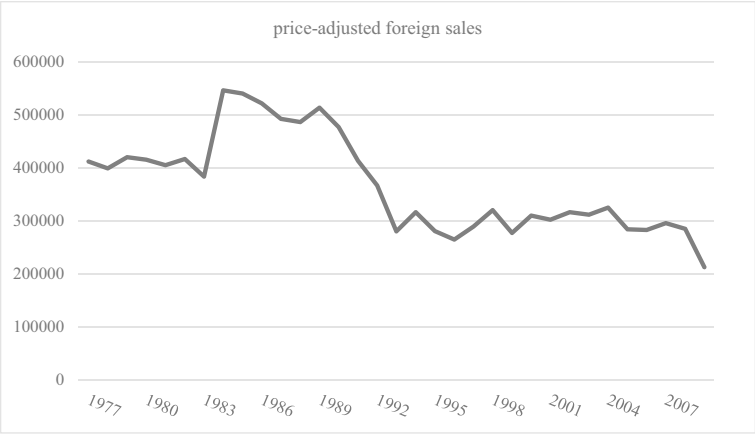

Fig. 2 Own representation based on data from the Bavarian State Office for Statistics. Only companies with more than 20 full-time employees are included. The data collection of the Bavarian Statistical Office only started in 1977. The price adjustment was calculated with the GDP deflators from the series: National Accounts, 2nd Quarter 2023, Statistical Report, tab "81,000–117"—of the Federal Statistical Office. The base year is 1991

is because large textile companies were rare in Upper Franconia. Many small and medium-sized companies emerged in this economic area (Murr 2018). Large companies, such as those in Augsburg were not established in Upper Franconia due to the local conditions (lack of energy supply from hydropower or cheap coal transport). These companies (mainly spinning mills) were not economically viable in the economic region of Upper Franconia.

If the preceding indicators are considered in 10-year periods in conjunction with the changes in the global economic, political, and social environment, 4 crises can be identified.

1970s: In 1972, there were 261 companies in Upper Franconia, at the end of the 1970s there were still 172 companies. The German textile industry underwent a profound structural change in the 1970s. This was partly due to increasing competition from countries with low labor costs, especially from Asia. The textile industry was faced with the challenge of remaining price competitive. Companies with older production facilities were no longer competitive, which led to company closures and layoffs. In Upper Franconia, foreign sales were at a stable level at the end of the 1970s. In contrast, the number of companies and employees declined sharply. In addition to stagflation and the two external shocks (the collapse of the Bretton Woods system and the commodity price shocks of 1973 and 1978), this development was also influenced by the migration of workers from Upper Franconia (Lauschke 2004).

1980s: The decline in the number of textile companies continued in the 1980s. In 1980, 175 companies were active, in 1989 only 127 companies were counted. At the beginning of the 1980s, foreign sales shrink to their lowest level since recording, the same applies to the number of employees. This goes hand in hand with the development of the West German economy, which shrinks to the 1978 level in the course

Fig. 3 Own representation based on data from the Bavarian State Office for Statistics. Only companies with more than 20 full-time employees are included

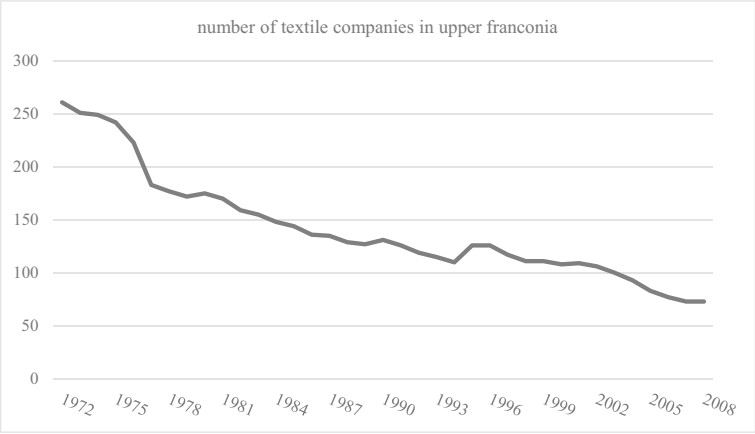

Fig. 4 Own representation based on data from the Bavarian State Office for Statistics. Only companies with more than 20 full-time employees are included

of the economic crisis in 1981. The number of textile companies in Upper Franconia declined continuously, despite steep increases in foreign sales in the mid-1980s. This is also due to the structural change in the German economy. Other sectors, such as the automotive industry and mechanical engineering, gain in importance, while the textile industry loses influence.

1990s: At the beginning of the 90s, the number of companies rose slightly — to 131. In 1999, 111 companies were statistically recorded. With the fall of the Iron Curtain, foreign sales of textile companies collapsed. In 1991, this was also due to the sharp drop in prices for cotton products (Häcker 1994). The number of

employees and companies, on the other hand, is rising slightly. The reason for this is the availability of skilled workers from the former GDR, who also set up companies. On 1 January 1995, the World Textile Agreement (WTA) replaced the Multifibre Arrangement (MFA) that had been in force until then.[3] The former is supposed to accompany a 10-year transition phase to liberal world textile trade and protect the textile companies of the industrialized countries from price competition. Furthermore, in the course of German reunification, financial support for companies on the zonal border was discontinued. Instead, a subsidy gap emerged, as the East German companies received subsidies from 1991 onwards.

2000s: The number of companies in this period declined from 108 (2000) to 73 (2008). Until 2004, foreign sales increased slightly. The number of employees and the number of companies decline continuously. This decline is due to company closures and not to company mergers. With the further opening of the European market for foreign textiles, a slump in foreign sales was observed in 2005. On 1st January 2005, the provisions of the WTA were abolished. For the Upper Franconian weaving companies, however, this was not the only reason for the declining foreign sales. In the mid-2000s, the major customers of women's outerwear (DOB) manufacturers reoriented themselves. Until 2005, the major customers from the fashion sector ordered their fabrics in Upper Franconia and had them shipped from there to the ready-to-wear factories. Strategic realignments of the women's wear customers led to a different buying behavior. One company stated that their former customers buy raw fabrics from weaving mills that are located close to the clothing manufacturers.

5 Crisis management strategies (Fig 5)

For the German textile industry, various core investment types were identified by Arbeitgeberkreis Gesamttextil for the 1970s, 1980s, and 1990s. The crises of the 1970s and above all the migration of skilled workers to other regions or other sectors were countered with high investments in modern machinery. This, in turn, led to the elimination of manual work and the transformation of the formerly labor-intensive industry into a capital-intensive sector (Donath and Szegfü 2021). Bertani et al. 2020 describe a similar development in their study on the impact of digital transformation on work. The result was a fivefold increase in production, with a simultaneous reduction in human resources (Grötsch 2022). It was not possible to react in time to short-term changes in market demand because the capital assets were tied up in the production facilities (Lindner 2001). The optimized processes also made it impossible to change the production program at short notice. In some cases, this increased inventories and storage costs (Stadtarchiv Kulmbach, 323–351, 1979). However, this automation of production processes required sufficient financial

[3] There were several earlier agreements before the MFA. In 1961 the Short-Term Agreement on International Trade in Cotton Textiles was concluded. This was followed by the Long-Term Agreements on International Trade in Cotton Textiles in 1962 and 1970. In 1973, the Agreement was extended to other textiles and no longer covered only cotton textiles. This was followed by the Multifibre Arrangement in 1974.

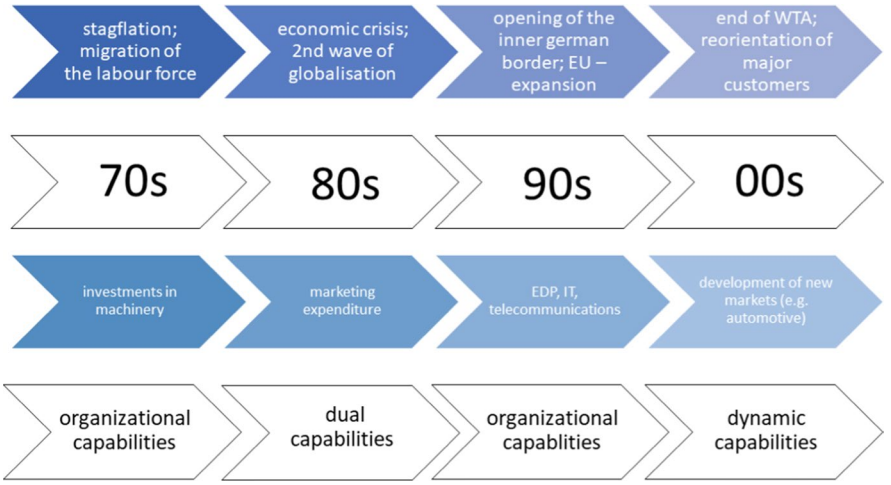

Fig. 5 Presentation of the periods and crises, as well as the main reactions of the companies. These have been assigned to the capabilities

resources. Companies that did not have the necessary investment funds had to give up (Donath and Szegfü 2021). Large enterprises or companies that served the mass market were particularly affected (Engel 1985; Gesamttextil 1993, 1994). Some owners sought diversification through company acquisitions (Stadtarchiv Hof, Fi 20 Nr. 111, 1974). The result, however, was an increased administrative burden with a simultaneous loss of flexibility. The concept of entrepreneurial strength through size turned out to be a fallacy (Bayerisches Hauptstaatsarchiv; MArb 8356, 1975). The declining foreign sales of the 1980s were countered by increased marketing activities. Overcapacities and aggressive pricing strategies required excellent cost management on the part of the companies. To make them profitable, all marketing possibilities were needed (Gesamttextil 1988). Industry experts pointed out that while there was extensive knowledge about competitors, there was little knowledge about consumer needs (Stadtarchiv Hof, Fi 20 101–102, 1985). Effective marketing increased returns because the costs of marketing activities had a direct impact on prices. To target these activities, companies needed comprehensive information about their business partners as well as detailed profiles of their customers (Bayerisches Wirtschaftsarchiv F54/82, 1993). Information management systems were to provide support in accomplishing this task. To remain able to act during the crises of the 1990s, financial resources were mainly spent on logistical processes and means of communication.[4] This is in line with the recommendations of the textile

[4] The investment focus can also be observed at the Kulmbach spinning mill. Spinning mill director Theodor Keeding suggested a comprehensive modernisation programme in 1975 (cf. Bayerische Rundschau, 1 May 1975, "Company must be harshly reorganized"). After his departure, a marketing expert, Olaf Kier, was appointed to the board (cf. Kulmbach City Archives, 323–51, Bayerische Rundschau, 23 February 1979, "New board member at the spinning mill"). From the 1990s onwards, expenditure was mainly on distribution and logistics processes such as "Just-in-Time" (cf. Kulmbach city archive, KSP WA I/2/3, product catalogue around 1990).

research institutes (Gesamttextil 1988). *Quick Response* in the textile industry enables producers to lower fixed costs for storage. If this method is implemented in close coordination with the buyers, demand-oriented production is possible (Breitenacher 1989). The survey of Upper Franconian companies shows that the development of new markets was the core type of investment in the 2000s.

The results of Textilwirtschaft are only partially consistent with my findings. The study includes companies from all over Germany. These include large companies from the textile regions of Augsburg, Westmünsterland, etc. Due to their size and financial resources, they were able to choose different strategies than the SMEs in Upper Franconia. The study shown in Fig. 4 was based on the investment amounts in the individual investment areas. However, this should be treated with caution. This is because when large enterprises invest in machinery, the demand and therefore the amount spent is higher. This is included in the figures and distorts the results. The measures taken by small and medium-sized enterprises are overshadowed by the higher spending by large companies.

Companies have different options for developing their business model or responding to crises. These subcategories require a higher level of classification to produce meaningful results. Table 3 shows the assignment of the subcategories to the categories. The terms of the categories are taken from evolutionary economics. The following section explains those terms that have already appeared in Fig. 5. Findings and statements of the companies interviewed can be found in the final section, which represents the preliminary findings and conclusions.

5.1 Dynamic capabilities

One of the basic assumptions of dynamic capabilities is that companies use their core competencies to improve their competitive position in the short term to generate long-term competitive advantages. In this way, they describe the adaptability of companies to changes in the market (Teece et al. 1997). This is also consistent with the assertions of the company owners C, D, G and K who perceive their capacity for adaptation as a competitive advantage. Due to their long-term character, they have the property of transforming the company. In essence, dynamic capabilities differ from organizational or "ordinary" capabilities in that they have a medium to long-term effect and help the company to grow further through (disruptive) restructuring.

They refer to "the capacity of an organization to purposefully create, extend, or modify its resource base" (Helfat et al. 2007) and are seen as repetitive patterns used by a broad mass to gain competitive advantage through rapid and targeted development and change of its resource base (Eisenhardt 2009b; Helfat et al. 2007; Teece et al. 1997; Zollo und Winter 2002). Dynamic capabilities include, for example, the development of new markets and the introduction of new technologies in the production process. The latter is highly relevant for generating competitive advantage (Althen 1996). Previous studies on dynamic capabilities also show that technological innovations are key to a company's transformation (Helfat 2018).

With a targeted further development and change of existing resources (raw materials, preliminary products, processes, company organization, supplier

Table 3 Overview of crisis management strategies

Dynamic capabilities	Organizational capabilities	Dual capabilities
Strategic development and change of the existing resource base	Product and process development	Marketing
Development of new resources	De-investment/streamlining	Niche markets/specialization
Research and development	Expanding existing customer relationships	Cooperations to drive change
Strategic entry into new business areas	Rationalization/streamlining	Investments (technological equipment; manpower)
Introduction of new products/ innovation	IT/telecommunication	
Dynamic leadership	Relocation of production	

networks, technologies, reputation, and personnel), companies can adapt to changing conditions. The focus is not on a single measure, but rather on a whole bundle of strategies. The companies agreed that tacit knowledge, i.e. personal knowledge, is an important success factor in global competition. Or as Foray describes it: "a knowledge of *time and place*", that is tied to the company and "needs to be discovered by entrepreneurs and other actors in the transformation process" (Foray et al. 2021). For this reason, companies try to communicate transparently with their employees in times of crisis and beyond. This is done through various channels. Similarly, Company C proceeded in a manner analogous to that of the aforementioned entity. In response to the decline in sales of damask fabrics in the 1970s, the company management engaged in open dialogue with its employees. The company requested the resignation of the longest-serving employees, who were over the age of 70 at the time, in order to consolidate the company and retain younger personnel.[5]

Their goal is to retain employees in difficult times to maintain a competent workforce in normal times. Long periods of short-time work bring economic uncertainty both for the company and its staff. These periods can be used for staff development or process improvement, which are often neglected during normal operations. Training, process changes, and the use of new technologies and manufacturing processes can help reshape the resource base. A lack of skilled workers can be partly offset by automating or restructuring operations, as it was the case with companies A and B. Both operate in the mass market and therefore compete with low-cost rivals. The solution for these companies was to automate every possible step (Stadtarchiv Kulmbach, 323–351, Bayerische Rundschau, 1976).

The development of new resources and R&D requires qualified staff and capable managers. This can increase the number of new products in a company, as shown by Deeds et al. (1999) and Helfat (2018). In summary, a higher qualification of the workforce and higher R&D expenditure lead to more innovative output (Rothaermel

[5] The average retirement age in the 1970s was 63.6 years and 62.2 in the 1980s in West-Germany (Deutsche Rentenversicherung, 2023).

and Hess 2007; Henderson and Cockburn 1996). The success of an invention hinges on satisfying consumer needs, as only such developments will penetrate the market and be economically successful. Therefore, companies must analyze weaknesses in their R&D processes and implement tools to integrate customer feedback, improve production processes, and conduct regular performance reviews.

Before Company G launched new products, they planned the process carefully. They analysed the target market to understand the needs of the target group. In parallel with the existing production programme, they started to enter the new market. In this way, the subsequent product development can focus on the development of products with a clear added value. This in turn results in a competitive advantage over rival companies (Teece et al. 1997) and the possibility to charge higher prices. How the market launch of the new product is designed also depends on the type of product. So we can conclude that new products can help to enter new markets (Fligstein and McAdam 2012).

The strategic entry into new business areas can be designed both vertically (upstream and downstream markets) and horizontally (in neighboring sectors). This in turn leads to less dependence on one market and group of customers, thereby increasing the resilience of the business (Sahebalzamani et al. 2023). To be successful in new business areas, the development of new capabilities and resources must be promoted within the organization (Manhães and Dávilla 2023).

5.2 Organizational capabilities

However, corporate success is not only dependent on the ability to develop and innovate but also on organizational skills and routines (Winter 2003). These refer to day-to-day business operations and describe the company's ability to organize, manage, and implement processes and tasks efficiently and with a low expenditure of resources. They are measures that aim to improve the current state and therefore have a short- to medium-term effect. They include, for example, measures to streamline business processes and efforts to achieve high product quality. Especially in times of crisis, companies strive to reduce production costs. This strategy can be observed in all textile companies, especially in the 1970s. The companies invested massively in the automation of production to replace missing skilled workers and to generate competitive advantages over suppliers from low-wage countries. By focusing on existing processes and products, the product and process development strategy counts as an organizational capability.

Another measure is to build a close customer relationship, like companies C, J and K. In order to maintain or build a close relationship with the customer, these companies offer an extension of services. To make the customer feel comfortable, native speakers from their country or with appropriate foreign language skills are employed. This creates a positive feeling for the customer and enhances the company's reputation abroad (Teece et al. 1997). It also facilitates communication between customers and producers. Furthermore, this offer also supports the acquisition of new customers.

Upgrading information technology (IT) is one of the organizational capabilities and is critical for companies in today's digital business world (Sahebalzamani et al. 2023; Gesamttextil 1988). The higher level of digitalization is in line with closer

customer relationships. *Quick Response* in the textile industry enables producers to have lower fixed costs for storage. If this method is implemented in close coordination with the customers, demand-oriented production is possible (Breitenacher 1989). Furthermore, digital data collection and evaluation also increase the possibilities for analysis and thus the scalability of company processes. But information technology can also support marketing activities. For targeted marketing measures, companies need comprehensive knowledge about their customers and their preferences (Bayerisches Wirtschaftsarchiv; F54/82, 1993).

Another way to deal with the crises is to relocate production abroad. The decisive factor for this offshoring process is the difference in labor costs because technical standards, machinery, and knowledge that do not fall within the core competence can be transferred to the new location (Bayerisches Wirtschaftsarchiv; F54/82, 1993). In the Upper Franconian textile industry, this mainly affected the "consumer-related sectors",[6] such as the production of home textiles. As a rule, the administration, product development, and design departments remained in Germany.[7]

5.3 Dual capabilities

However, some activities are a mixture of dynamic and organizational capabilities. Depending on their design, they have short-term and/or long-term effects. Managing this duality and transforming it into long-term processes requires experienced leaders to develop new processes and establish new routines (Narayanan et al. 2009). This includes, for example, marketing (Thomas 2019). Depending on how it is designed, marketing may only be directed at existing customers and thus be classified as an operational capability. However, if it is aimed at developing new customer groups, it is classified as a dynamic capability.

Niche markets such as companies C, D, H and K represent a dual capability, as they require both a specific market entry strategy and a specific form of business development. This duality stems from the need to operate successfully in a limited and specialized market segment while maintaining adaptability and innovation to meet the changing demands of the niche market. Exploiting niche markets therefore requires a balance between specialization and adaptability, making it a dual capability. The interviewees said that they need to be able to understand the market and the customers in their niche very precisely. At the same time, however, they must be prepared to adapt and innovate in order to be successful in this specialized environment in the long term. This requires a special strategy and organizational culture that is adapted to the specific requirements of niche markets.

Cooperations that serve to maintain the status quo can be located as an organizational capability. Their implementation can be carried out through franchises or

[6] In its 1993 report on the competitiveness of the European textile and clothing industry, the Commission of the European Communities notes that relocation trends were first observed in "high-wage countries such as Germany and the Netherlands".

[7] These are among the core competencies of a company. Established management routines and creativity strategies are, on the one hand, company-bound and, on the other hand, person-bound. They are therefore non-transferable resources (cf. Liefner und Schätzl 37, p. 144f., Kiese and Schätzl 34, p. 70f.).

licensing agreements. Another possibility is the creation of networks and platforms on which the companies interact and support each other. These networks help to reflect on one's processes and serve to exchange ideas. The study showed that the textile companies in Upper Franconia do this exchange mainly in an informal setting. Through discussions with the management of neighboring companies, they receive information on funding opportunities and suggestions for the design of production processes.

However, collaborations also mobilize a wide range of resources, knowledge, and perspectives. By working with internal and external partners, companies can gain access to new ideas, expertise, and innovative solutions that help address challenges and implement change.

Employee training — a dual capability — plays a crucial role at both the individual and organizational levels. At the individual level, it enables employees to develop new skills and improve their professional know-how, which strengthens their career prospects and adaptability in a changing world of work. At the organizational level, training helps to increase employee competencies, leading to higher productivity, quality, and innovation. It also promotes a corporate culture of lifelong learning and adaptability, which is crucial for the long-term success and competitiveness of the company (Schneider 2008). Thus, employee training is a dual capability that supports both individual and professional development and organizational growth.

Sometimes it is difficult to make a clear and simple distinction between organizational and dynamic capabilities. However, it is necessary to determine which actions will bring about significant economic change. Sometimes, however, this assessment may depend on the point of view of the observer. Some actors can significantly change the organizational structure of an enterprise and are therefore considered dynamic or first-order capabilities. Other measures have both dynamic and operational effects and are therefore referred to as "dual capabilities". Due to the close interlocking of the three categories, corporate success and thus the survival of a company in times of crisis depends on how well the company management uses these capabilities. Which strategies the companies have specifically used are presented in the following section. (Table 3 gives an overview.)

6 Preliminary findings and conclusion

The strategies presented in this paper are part of the corporate practice of the companies studied. These firms are active in both highly dynamic and less dynamic markets.[8] Therefore, the cases provide a good insight into a very heterogeneous industry, whose structural change took place to different degrees and also peaked at different times but was hit by the same crisis events due to the close spatial localization

[8] A dynamic market is the women's wear sector, which is strongly dependent on fashion demand. The protective textiles sector, on the other hand, is a less dynamic market. The needs of this customer group are based on qualitative and innovative developments, rather than on fashionable features. This leads to longer order cycles.

and the interconnectedness. A crisis in the weaving mills therefore also affected the downstream finishing mills, which were dependent on orders from the weaving mills. Nevertheless, the results cannot be generalized, as the study refers to a non-representative sample of firms. Moreover, all the companies studied are located in the same space, which limits the transfer of the results to other spaces with different horizons of experience.

Enterprises were asked which strategies they had used during the periods shown above. This showed that SMEs were more likely to use measures from the dual and dynamic skills area than from the organizational skills area.

One reason for this could be that their capital base is smaller than that of large enterprises. SMEs in the study area rely mainly on investments financed by equity. Entrepreneurs avoid borrowing. However, investment in machinery is very costly and may be difficult for SMEs to undertake.

One success factor of the SMEs studied is their activities in different submarkets. The companies offer both product variations and homogeneous products in these markets. Through this approach, sales shortfalls can be compensated for in one submarket. Or as one manager put it `If one part sold less well, the other sold better. Some textile companies in Upper Franconia adapted by focusing on high-quality products and sustainability. These companies (e.g. D, H, K) focused on the production of special textiles and were thus able to find their niche in a difficult market environment.

Some companies have formed partnerships with other companies to jointly develop new businesses. This can also facilitate access to resources, know-how and new markets. When companies want to expand into other countries, it is advisable to partner with a local company. This facilitates access to the foreign market because the local company knows the specific requirements of the new target market. In one case (Company G), chance also plays a role. During an economic downturn in 2002, the management heard that a company was being sold. 'We were friends with the company owner and he asked us if we would like to buy his company. So that's what we did.', said Manager G. This company served a different market, but its basic structure was similar to that of the company under investigation. It was therefore possible to convert production without major investment. They analyzed the company, integrated competent employees and entered the new market. They used to make curtain scarves, but now they make premium upholstery fabrics.

An example of dynamic leadership is Company D. This company has been active since 1920 and sees change as the only constant. The company has been able to address the shortage of skilled workers by providing further training for employees or by helping employees find accommodation. 'Housing was scarce after reunification, so we had to think of something to keep the skilled workers from the East. That's why we built this house [points out the window]. Today we no longer need it and have therefore sold it.' Furthermore, a newsletter was published to inform clients and employees about the company's activities. No external financing was taken out for any of these measures but was financed from current assets.

To effectively address the skills shortage one of the companies reduced its working hours to four days in consultation with its employees. Although this was not possible with full-wage compensation, the feedback from the employees was positive.

This led to skilled workers applying from competing companies, which eventually also introduced a four-day week to retain their employees.

How the market launch of the new product is designed also depends on the type of product. Companies B and C explain it as follows. In contrast to woven fabrics for the fashion market, technical protective textiles must be tested before market launch. Only after certification by independent testing institutions, the weaving company with the certified fabric can promote it to clothing manufacturers for protective equipment. If the clothing company wants to include the fabric in its portfolio, it orders a very small quantity of this material and produces prototypes that have to go through another testing process. Only after successful acceptance of this final product (e.g. protective suit) will the clothing company place a large order with the weaving mill. For this reason, the development of textiles with special protection requirements takes several years. The advantage of the weaving mill is that the fabric collections only change every 5–6 years. In the fashion sector, these cycles are also possible within one quarter. A disadvantage is that the weaving mills have to make financial advance payments for technical textiles. However, a dynamic management style also helps them to cope with this burden.

Most of the companies analyzed showed that they survived the main crises during the period under review. In doing so, they have proven their adaptability and resilience. With each successfully overcoming crisis, they have gathered empirical values that are anchored in the company. Systematically tapping into this specific knowledge can help develop recommendations for companies when facing multiple crises.

The two companies which left the market used mainly organizational skills to deal with the crises, especially in the 2000s. An explanation for the fact that organizational skills were no longer sufficient could be that the crisis of the 2000s differed substantially from the others. One factor that changed in the mid-2000s was the World Textile Agreement (WTA). This expired at the end of 2004 and was not followed by a successor agreement. In the periods before this (1970, 1980, 1990), there were repeated amendments, but it was never completely abolished. This suggests that the WTA protected companies that did not change their corporate purpose. It could also lead to the conclusion that dynamic capabilities are the key to market success. However, this requires on the other hand a better understanding of the crises. Their similarities and differences need to be further analyzed, and the strategies used by companies to overcome each crisis need to be examined.

On the other hand, to make such a statement, it is necessary to identify at least two companies that are or were active in the same market, have or had a similar customer base and are or were exposed to the same general conditions. This follows the approach chosen by (Pettigrew 1990) and (Harris and Sutton 1986). They chose "cases such as extreme situations and polar types in which the process of interest is" (Eisenhardt 2009a) recognizable. While no final judgement can be made on the best strategies, I hope my efforts will inspire other industries to look for the success factors of crisis-proof companies.

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