

Motives and strategies of women pursuing careers in IT and HR managerial positions

Perceptions
of women

Celina Sołek-Borowska and Joanna Tabor-Błażewicz
*Institute of Management, SGH Warsaw School of Economics,
Collegium of Management and Finance, Warsaw, Poland*

241

Received 31 December 2021
Revised 22 December 2022
Accepted 2 March 2023

Abstract

Purpose – Despite more than 50 years of research into gender and work, the impact of women occupying managerial positions persists to be under-represented in mainstream human resource management (HRM) literature. The purpose of this article is to identify and explore the perceptions of women who decided to choose their career path either in IT or HR positions to explore their motivation, career strategies and success factors.

Design/methodology/approach – Twenty semi-structured interviews were conducted with women occupying either IT or HR managerial positions. The study included two datasets: (1) women representing managerial positions in IT and (2) women representing managerial positions in HR.

Findings – Women holding HR managerial positions took action to achieve the intended position in their dream industry since their studies. On the contrary, the choice of the IT industry was one undertaken by candidates with no previous IT experience. Because the IT sector is dominated by men, women in these positions still had to prove their competences.

Research limitations/implications – The research showed that women cannot be ignored in the science, technology, engineering and mathematics (STEM) industry, and they prove a valuable resource for managerial positions in IT or HR departments in many sectors.

Originality/value – The research underpinned a new boundaryless career model for both HR and IT positions.

Keywords Career, Human resources, IT, Women, Strategy

Paper type Research paper

Introduction

It is well documented that women – historically and globally – have been under-represented in science, technology, engineering and mathematics (STEM), as many young women continue to avoid educational, career or entrepreneurial opportunities in these fields. Women show a historic and worrying gap in disciplines related to science and technology except for professions in healthcare. Although most countries have more women than men enrolled in tertiary education, the number of women in tertiary education who choose STEM is around 15% (UNESCO Director-General, 2009–2017, 2017).

JEL Classification — J24: Human Capital • Skills • Occupational Choice • Labor Productivity; J16: Economics of Gender • Non-labor Discrimination; M12: Personnel Management • Executives; Executive Compensation

© Celina Sołek-Borowska and Joanna Tabor-Błażewicz. Published in *Central European Management Journal*. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

The research that has been presented in this paper has been prepared and financed as part of the Ministry of Science and Higher Education in Poland subsidy for Warsaw School of Economics, Collegium of Management and Finance: KZiF/S/37/19.

Funding: Edition of this article was financed under Agreement Nr RCN/SN/0330/2021/11 with funds from the Ministry of Education and Science, allocated to the “Rozwój czasopism naukowych” programme.



Central European Management
Journal
Vol. 31 No. 2, 2023
pp. 241-257
Emerald Publishing Limited
e-ISSN: 2658-2430
p-ISSN: 2658-0845
DOI 10.1108/CEMJ-12-2021-0158

A STEM labor force is a fundamental tool for responding to the needs of the 21st century society. Evidence shows that increasing gender diversity in STEM may lead to more effective problem-solving and improved innovation abilities (Kahn & Ginther, 2017), having long-term effects not only on gender equality but also on economic development. According to Quirós *et al.* (2018), more women in digital jobs would benefit the European gross domestic product (GDP) by up to 16tn euros per year. Improving the position of women in society – especially in the labor market – is a crucial issue in national policies. One of the policies discussed is the implementation of gender quotas in top positions and company boards.

Governments invest significant financial resources in supporting STEM research and commercialization activities due to the assumed socioeconomic returns pertaining to wealth, employment creation and socioeconomic development.

The basic argument for hiring women is that the manager's gender or managerial-level gender composition impact the career prospects of women employees. Research shows that the perception of women as candidates for top positions in companies is different from the perception of men. Female candidates are assessed less favorably compared to identical male candidates. Therefore, females may be judged less favorably as CEO candidates, thus receiving lower remuneration and an overall negative attitude (Górska, 2017).

Despite the appallingly low proportion of women in the IT sector, especially in senior roles, they still can appear in the spotlight. By consistently demonstrating their expertise, women in technological professions have gained enormous recognition around the world. Their actions have demonstrated to the entire world how important it is for the tech industry to hire more women. Moreover, diversity and inclusivity are now important considerations when hiring, which has allowed women to enter jobs previously reserved primarily for men.

We should prepare more women for careers in the tech industry because according to research, demand for IT and programming skills will grow by around 90% over the next 15 years (Bughin, Hazan, Dahlström, Wiesinger, & Subramaniam, 2018). Businesses systematically report about the expected tech skills shortages, especially in the next three years. A study that examined how tech companies' philanthropy and corporate social responsibility (CSR) investments could improve the gender diversity of the tech pipeline suggests that the tech sector must expand its talent pool quickly by investing in and attracting underutilized talent, especially among women (Conway, Ellingrud, Nowinski, & Wittemyer, 2018). Therefore, although few women hold managerial positions, we should still consider: How the women who do occupy managerial positions reached their positions? What were their strategies and motivations? Moreover, the constraints on and support for women in STEM are a relatively under-researched field, despite the importance of such activities.

In light of the above, we seek to investigate the strategies of women employed in HR and IT managerial positions: especially their career motivation, strategies and success factors. We selected these three elements to best understand the three stages of a career: beginning (choice of career), development (career strategies for achieving managerial position) and current state (the success explained by success factors).

We selected these industries because more and more women choose to pursue careers in the IT industry albeit this sector mainly focuses on hiring men. On the other hand, HR departments always employed mostly women. Therefore, this interesting research thread was to show similarities and differences in women's career strategies. To that end, we conducted semi-structured interviews with women occupying managerial positions in IT and HR.

The article is structured as follows. First, we will critically review the relevant literature regarding self-efficacy career models and success factors, which we will follow with a brief presentation of the IT and HR sectors. We will then discuss research methods and present research results, ending with a final discussion and conclusion.

Literature review

Motivation and self-efficacy

Motivation is a psychological persuasion that involves one's eagerness or enthusiasm to endeavor a set goal at the expense of hard work and sacrifices. Motivation is the prime mover of human behavior, a dynamic element (Narayanasamy, Ruban, & Sankaran, 2019), and a critical component of learning, namely a psychological process that describes one's willingness to use the best of their abilities to achieve a singular aim. Thus, motivation is a determining factor, one's inner driving force to accomplish personal or organizational objectives. Kozłowski (2009) defines intrinsic motivation as a force that induces the achievement of values and calls to action; this motivation can manifest itself as an interest or a passion for something.

Intrinsic motivation means that someone engages in acting for the sake of the activity itself. When someone is intrinsically motivated, they act for the pleasure derived from participating in learning (Deci & Ryan, 1985). Intrinsic motivation remains an important construct, reflecting the natural human inclination to learn.

The relationship between the motivation to choose a profession and the motivation to work was also studied by Prokopczuk (2012), whose study on a group of teachers in Poland confirmed that the influence of the desire to do a job (intrinsic motivation) is related to the effectiveness of motivational systems with non-financial rewards.

On the other hand, the study of self-efficacy in making professional decisions derives from Bandura's theory of self-efficacy: self-efficacy is "the belief that it is possible to successfully perform the behavior required to produce results." The theory of self-efficacy has been used to explain that self-efficacy leads to specific behaviors of individuals as a role and direct function (Zimmerman, 2000). Bandura explains self-efficacy in the context of the social learning theory, as self-efficacy determines whether a person takes up a job, what kind of work they take, and how long they continue to work in all aspects of human development (Betz, Hammond, & Multon, 2005). A person with low self-efficacy tends to avoid this behavior while a person with high self-efficacy tends to effectively continue this behavior (Watson, Brand, Stead, & Ellis, 2001). The key assumption of the self-efficacy theory is that one's self-appraisal influences associated outcome expectations and behaviors (Sandau, Bredow, & Peterson, 2013).

Career models

Research on careers found that individuals are increasingly becoming more self-directed (Briscoe, Hall, & Frautschy DeMuth, 2006; Hall, Yip, & Doiron, 2018; Hirschi & Koen, 2021).

A career can be defined as a series of experiences, positions and endeavors gathered in professional life (Juchnowicz, 2014). In another approach, career dynamics describes career progression, namely climbing higher career levels by way of promotion, expansion or role enrichment (Armstrong, 2007). A career can also be viewed as a constellation of many "functions performed by an individual simultaneously or sequentially throughout life" (Cybal-Michalska, 2012).

In the traditional understanding, the course of a career usually proceeds in accordance with the natural geriatric and social processes to which a person is subjected. Stages of career development contain the following elements (Listwan, 2006):

- (1) growth, exploration of opportunities and labor market entry (up to approximately 20 years of age)
- (2) full participation, early development and experimentation (up to approximately 40 years of age)
- (3) effective period of work and late development (up to approximately 55 years of age)

- (4) stagnation and regression (up to approximately 65 years of age)
- (5) retirement (from approximately 65–70 years of age)

Today, new career models are emerging, including such elements as lifelong learning, flexibility and multifaceted development (Syper-Jędrzejczak, 2010). We should mention new forms of work organization, such as remote work, employee leasing, outsourcing, work contracting, self-employment and seasonal work (Bednarska-Wnuk & Januszkiewicz, 2012). In the new career paradigm, there are elements of strategic career planning, potential diagnosis, analysis of strengths and weaknesses, deliberate acquisition of qualifications, planning, consistent pursuit of goals (Sidor-Rzadkowska, 2018), and the choice of a career path consistent with predispositions and beliefs (Chaberek-Karwacka, 2013).

While the traditional career model dominated the industrial economy and assumed assignment to an organization, the modern model of a planned career mostly depends on the individual, who based on the created career portfolio, makes choices for a specific profession, industry and profitable activities. With this assumption, there appeared the phenomenon of externalizing the responsibility assigned to each individual, as excessive orientation on a professional career may lead to an imbalance between work and other areas of life (Tomaszewska-Lipiec, 2016).

High flexibility and new forms of work organization – like remote work, employee leasing, outsourcing, contracting work, self-employment or seasonal work – contribute to the emergence of new types of careers. New career models appeared due to changes observed in the environment, including such concepts as career without borders, protean career or kaleidoscope career:

- (1) **Protean career** may serve as an example of new career models. It assumes that an individual is proactive and independent, focused on development, applies educational and professional experience along with individual predispositions, and is guided by their own value system (Jakimiuk, 2017). Protean career may be considered a development process that becomes a route to self-fulfillment (Hall, 2004). Protean orientation should be expected to be widespread among talented individuals, which might represent a threat to those that seek to develop and retain highly valued employees. Highly protean talented individuals show greater organizational commitment and job satisfaction, but contrary to expectations, they do not show a higher intention to quit (Redondo, Sparrow, & Hernández-Lechuga, 2021).
- (2) **Boundaryless career** is a model in which individuals grow their experience and personal development beyond the boundaries of their organization: they may be switching jobs or even occupations (Alonderienė & Šimkevičiūtė, 2018). New models point to the significant burden of responsibility for own career that rests on the individual. In this model, the worker as the owner of “career capital” is to ensure the effective allocation of this capital and increase their market value (Smolbik-Jęczmień, 2015).
- (3) **Kaleidoscope career** focuses on three key dimensions: authenticity (compliance of tasks with values), balance (good proportions between work and other areas) and challenges (appropriate work difficulty, realization of one’s potential; Sidor-Rzadkowska, 2018). Just like a kaleidoscope produces shifting patterns when one rotates its tube and its glass chips fall into new arrangements so does the kaleidoscope career describe how individuals adjust their careers patterns by rotating aspects of their lives to arrange their relationships and roles in new ways (Mainiero and Sullivan, 2005). Modifications may occur in response to internal changes, like maturation and experience, or to external environmental events, such as unemployment or caregiving.

The three models accentuate that the individual is burdened with responsibility for their own career. The protean and boundaryless career orientations are by far the most prominent and influential forms of career orientations examined in the literature to date (Hirschi and Koen, 2021). The new career models carry great changeability, providing new dynamics and the penetration of boundaries between work and other areas of life. What opens the development of employee competences to achieve success in the implementation of career planning, individuals must engage in such actions as recognizing their own potential, possibilities, values and motivation to take a given career path, then setting a goal, planning a path to reach it, or opening to opportunities, and finally making corrections and changes in a given career path or plan. Individuals are faced with a new career strategy, namely the program of using the diagnosed potential and resources to achieve the goal.

Career success factors

Career success can be viewed as a means to accomplish one's needs and desires through achievements, accomplishments, and power acquisition (Lau & Shaffer, 1999). Career success factors in this study refer to the factors that have helped to achieve career progression in an organization, such as achieving promotion and climbing the career ladder. We reviewed the relevant literature to identify women's career success factors in general.

For career development in a specific professional environment, it is useful to identify the specific individual or environmental characteristics and requirements that lead different people to career success in different industries or organizational structures (Akrivos, Ladkin, & Reklitis, 2007). In every industry, these success factors may be viewed differently. The practical meaning of this knowledge is critical for both organizations and individuals, enabling organizations to have the ability to plan more effectively the systems for personnel training and development. Moreover, this helps individuals to develop career strategies that enable them to achieve greater success in terms of job position, satisfaction and salary (Ellis & Heneman, 1990). After all, many organizations are struggling to hold on to their best and brightest women.

Women's successful performance – particularly in masculine and demanding situations – is perceived as a freak phenomenon that is to stem not from their real abilities but from other external factors (O'Neill, 2002). Similarly, Rigg and Sparrow (1994) indicate that women are caught between two forms of male prejudice. When women behave with qualities perceived as more feminine, men like them yet perceive them as unintelligent and incompetent. At the same time, when women behave and perform assertively, men see them as intelligent and competent, but they are disliked as supposedly being unfeminine.

The IT as a highly gendered industry

The IT industry is among the fastest-growing businesses in Poland. Rapid technological advances provide new opportunities and enable lightning developments in this field, so access to qualified IT staff is becoming an important element for all employers. There is practically no sector of the economy in which the impact of the IT industry would not be noticeable. Women are increasingly entering industries once exclusively reserved for men, including IT. Moreover, let us keep in mind the dynamic of the IT industry, perceived as demanding, fast-changing and requiring abrupt solutions to problems that arise in this industry.

Ten years ago, the IT industry was mainly categorized as a knowledge-intensive industry, competitive, individualized, sex-segregated, gendered and often offering a chilly climate for women in terms of organizational culture. Although at first glance the IT profession appears "gender neutral" (Miller *et al.*, 2000), in which men and women play equal and impartial roles irrespective of gender, and work expectations are set without regard to gender

(Jayaweera, Sanmugam, & Wanasundara, 2006; Sudhakar, Farooq, & Patnaik, 2011), the profession is “gendered” nonetheless (Kovacs, Ryan, & Haslam, 2006). Bhattacharjee and Takruri-Rizk (2011) state that the IT culture is characterized by competitiveness and individualism – and is sexualized and gendered – with women employed in such organizations often having to adjust and fit into the male-dominated work culture. Gender imbalance is still a key issue in the industry (Balcita, Carver, & Soffa, 2002; Valenduc and Vendramin, 2005). During the Richard Dimpleby Lecture, the Internet boom pioneer Martha Lane Fox (2015) identified the under-representation of women in technology companies as a great concern. Moreover, the social constructionist perspective indicates the social construction of IT as a male domain that is to be incompatible with the social construction of women’s identity (Lemons and Parzinger, 2007). Unsurprisingly, STEM industries face the common issue of attracting and retaining women as an untapped resource (Glass, Sassler, Levitte, & Michelmor, 2013). Workplaces in the IT sector are not always ideal for women’s progression and well-being, meaning that women often must adjust and fit into a male-dominated work culture.

Diversity in the technology sector has become an important topic, and most technology companies have pledged to increase the number of women and minorities in their workforce. However, most have made very little progress since. For example, the percentage of female employees at Google has barely changed over the years. The percentage of female gender diversity in large global technology firms increased by only 0.3% points, from 30.6% to 30.9%, between 2014 and 2018 (Tiku, 2018). In 2021, this percentage was 33.7% according to Google’s Diversity Annual Report, which displays a minimal increase.

For the last few years, we see a real change in the number and role of women in IT. According to the newest research “Women in IT in 2022” by No Fluff Jobs, the share of women in Poland in IT jobs is growing steadily, starting from 22.4% in 2019, then 23.2% in 2020, up to 24% in 2021. The perception of IT is changing as women perceive IT as a secure place with good remuneration and flexible working conditions. Nevertheless, the study discovered that gender discrimination continues.

The peculiarity of the HR industry

In recent years, the HR industry has experienced major changes in functions and the scope of competences required from candidates. In the past, HR departments were perceived mainly through administrative, documentation, payroll or legal functions, sometimes called “hard HR.” Over the years, the scope of activity has expanded to include training, employee development, improvement of work quality and satisfaction surveys, which together with recruitment processes (acquisition, deployment and retention) used to be called “soft HR.” Currently, processes such as talent management (Gallardo-Gallardo & Thunnissen, 2016), diversity management (Jayne & Dipboye, 2004) and age management (Stachowska, 2012) are treated as modern personnel functions. Moreover, interest grows in facing the challenges posed by robotization and the use of artificial intelligence in personnel processes like the use of chatbots for recruitment (Przegalinska *et al.*, 2019). The HR departments received new tasks: cost optimization and internal business consulting (Grabus, 2014). Such evolution has created a new position of HR Business Partner, which operates at the interface between personnel and business activities, covering many areas and roles, constantly redefined in the literature and in practice. These new functions pose a challenge to HR departments and require the strengthening or reinvention of competences required by the people who want to associate their careers with this industry.

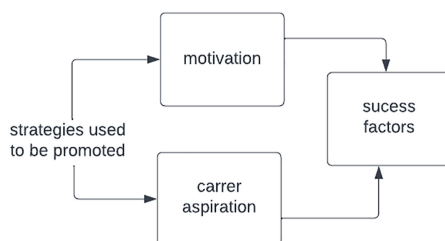
Professionals in the HR industry are now required to act and measure organizational effectiveness, measure their impact on business performance, and maximize the return on investment in the organization’s human capital (Vosburgh, 2007). At the same time, the role of

women in the HR industry is changing, meaning they hold the highest positions in their industry, lead teams, make strategic decisions, advise and sit on the boards of companies. Although technology has entered every field, the HR sector continues to be perceived as softer, staffed mostly with women, whose actions require more care and whose decisions take time.

Analyzing the literature review and reports on the IT and HR industries, we notice the lack of research that would compare the career strategies of women in leadership positions in these two sectors. This study helped to fill the diagnosed research gap. Although these sectors are so different in terms of dynamics, job roles and demands, we believe that there are commonalities among the three discussed aspects: motivation, career strategy and success factors.

Research methods

To capture the similarities and differences between career strategies for women in the two discussed industries, we had to consider the individual perspectives of women to examine strategies used by women in their career development. The study was exploratory, conducted in an interpretivist paradigm to understand the perspectives of women in IT and HR managerial positions. In line with Schütter and Boerner's (2013) study, the exploratory approach is appropriate for two reasons: scant previous research on career strategies of women in IT and HR from a Polish perspective and the need to understand the subjective perceptions and experiences of these women. Based on the literature review, we hypothesized the model C. On the basis of the literature review the following hypothesised model has been developed (see Figure 1):



Source(s): Own elaboration

Figure 1.
The
hypothesized model

The first step of the research procedure was to create a questionnaire for in-depth interviews. We selected the qualitative methodology that enables the exploration of complex situations, while the interpretivist approach enables the investigation of the perspectives of those involved, thereby giving meaning to their experiences (Denzin, 2001). The second step involved choosing the research sample. Concerning the choice of the IT women who decided to partake in the research, the sample was derived using snowball sampling, in which the first two authors contacted a few women through their networks and through them gained further contacts. As a result, we obtained the final sample of 10 women working on various technical projects in companies in Poland. Nonprobability sampling was used to select respondents from the HR industry, who were invited according to their positions and among the corporate partners of the SGH Warsaw School of Economics.

In the third step, we conducted semi-structured interviews in Poland from May to June 2019 with 20 women. The interview participants who expressed an interest in taking part in the research received a participant information sheet, interview guidelines and participation consent form prior to the interview. Interview guidelines were developed by reviewing and

synthesizing the literature. The guidelines were used as the basic structure for conducting the interviews. During the interviews, we asked questions based on the guidelines. However, we simultaneously allowed the interviewees to discuss and elaborate on any further issues that they felt were important. In fact, we deliberately used questions in the interview guidelines that triggered this process. We adopted this approach to encourage the interviewees to introduce their own perspectives to the discussed problem, rather than simply answer the interview questions in a reactive manner. Prior to each interview, we introduced the research, the study objectives, and the basis for the interview, enabling the interviewees to appropriately respond to the questions.

The interviews provided a holistic overview of the perceptions of women in terms of their motivation to choose a career in the desired sector, career strategies and success factors in acquiring their positions. The interviews lasted between 35 and 60 minutes. We made notes about the most important points, including overall impressions and emergent ideas after the interviews. The data were coded with letters and numbers: A1 for the first person from the group of IT managers, A2 for the second and so on. Accordingly, B1, B2 and so on, for the HR group. For detailed data, see [Tables 1 and 2](#). Following this thematic approach, we moved to the fourth stage: labeling, sorting and comparing themes. Furthermore, we systematically compared the interviews to assess any irregularities and differences in the data. In terms of external validity, the aim was more theoretical than statistical generalization in order to capture the main themes based on in-depth qualitative evidence.

The main objective of the research was to fill the research gap by comparing the career strategies of women in leadership positions in the HR and IT industries. The study focuses to answer the following specific research questions:

RQ1. What was the motivation to choose a career in IT and HR?

RQ2. What career strategies did women take to advance in HR and IT?

RQ3. What are the career success factors for career development in HR and IT?

[Tables 1 and 2](#) present the sample characteristics.

The data were analyzed using content analysis, as recommended by [Bardin \(2011\)](#). What emerged is that 80% of interviewees had no IT background, 60% of them were single.

Interviewee	Education background	Employment sector	Age	Marital status	Years of experience in IT
A1	Bachelor's degree – Technological	Construction company	41–45	Single	Above 16 years
A2	Management degree	IT telecommunication	36–40	Single	From 11 to 15
A3	Economics	Banking	36–40	Married	From 11 to 15
A4	Linguistics, Management	Banking	36–40	Single	From 11 to 15
A5	Banking and Finance	Banking	36–40	Married	From 11 to 15
A6	Management	Banking	Below 30	Married	Up to 5 years
A7	IT	Banking	30–35	Single	From 11 to 15
A8	Economics	Banking	36–40	Married with two kids	From 11 to 15
A9	Management	Banking	30–35	Single	From 11 to 15
A10	Finance and Banking	Telecommunication	30–35	Single	From 6 to 10

Source(s): Own elaboration

Table 1.
Profile of the interviewees of women representing IT managerial positions

Table 2.
Profile of the
interviewees
representing HR
managerial positions

Respondent	Education	Sector	Years of experience in HR	Age	Marital status, married
B1	Russian filology	Fintech, IT	16	41–45	Yes
B2	Pedagogy/ andrology	Health	11–15	41–45	Yes
B3	Psychology	IT advisory services, technology, new media	More than 16	41–45	Yes
B4	Psychology	Banking	More than 16	More than 45	Yes
B5	Psychology	Engineering	11–15	36–40	Yes
B6	Social psychology	Media	More than 16	36–40	Yes
B7	Psychology	Consulting	11–15	30–35	Yes
B8	Management and marketing	Real Estate	11–15	36–40	Yes
B9	Economy	Banking	11–15	36–40	Yes
B10	Management	Medical, life-science	More than 16	More than 45	Yes

Source(s): Own elaboration

When analyzing the data, we used the constant comparative method in search of repeating words or topics that were conceptually consistent for all participants. One data segment from the participant was then compared with another by the same or another participant to determine similarities and differences. Based on a similar dimension, the data were grouped together and then assigned a preliminary name to classify key concepts and ideas.

Findings

Motivation to choose a certain career path

In response to **RQ1**, respondents named a few different factors.

We may conclude that the main motivation for women who have chosen a career in the IT industry are the following three factors:

- (1) personal interest in IT
- (2) remuneration and allowances
- (3) high demand for workers in IT positions

Women repeatedly stressed that working in the IT industry can be exciting and interesting as such work is neither boring nor monotonous. They are oriented toward practical thinking, discovered a shortage in the labor market, and decided to seize the opportunity. These results of the study are consistent with the theory of self-efficacy, which states that self-efficacy leads to specific behaviors of individuals as a role and direct function (Zimmerman, 2000). Although the respondents did not have IT education, they felt they could learn specific skills, emphasizing that new IT skills acquisition should be parallel to the learning of other skills.

For women in HR, the remuneration and allowances option was rejected by most respondents as the possible motivator for working in HR departments. On the contrary, the main motivator for taking up work in the HR industry was the opportunity to work with people, educate, influence their development and support them in their professional work. At the same time, this motivator became the benefit of working in this industry. There also appeared a link between work and previously diagnosed interests in psychology and sociology. Another motivator was the possibility of translating into practice issues that

interested respondents already during their studies, as well as the combination of soft and hard competences. The need to combine soft and hard skills at work was also highlighted in the context of modern business requirements for personnel tasks. Table 3 summarizes the results.

The research results showed that the motives for pursuing a career in the IT and HR industries are different; especially the “remuneration and allowances” factor, which was strongly indicated by women in IT and strongly rejected by women in HR. Moreover, we may conclude that respondents chose a career that agrees with their personal interests.

Career strategies

As for the RQ2, the findings showed several strategies. The respondents’ narratives revealed that task orientation, hard work, tackling challenges and risk at work were the main professional expectations in the IT industry. These expectations are consistent with the male characteristics that characterize the male terms: authoritative, tough, individualistic (Syed & Murray, 2008), aggressive, persistent, competitive, assertive (Karakowsky, McBey, & Chuang, 2004), masculine and task-oriented (Erwin, 2010).

Three different strategies were used by the interviewed women not only to survive in the male-dominated IT industry but also to make careers in gender-atypical work environments. In the first strategy, some women adopted masculine traits by referring to Hofstede’s male culture. Other women employed a hybrid approach, aware of the required gender roles in different situations, and thus skillfully combining hard and soft skills. The third strategy focused on self-confidence: the women worked hard to show remarkable achievements.

We may argue that stemming from male norms and ideologies in IT companies, gender-based job role expectations compel women to deliberately engage in gender-related strategies if they are to stay and advance in their positions. Some of the interviewed women adopted male characteristics. The respondents did it in various ways, becoming task-oriented and taking more responsibilities than they were expected to take. The career model that has been undertaken by women in IT was that of boundaryless career, by which women take opportunities as they arise. Most women did not possess an IT background, but they grasped the chance when it appeared and constantly developed themselves.

Among the women in HR positions, two types of career strategies could be observed. The first strategy is connected with planning: both the career direction and sometimes even a specific position in the company structure (like gaining the position of board member before a certain age) were included by respondents in their “career plan.” The interviewed women have meticulously planned their careers from an early age, most often from the period of studies, when they first became interested in HR issues. This plan is consistently implemented in the following years until they reached the desired position. This type of strategy can be combined with a career model described earlier as a protean career, which is characterized by proactivity, focus on development and a high level of self-management.

Another type of career strategy was the choice of the HR industry as a field in which you can pursue your professional interests. Respondents were not planning to achieve any specific, high positions. They stated in interviews that it was the passion for the

IT industry

Personal interest in IT
Remuneration and allowances
High demand for work in the IT sector

Source(s): Own elaboration

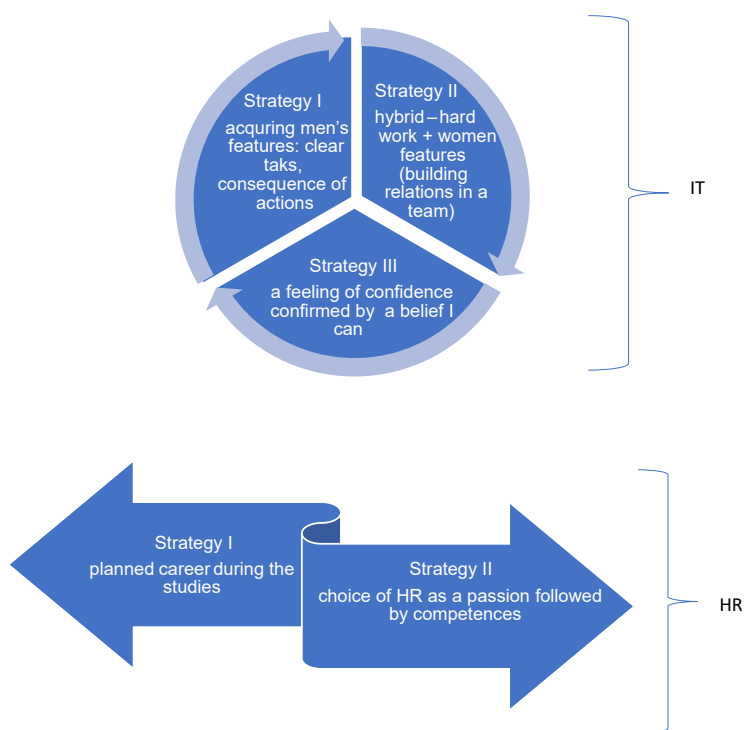
HR industry

Opportunity to work with people
Interest in psychology and sociology
Combination of “soft” and “hard” competences

Table 3.
Main motives for
choosing a career in IT
and HR

implementation of tasks and high competence that resulted in their promotion to higher positions. The respondents admitted they did not expect to reach managerial positions so quickly, if at all. Entering higher ranks in the hierarchy sometimes happens in leaps and bounds. The importance of being open to various possibilities, careful performance of tasks, and taking care of relations with employees was emphasized in the interviews. Such a strategy would correspond to the so-called boundaryless career model, in which it is important to analyze opportunities, exploit links and exceed the scope of one's position while remaining open to new possibilities.

The career strategies are presented in [Figure 2](#).



Source(s): Own elaboration

Figure 2.
Career strategies in
IT and HR

To summarize, there are clear differences in women's career strategies in both industries. The women who entered the male-dominated IT environment showed the need to include in their strategy the actions that prove their position and value. On the other hand, the women who entered the HR environment often did not believe they could achieve such high positions, so they did not plan to reach them, focusing only on their passion for cooperation with others.

Career success factors

We assumed that success factors may be differently understood by respondents, and such an idea was also considered during interviews. Respondents were asked whether they regard themselves as successful women, and how they understand "success." We were thus able to group success factors both for HR and IT positions. The factors may be linked with

recommendations offered to other women who decide to choose their career path either in IT or HR. In response to RQ3, the respondents shared the reflections described below.

In the HR industry, respondents agreed that they felt like successful women, but the dilemma for them was how this success should be understood. They foregrounded their professional achievements, going through a career path, finding a position within an organization, gaining professional experience, learning and development, and above all, the fact that they achieved this status through their own effort, hard work, perseverance and acquired competences. On the other hand, some respondents referred to the concept of success as the ability to reconcile many areas of life: professional work along with family and personal life. When considering the concept of success, the respondents referred also to the burdens associated with the implementation of such a managerial career path.

Respondents admit that being a woman in the IT industry was a challenge at the early stage of their careers. The respondents admitted that they were not taken seriously; at the beginning, they still had to prove their competences, but at a certain level, after confirming them several times, this element no longer affected their further development.

The interviewed women believed that everything depends on the approach, managers, organizational culture and the company's openness to women. The latter element influences lower-level managers to share this opinion, which enables women to develop in such a company and stay there for longer. If the organizational culture is closed, development may not only be hampered but even impossible. The respondents believed that it is very important to have a diverse workforce today. Hiring mixed teams can have a very positive effect on the development of your business. The diversity of employees is very important to business success. Women and men differ not only physically but also in their approach to work, attitude toward clients and performance methods. If the company makes good use of such diversity, mixed teams can become assets contributing to increases in productivity, innovation and creativity of the whole organization.

After analyzing the results of the study, we formulated a list of career success factors presented in Table 4.

Due to the abovementioned changes in the HR industry, the new competences required for HR positions have come first among the factors. Respondents mentioned as the most important the ability to combine specific knowledge about HR with business knowledge, and an understanding of business, which is to allow HR managers to respond to the business needs faster and in a more effective way. Moreover, respondents foregrounded the importance of analyzing individual needs and motives as soon as they arise. Setting development goals is equally helpful, but this does not suffice without their persistent pursuit.

IT industry	HR industry
Proving competences	Combining HR knowledge and business knowledge, continuous development
Diversified teams	Early analysis of personal needs, setting development goals and pursuing them
Courage, taking new challenges	Building professional network, caring about relations, effective communication
Determination, consequence and hard work	Building self-confidence
	Following ones values, finding a job that corresponds with them
	Being open for new possibilities, taking advantage of opportunities

Table 4.
Success factors for
career in IT and HR
industry

Source(s): Own elaboration

On the contrary, women from the IT industry highlighted that at the beginning of their careers, they had to prove their competences, constantly learn and tackle new challenges, as these are obligatory features that must be embraced by women.

Nevertheless, we conclude that both groups show several similar success factors:

- (1) building a wide range of professional relationships, taking care of these relationships, communicating well and building trust
- (2) building self-confidence and professional image
- (3) openness, opportunity, determination, sincerity and independence as the features needed to progress and achieve a dream position.

Limitations

The main limitation of the research was the fact it was conducted on a relatively small group with the use of nonprobability sampling. Therefore, the results cannot be generalized to the entire population. The second limitation is that the data refer only to the Polish market, which further limits the findings generalizability. The third limitation is the list of considered factors. One may conduct research concerning different factors that influence careers. Considering the above limitations, the study may still serve as the basis for the implementation of broader research on a larger research group both in terms of these and other conditions affecting the formation and implementation of a career path in HR and IT.

Discussion and conclusions

The research allowed us to obtain an in-depth picture of the perception of HR and IT women managers' conditions necessary for a career in these industries. Including the determination in pursuing goals and taking advantage of opportunities appearing in the environment – with a strong focus on building and maintaining relationships – the skills and personal qualities indicated by the respondents are the strength of women that contributes to their success.

The women interviewees who hold managerial positions in the HR industry took action to achieve the intended position in their dream industry since their studies. On the contrary, the choice of the IT industry stemmed from its opening to potential candidates without previous IT experience. Because this study was conducted among women professionals, they were aware of the technical skills needed, as after they joined the industry, they systematically raised their educational qualifications, which they mentioned as an important factor in gaining promotion. Since the IT industry is dominated by men, women in these positions still had to confirm their competences and proof that they can achieve the same results as men. Notably, mixed, diverse teams composed of women and men remain rare in both industries. Although diversity and inclusivity are important considerations when hiring employees, the change will not be implemented properly unless employees and management will not experience the real benefits of diversity. Therefore, we very strongly recommend organizing diversity training in both sectors so as to highlight and gain benefits from working in diverse teams.

Our main input regarding practical implications is that only diverse teams will bring added value to the complex work organizations face today. In pursuit of their dream job, women in both industries combine a goal-oriented attitude and consistency in action. The results of the research confirm the trends described in the literature, regarding changes in career models, the increasing role in the field of competences in HR business partnering, and the growing value of the IT sector for women managerial positions. This article contributes to the field by showing that women mostly select the boundaryless career model in both sectors.

Moreover, this study confirmed that character features like determination and self-confidence are very important for career success, while hard skills are essential only next, which agrees with [Fernando, Amaratunga, and Haigh \(2014\)](#).

Our findings provide initial support for future studies to further test the relationships between strategies used by women to gain promotion, their motivation and their career aspirations in search of success factors.

The article opens future avenues of research about exploring the possible career paths that could ensure gender-inclusive development in the IT industry. On the contrary, the HR industry should attract more men to guarantee diversity and inclusivity. Although the IT sector is more open than most other service sectors to employ women, women in IT still face difficulties associated with gender, which is not the case in the HR industry. To confirm our initial qualitative research results, further research might be quantitative. An interesting option would be to conduct the same study in other countries so as to capture similarities and differences.

References

- Akrivos, C., Ladkin, A., & Reklitis, P. (2007). Hotel managers' career strategies for success. *International Journal of Contemporary Hospitality Management*, 19(2), 107–119. doi: [10.1108/09596110710729229](https://doi.org/10.1108/09596110710729229).
- Alonderienė, R., & Šimkevičiūtė, I. (2018). Linking protean and boundaryless career with organizational commitment: The case of young adults in finance sector. *Baltic Journal of Management*, 13(4), 471–487. doi: [10.1108/BJM-06-2017-0179](https://doi.org/10.1108/BJM-06-2017-0179).
- Armstrong, M. (2007). *Human resource management* (Ed. IV). Kraków: Wolters Kluwer.
- Balcita, A. M., Carver, D., & Soffa, M. L. (2002). Shortchanging the future of information technology: The untapped resource. *SIGCSE Bulletin*, 34(2), 32–35. doi: [10.1145/543812.543825](https://doi.org/10.1145/543812.543825).
- Bardin, L. (2011). *Content Analysis* (p. 70). Sao Paulo: Edicoes.
- Bednarska-Wnuk, I., & Januszkiewicz, K. (2012). Oblicza kariery w XXI w. In Mikula, B. (Ed.), *Historia i perspektywy nauk o zarządzaniu. Księga pamiątkowa dla uczczenia jubileuszu 40-lecia pracy naukowo-dydaktycznej Prof. zw. dra hab. Arkadiusza Potockiego*. Kraków.
- Betz, N. E., Hammond, M. S., & Multon, K. D. (2005). Reliability and validity of five-level response continua for the career decision self-efficacy. *Journal of Career Assessment*, 13(2). doi: [10.1177/1069072704273123](https://doi.org/10.1177/1069072704273123).
- Bhattacharjee, S. D., & Takruri-Rizk, H. (2011). Gender segregation and ICT: An Indo-British comparison. *International Journal of E-Politics*, 2(1), 45–67. doi: [10.4018/jep.2011010104](https://doi.org/10.4018/jep.2011010104).
- Briscoe, J. P., Hall, D. T., & Frautschy DeMuth, R. L. (2006). Protean and boundaryless careers: An empirical exploration. *Journal of Vocational Behavior*, 69(1), 30–47. doi: [10.1177/1069072704273123](https://doi.org/10.1177/1069072704273123).
- Bughin, J., Hazan, E., Dahlström, P., Wiesinger, A., & Subramaniam, A. (2018). Skill shift: Automation and the future of the workforce. McKinsey Global. Available from: <https://www.mckinsey.com/featured-insights/future-of-work/skill-shift-automation-and-the-future-of-the-workforce> (accessed 10 November 2019).
- Chaberek-Karwacka, G. (2013). Kształtowanie ścieżki kariery zawodowej zgodnej z zamiłowaniem głęboko zakorzenionymi w świadomości. In Bizon, W., & Poszewiecki, A. (Eds.), *Efektywność innowacyjnych narzędzi dydaktycznych w procesach kształtowania postaw przedsiębiorczych*. Gdańsk.
- Conway, M., Ellingrud, K., Nowski, T., & Wittemyer, R. (2018). Closing the tech gender gap through philanthropy and corporate social responsibility. McKinsey Global. Available from: <https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/closing-the-tech-gender-gap-through-philanthropy-and-corporate-social-responsibility> (accessed 10 November 2019).

- Cybal-Michalska, A. (2012). Kariera jako 'własność' jednostki – rozważania teoretyczne nad definicyjnym credo. *Kultura – Społeczeństwo – Edukacja*, 1. doi: [10.14746/kse.2012.1.12](https://doi.org/10.14746/kse.2012.1.12).
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York. doi: [10.1007/978-1-4899-2271-7](https://doi.org/10.1007/978-1-4899-2271-7).
- Denzin, N.K. (2001). *Interpretive interactionism*. Thousand Oaks, CA: Sage Publication. doi: [10.4135/9781412984591](https://doi.org/10.4135/9781412984591).
- Ellis, R., & Heneman, H. G. (1990). Career pattern determinants of career success for mature managers. *Journal of Business and Psychology*, 5(1), 3–21. doi: [10.1007/BF01013942](https://doi.org/10.1007/BF01013942).
- Erwin, C. (2010). Social identity in diverse workgroups: An empirical investigation. *Research Journal of International Studies*, 15, 69–76.
- Fernando, N. G., Amaratunga, D., & Haigh, R. (2014). The career advancement of the professional women in the UK construction industry. The career success factors. *Journal of Engineering, Design and Technology*, 12(1), 53–70.
- Fox, M. L. (2015). *Dot everyone – power, the internet and you. Richard Dimbleby Lecture. March 30*. Available from: www.bbc.co.uk/mediacentre/speeches/2015/martha-lane-fox-dot-everyone (accessed 10 November 2019).
- Gallardo-Gallardo, E., & Thunnissen, M. (2016). Standing on the shoulders of giants? A critical review of empirical talent management research. *Employee Relations*, 38(1). doi: [10.1108/ER-10-2015-0194](https://doi.org/10.1108/ER-10-2015-0194).
- Glass, J. L., Sassler, S., Levitte, Y., & Michelmore, K. M. (2013). What's so special about STEM? A comparison of women's retention in STEM and professional occupations. *Social Forces*, 92(2), 723–756. doi: [10.1093/sf/sot092](https://doi.org/10.1093/sf/sot092).
- Górska, A. (2017). Perception of women in top managerial positions in Poland. *Central European Management Journal*, 25(1), 16–32. doi: [10.7206/jmba.ce.2450-7814.187](https://doi.org/10.7206/jmba.ce.2450-7814.187).
- Grabus, M. (2014). Wzmacnianie funkcji personalnej w procesie rozwoju firmy. *Zarządzanie Zasobami Ludzkimi*, 1(96), 9–26.
- Hall, D. T. (2004). The protean career: A quarter-century journey. *Journal of Vocational Behavior*, 65(1). doi: [10.1016/j.jvb.2003.10.006](https://doi.org/10.1016/j.jvb.2003.10.006).
- Hall, D. T., Yip, J., & Doiron, K. (2018). Protean careers at work: Self direction and value orientation in psychological success. *Annual Review of Organizational Psychology and Organizational Behavior*, 5, 129–156. doi: [10.1146/annurev-orgpsych-032117-104631](https://doi.org/10.1146/annurev-orgpsych-032117-104631).
- Hirschi, A., & Koen, J. (2021). Contemporary career orientations and career self-management: A review and integration. *Journal of Vocational Behavior*, 126. doi: [10.1016/j.jvb.2020.103505](https://doi.org/10.1016/j.jvb.2020.103505).
- Jakimiuk, B. (2017). Models of career realization: The perspective of individual values and attitudes. *Annales Universitatis Mariae Curie-Skłodowska*, XXX(2). doi: [10.17951/j.2017.30.2.83](https://doi.org/10.17951/j.2017.30.2.83).
- Jayaweera, S., Sanmugam, T., & Wanasundara, L. (2006). *Information and communication technologies and gender in Sri Lanka*. New Delhi.
- Jayne, M., & Dipboye, R. (2004). Leveraging diversity to improve business performance: Research findings and recommendations for organizations. *Human Resource Management*, 12(43). doi: [10.1002/hrm.20033](https://doi.org/10.1002/hrm.20033).
- Juchnowicz, M. (2014). (Ed.). In *Zarządzanie kapitałem ludzkim. Procesy – narzędzia – aplikacje*. Warszawa. doi: [10.5604/01.3001.0009.6314](https://doi.org/10.5604/01.3001.0009.6314).
- Kahn, S., & Ginther, D. (2017). *Women and STEM* (pp. 1–44). Cambridge: National Bureau of Economic Research.
- Karakowsky, L., McBey, K., & Chuang, Y. (2004). Perception of team performance: The impact of group composition and task-based cues. *Journal of Managerial Psychology*, 19(5), 506–525. doi: [10.1108/02683940410543597](https://doi.org/10.1108/02683940410543597).

- Kovacs, D.M.W., Ryan, M., & Haslam, A. (2006). The glass-cliff: women's career paths in the UK private IT sector. *Equal Opportunities International*, 25(8), 674–687. doi: [10.1108/02610150610719137](https://doi.org/10.1108/02610150610719137).
- Kozłowski, W. (2009). *Zarządzanie motywacją pracowników*. Warszawa.
- Lau, V., & Shaffer, M. (1999). Career success and the effects of personality. *Career Development International*, 4(4), 225–231. doi: [10.1108/13620439910270607](https://doi.org/10.1108/13620439910270607).
- Lemons, M.A., & Parzinger, M. (2007). Gender schemas: A cognitive explanation of discrimination of women in technology. *The Journal of Business and Psychology*, 22(1), 91–98. doi: [10.1007/s10869-007-9050-0](https://doi.org/10.1007/s10869-007-9050-0).
- Listwan, T. (2006). (Ed.). *Zarządzanie kadrami*. Warszawa.
- Mainiero, L.A., & Sullivan, S.E. (2005). Kaleidoscope career: An alternate explanation for the 'opt-out' revolution. *Academy of Management Executive*, 19(1), 106–123. doi: [10.5465/ame.2005.15841962](https://doi.org/10.5465/ame.2005.15841962).
- Miller, L., Wood, T. A., Halligan, J., Keller, L., Pike, C. H., Kornbrot, D., & de Lotz, J. (2000). Saying welcome is not enough: Women, information system and equity in work. *Career Development*, 5(7), 379–389. doi: [10.1108/13620430010379939](https://doi.org/10.1108/13620430010379939).
- Narayanasamy, M., Ruban, A., & Sankaran, P. S. (2019). Factors influencing to study medicine: a survey of first-year medical students from India. *Korean Journal of Medical Education*, 31(1). doi: [10.3946/kjme.2019.119](https://doi.org/10.3946/kjme.2019.119).
- O'Neill, R. M. (2002). Gender and race in mentoring relationships: A review of the literature. In Clutterbuck, D., & Ragins, B. R. (Eds.), *Mentoring and Diversity: An International Perspective* (pp. 1–22). Oxford. doi: [10.1016/B978-0-7506-4836-3.50003-3](https://doi.org/10.1016/B978-0-7506-4836-3.50003-3).
- Prokopczuk, A. (2012). Motives for choosing a career vs. Work motivation. *Central European Management Journal*, 20(5), 29–49. doi: [10.7206/mba.ce.2084-3356.28](https://doi.org/10.7206/mba.ce.2084-3356.28).
- Przegalińska, L., Ciechanowski, A., Stroz, P., & Gloor, G. (2019). In bot we trust: A new methodology of chatbot performance measures. *Business Horizons*, 62(6), November–December. doi: [10.1016/j.bushor.2019.08.005](https://doi.org/10.1016/j.bushor.2019.08.005).
- Quiros, C. T., Morales, E. G., Pastor, R. R., Carmona, A. F., Ibáñez, M. S., & Herrera, U. M. (2018). *Women in the digital age*. Luxembourg: Publications Office of the European Union. doi: [10.2759/526938](https://doi.org/10.2759/526938).
- Redondo, R., Sparrow, P., & Hernández-Lechuga, G. (2021). The effect of protean careers on talent retention: Examining the relationship between protean career orientation, organizational commitment, job satisfaction and intention to quit for talented workers. *The International Journal of Human Resource Management*, 32(9), 2046–2069. doi: [10.1080/09585192.2019.1579247](https://doi.org/10.1080/09585192.2019.1579247).
- Rigg, C., & Sparrow, J. (1994). Gender, diversity and working styles. *Women in Management Review*, 9(1), 9–16. doi: [10.1108/09649429410050971](https://doi.org/10.1108/09649429410050971).
- Sandau, K.E., Bredow, T.S., & Peterson, S.J. (2013). *Health-related quality of life, middle range theories: Application to nursing research*. Philadelphia, PA.
- Stachowska, S. (2012). Zarządzanie wiekiem w organizacji. *Zarządzanie Zasobami Ludzkimi*, 3–4, 125–138.
- Schütter, H., & Boerner, S. (2013). Illuminating the work-family interface on international assignments: An exploratory approach. *Journal of Global Mobility: The Home of Expatriate Management Research*, 1(1), 46–71. doi: [10.1108/JGM-09-2012-0012](https://doi.org/10.1108/JGM-09-2012-0012).
- Sidor-Rządkowska, M. (2018). *Coaching kariery. Doradztwo zawodowe w warunkach współczesnego rynku pracy*. Warsaw: Wolters Kluwer Polska.
- Smolbik-Jęczmień, A. (2015). Współczesne przeobrażenia w podejściu do kariery zawodowej jako konsekwencja zmian zaistniałych w globalnej gospodarce. *Management Forum*, 3(3). doi: [10.15611/mf.2015.3.07](https://doi.org/10.15611/mf.2015.3.07).
- Sudhakar, G. P., Farooq, A., & Patnaik, S. (2011). Soft factors affecting the performance of software development teams. *Team Performance Management*, 17(3), 187–205. doi: [10.1108/135275911111143718](https://doi.org/10.1108/135275911111143718).

- Syed, M., & Murray, P. (2008). A cultural feminist approach towards managing diversity in top management teams. *Equal Opportunities International*, 27(5), 413–432. doi: [10.1108/02610150810882288](https://doi.org/10.1108/02610150810882288).
- Syper-Jędrzejczak, M. (2010). Kształcenie ustawiczne istotnym elementem współczesnych karier pracowniczych. In Znajmiej-Sikora, M., & Roszko, E. (Eds.), *Podstawy kształcenia ustawicznego od A do Z*. Łódź.
- Tiku, N. (2018). *Google's diversity stats are still very dismal*. Wired. Available from: <https://www.wired.com/story/googles-employee-diversity-numbers-havent-really-improved/> [accessed 10 November 2019].
- Tomaszewska-Lipiec, R. (2016). Eksternalizacja odpowiedzialności w obszarze kariery zawodowej. *Ruch Pedagogiczny*, 1, 144–145, 149.
- UNESCO. Director-General 2009–2017 (2017). Cracking the code: Girls' and women's education.
- Valenduc, G., & Vendramin, P. (2005). Work organization and skills in ICT professions: The gender dimension. *Proceedings of ICT, the Knowledge Society and Changes in Work*, Den Haag, June 9–10.
- Vosburgh, R. M. (2007). The evolution of HR: Developing HR as an internal consulting organization. *Human Resource Planning*, 30(3), 11–24.
- Watson, M. B., Brand, H. J., Stead, G. B., & Ellis, R. R. (2001). Confirmatory factor analysis of the career decision-making self-efficacy scale among South African university students. *Journal of Industrial Psychology*, 27(1). doi: [10.4102/sajip.v27i1.774](https://doi.org/10.4102/sajip.v27i1.774).
- Zimmerman, J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology*, 25. doi: [10.1006/ceps.1999.1016](https://doi.org/10.1006/ceps.1999.1016).

Further reading

- Bandura (1996). *Self-efficacy: The exercise of control*. New York.
- Directorate-General for Research and Innovation Horizon (2021). She figures 2021. Gender in research and innovation statistics and indicators. doi: [10.2777/06090](https://doi.org/10.2777/06090).
- European Commission (2012). Questions and answers: Proposal on increasing gender equality in the boardrooms of listed companies. MEMO/12/860.
- Foong, C. C., Nazri, N. N., & Holder, N. A. (2018). I am becoming a doctor: Mine or someone else's will? Or does it even matter? A qualitative investigation. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(7), 3253–3267. doi: [10.29333/ejmste/91680](https://doi.org/10.29333/ejmste/91680).
- No Fluff Jobs (2022). Women in IT in 2022. Chances and possibilities of starting and developing career. Available from: <https://nofluffjobs.com/en/insights/report-women-in-it-2022-chances-and-opportunities-for-starting-and-developing-a-career/> (accessed 10 November 2019).
- Women in STEM in Higher Education: Good Practices of Attraction, Access and Retainment in Higher Education (2022). Springer.

Corresponding author

Celina Sołek-Borowska can be contacted at: csolek@sgh.waw.pl

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgrouppublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com