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Yes you can, follow your goals! Individual Coaching for female Computer scientists on career development

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Abstract

Earlier results show that female computer scientists show a lower self-efficacy compared to male colleagues. Similarly, gender-typical attributions, in the sense of gender stereotypes, are considered a disorder. As a result, a coaching program that supports computer scientists after a re-entry into professional life also, in a new orientation or with regard to management ambitions has been developed at the University of Bamberg. The measure strengthens computer scientists in their motivational resources and enables them to take advantage of professional opportunities. A scientifically founded analysis of their potential helps the coachees to become aware of their abilities and competences. The coaching program based on the potential analysis, takes important life goals of the coachees into account. Individual career plans are developed in coaching sessions, including a clear definition of the objective and implementation strategy. An open and modern corporate culture offers new opportunities of career paths for female computer scientists. If the company philosophy is based on appreciation of good performance, women in computer science are more motivated strengthen their career ambitions.

Keywords: *Women in computer science; self-efficacy beliefs; potential analysis; individual coaching; career development*

1. Introduction

Women, despite finishing college faster than men, do not have equal career perspectives (Leuze & Rusconi, 2009). A gender-typical choice of study field leads to gender-typical job-market perspectives, therefore less pay and a higher focus on work-family compability (ibd.). Male connoted jobs in the IT-field are associated with a high willingness to perform, unexpected work hours, readiness to travel and a sole identification with the job (ibd.). Women, unwilling to aspire said male employment biography are at risk to face disadvantages in their career (ibd.). Women, despite their academic performance, underestimate their competencies and have low self-efficacy expectations (Förtsch et al., 2018; Reuben et al., 2010). Supporting womem's career ambitions, e.g. through coaching programmes, can have a positive impact.

This article is based on the results of the project Career Coaching in STEM. It was studied in what degree an individual coaching program can have an impact on increased confidence in their own competencies, a distinct work vision and an understanding of the possibility of a compability of leading work positions and a good work-life balance including a family. Withal, a better understanding of their own competencies was aimed for. This article focuses on the factors that hinder or promote career development of female computer scientists.

After embedding the contribution in the theoretical framework, the coaching measure with its processes as well as the underlying test for personality analysis will be presented in more detail. Subsequently, a case study shows the practice of coaching with the developed individual career steps and their implementation and illustrates the potential of coaching measures to support the career planning of women in computer science.

2. Theoretical Framework

Self-efficacy expectation

Self-efficacy, a theoretical concept by Bandura (1997), is one of the most important theories of action (ibd.) Self-efficacy expectation stands in context with the assessment of one's own abilities and the motivation to carry out actions. It is known from literature that professional self-efficacy expectations of women after entering the labor market weakens. Men, on the contrary, tend to increase their confidence with work experience.

Women seem to process professional failures and difficulties worse than men. For men, lived experiences lead to concrete career ideas. Women rather start to question their abilities, especially in male dominated work environments (Abele, 2013). Results of previous studies show the same effect for the occupational group of computer scientists. Female

graduates, despite similar final grades, showed lower self-efficacy expectations than the male graduates after entering the work life (Förtsch et al., 2017).

Gender Stereotypes

In order to explain career inequalities between women and men, theoretical concepts refer to the existence of gender stereotypes (Spencer et al., 1999; Steele, 1997) and gender roles (Abele, 2003; Athenstaedt, 2002; Athenstaedt & Alfermann, 2011). The underlying theoretical assumption of those models implicates, that deeply rooted social gender roles and gender stereotypes have an impact on decision making and the behavior of employers and employees. This has the effect, that career chances and ambitions of women systematically differ from those of men (Boye, 2009; Claffey & Mickelson, 2009; Russo, 1976).

3. Research design and method

Career promoting measures like a coaching program for female computer scientist are, due to the mentioned mechanisms, valuable (Förtsch et al., 2015). The aim of coaching is to expand the scope of action which lead to behavioral change. This process is only successful, if the coachee links an idea of their own effectiveness with their actions (Bandura, 1997). An awareness of their own competencies as a computer scientist is necessary, to plan, conduct and successfully finalize actions. This can be reaching higher position in a company. A high self-efficacy expectation, regardless of the actual abilities, generally leads to positive results. In critical situations own resources can be accessed more easily (Loebbert, 2017). Coaching processes are to be seen as social exchange relationships. The usefulness of the course of action will be evaluated by the coachee's subjective experience. A successful coaching connects self-efficacy expectations with action, drawn from developed career enhancing steps, to a realized objective.

Participant Structure

15 women (between 24 and 40 years old) who either graduated with a degree in applied computer science or economic computer science or are enrolled in a master program participated in the coaching program.

Implementation

The implementation of the coaching measures is divided in five phases (contact, contract, hypotheses, interventions and evaluation) in accordance with the model of person-centered process consultancy. A personality analysis on the basis of a job-related compe-

tency test, the Business-Focused Inventory of Personality (BIP)¹, took place before the first coaching session.

Business-Focused Inventory of Personality (BIP)

The BIP questionnaire includes 210 items, which have to be ranked by the test person on a six level scale from „strongly agree“ to „strongly disagree“. 14 personality traits, belonging to 4 personality areas, are analysed (Hossiep & Paschen, 2003). Those include the following facets such as **professional orientation**: achievement motivation, motivation to shape, leadership ambition; **work behavior**: conscientiousness, flexibility, activity orientation; **social competencies**: sensitivity, interpersonal competencies, sociability, teamwork, assertiveness; **mental condition**: emotional strength, physical resilience and self-awareness. The evaluation of the data was done in a 10-stage standardization.

Evaluation of the Questionnaire

The evaluation of the participants answers happened in comparison to the reference groups of professional and managerial staff. A special focus of the coaching was put on the management potential. The emphasis of the dimensions leadership motivation, achievement motivation, sensitivity, interpersonal competencies and assertiveness are important for management potential development. The markedness of the dimensions conscientiousness, sociability and teamwork should lie in the mid-range (Kanning & Kempermann, 2012).

4. Case Study

Project Manager Plans Entry to the Management Level

The coachee, a 35 years old mother of two children (kindergarten and elementary level), holds a leading position as an IT-consultant and project manager and she is completing a coaching education, graduating in 2017. The further qualification strengthens her position in the company, as offered coaching sessions will expand the company's service portfolio. In the first half of 2017, she plans to join the management level with a financial participation. The company's corporate culture offers a high degree of creative possibilities. With 40 hours a week, the fifth day each week is reserved for continuing education and training with continued salary payment. Compensation for overtime can be used for time off from work.

The coachee works part-time with 30 hours a week on four days, including a home office day, often used as a „buffer“ for client meetings on-site. Childcare is arranged, yet the or-

¹The Business- Focused Inventory of Personality Bochum (BIP, Hossiep & Paschen, 2003) is a psychological test that systematically records occupational personality traits. For this purpose, the participant is presented with statements that he should judge in terms of the personal validity of the statements. The answers are summarized on the basis of relevant professional dimensions in each case to numerical values, represented graphically by means of a profile sheet and summarized in a psychological report. GDP can be applied in different contexts, such as: Eg in coaching measures

ganization calls for a high level of discipline and no flexibility, changing booked kindergarten hours is nearly impossible. Her husband and parents-in-law support her in terms of childcare.

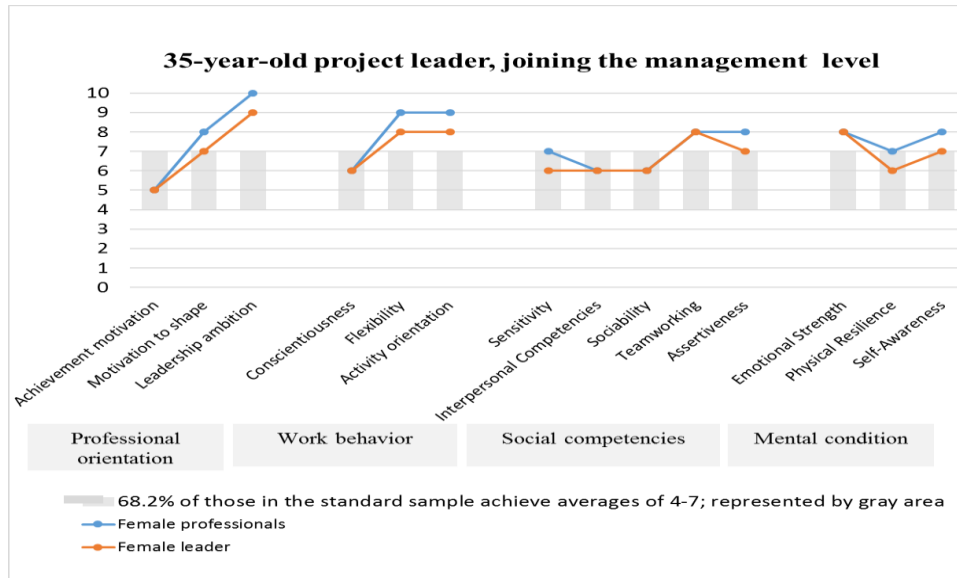


Figure 1: Result for the potential analysis for the reference groups of female professionals and leader for case-example 1 (Source: Own illustration, 2018).

Interpretation of the Results

Figure 1 shows the results of the coachee in comparison to both referential groups. Particularly the dimensions relevant for managerial staff as explained above appear for the coachee as follows: The figure for leadership ambition is above average, for assertiveness at the margins of above average and achievement motivation, sensitivity and interpersonal competencies are ranked average in comparison to the reference group. The dimensions conscientiousness and sociability are average, teamwork is above average. The comparison of the two reference groups indicate that management tasks will be important for the coachee in the future as well. Due to the well-defined profile, the coachee would be subchallenged with a exclusively professional career. The potential would be left unused.

The coachee perceives herself as a leader and identifies with the relevant qualities. She considers her social exertion of influence as competent and feels valued and respected as a team leader. It is important to her, that the workload is appropriate for the expected results. She sees herself as a person, who has to maintain an overview (Hossiep & Paschen, 2003). The markedness of flexibility indicates an ability to easily adjust to changing conditions. She needs new challenges for professional satisfaction, is open to new experiences and wants to contribute innovative ideas to the work process. Due to her time management, she

is able to complete all tasks. In terms of activity orientation, she is capable to perform parallel chores. The interaction with the coachee confirmed the test results. She was perceived as a sensitive person during the coaching session. Due to her empathy, she detects the mood of others and successfully deals with difficult conversational situations. She mentioned to first listen and then react openly in communication. At first she tends to be rather cautious. She depicts herself as a person, who does not show sympathy and antipathy up front. During the coaching session, she described herself as a person who reconsiders her objectives if necessary. She asserts herself in her work field and mediates if problems arise. She successfully convinces others of ideas and so motivates them to set their own goals. She uses her distinct emotional stability and shows resilience due to her additional burden of a coaching education besides work and family. She is used to perform efficient and effective over long periods of time and is aware of her competencies and leadership qualities and uses them. Criticism is dealt with without losing self-confidence [12]. Yet, she questions her external impact, which distinguishes her as a leader: The accordance of the self-perception with the results of the BIP questionnaire was verified in the coaching session. The coachee was not surprised with the result. She indicated a change of attitude and potential with the coaching education and therefore many results are marked above average. The coaching session focussed on possible career developments especially changes in the near future aiming to incorporate professional success with a certain life satisfaction.

Career Planning

After a joint discussion and evaluation of the results, the career planning was finalized by laying out the first steps, those were visualized and agreed on, as shown in figure 2.

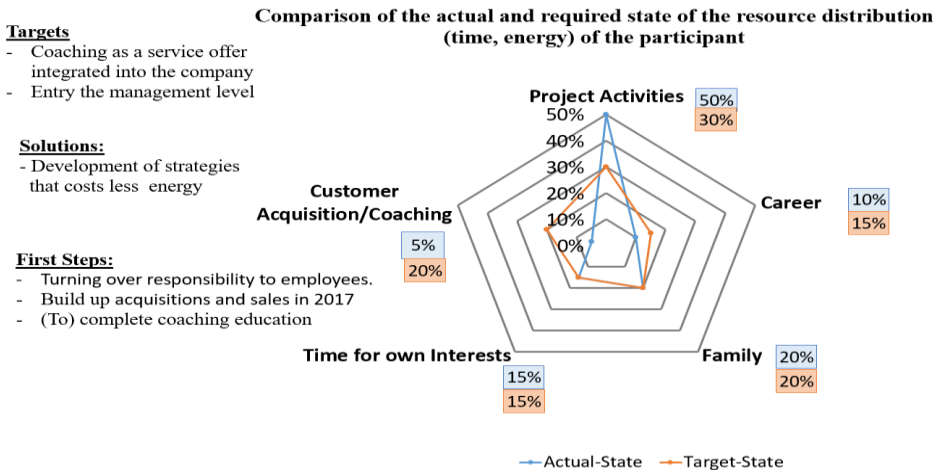


Figure 2: Visual presentation of developed career steps for case-example 1 (Source: Own illustration, 2018).

Evaluation of the Coaching Measure

The method was a case-by-case analysis. Due to the target group of the coaching measure, e. g. graduates of the Faculty of Information Systems and Applied Computer Sciences at the University of Bamberg who work in different areas of computer science and different businesses the method of an experiment could not be chosen. Therefore, the evaluation was carried out three months after each session via a narrative interview and questionnaire. The coaching was rated as successful if new perspectives were evolved and first career steps were achieved

„At the time of the coaching the next career step was clear to me. We worked out the different partial aspects, which belong to my position, and decided on a proportionate time budget for each (variance analysis). Due to that I had a clear understanding of my goals and knew how to operate. This way, the time management is still realistic, partly still with action required, to reach target figures.“ (Coachee)

The current work situation of the coachee did not change organizationally. Project management still takes up too much time. The new employees need assistance due to lacking experience. A high workload for individual topics is therefore necessary and time for distribution and acquisition is missing. Due to a good order situation client acquisition is not in the foreground. Because of capacity reasons some topics need to be postponed. The transition to the management level is developing hesitantly, the scope of action is expanding.

„With some topics, a transition happened, I send offerings etc. autonomously. While I am not satisfied because of the lack of new customers, I am working on contentwise very interesting topics, that I don't want to miss one of them. The most important goal, to be a certified coach, I have reached since the coaching session. I completed my coaching education with the certification (dvct) end of March“ (Coachee).

„Coaching“ as a service in the company seems to work well. The coached clients's feedback is consistently positive. Appointments with current and new clients exist.

5. Conclusion

This case study indicates that career ambitions are affected by personal engagement, existing corporate structures and family situation. The appreciative and supportive corporate structure in this IT-company furthers the coachee's career plans. The insufficient day care capacity is compromised by the husband's and parents-in-law's support and allows her to pursue her target. The most important career goal, the completion of the coaching education, was reached. The goal to enter the management level proved to be more difficult than expected, but is still aspired and is supposed to be realised in the following months. It has to be discussed whether it is actually due to the non-existent financial statements that the can-

didate has not yet completed this career step or whether she must send out even stronger signals in order to reach the level of senior management. Is she possibly attributed lower productivity due to her motherhood? The time management of the Coachee needs improvement.

“The coaching was very useful for me, which worked out the different aspects of my position and provided them with a proportionate time budget. With that, I had the goals clearly in mind, and where something should shift” (Coachee).

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