To trust or not to trust ICT? Empirical model of relation between career readiness, trust, and distrust

Elzbieta Kowalczyk[1], Dagmara Lewicka[2], Pawel Zajac[3]

[1] *Poznan University of Economics and Business, Department of Organization and Management Theory, Poland, ORCID: 0000-0003-4611-2246, e.kowalczyk@ue.poznan.pl;*
[2] *AGH University of Krakow, Faculty of Management, Poland, ORCID: 0000-0002-6955-7371, lewicka@agh.edu.pl;*
[3] *AGH University of Krakow, Faculty of Management, Poland, ORCID: 0000-0003-4343-3458, pzajac@agh.edu.pl.*

Abstract: *In this study, the authors focus on two issues: the influence of technology trust and distrust on career readiness and the identification of these trust and distrust factors determined by the respondent's gender. To achieve this goal, the authors collected data using the survey method. The study was conducted among 871 Polish university students aged 18 to 25. Structural equation modeling was used to show potential causal dependencies between variables. The study provides valuable insight into research on trust and distrust in technology. Three groups of factors influencing career readiness were identified: catalysts (ICT trust, human-ICT competition), inhibitors (digital illiteracy, harmful ICT) and neutrals (ICT scepticism, digital anxiety). Variables in the career inhibitor category are not significant for the male respondents. The model used in the study indicates higher readiness among women in the dedication dimension, lower readiness in the engagement dimension, and no gender difference in the sacrifice dimension. The differential role of gender is confirmed in the context of career readiness. Limitations for this type of research are related to the difficulty of reaching the appropriate research sample, and thus its representativeness. In this case, thanks to a large research sample, it was possible to capture the relationships that allow for a better understanding of Generation Z.*

Keywords: *Information and communication technologies, digitalization, Generation Z, SEM.*

JEL Classification: *I23, M53.*

APA Style Citation: Kowalczyk, E., Lewicka, D., & Zajac, P. (2024). To trust or not to trust ICT? Empirical model of relation between career readiness, trust, and distrust. *E&M Economics and Management*, *27*(2), 221–239. https://doi.org/10.15240/tul/001/2024-2-013

Introduction

The dynamic development of information and communication technology (ICT), going hand in hand with the increasing dependence of humans on technology, is increasing interest among researchers in both trust and distrust in this context (McKnight et al., 2020; Wong et al., 2023). The issues of trust and distrust are increasingly becoming the focus of the sub-discipline of technology management, where humans are part of a socio-technical system (Lankton et al., 2015; McKnight et al., 2011). In this system, trust and distrust relate to the relationship between humans and technology (Liu et al., 2017; Thatcher et al., 2013). These relationships are characterized by risk and dependency. The use of technology involves risks taken by technology users. Risks are compounded by users' lack of knowledge and uncertainty regarding the consequences of technology use. On the other hand, an increasing level of dependence on technology can be observed (Ejdys, 2018).

ICT contributes to dynamic changes in society in all aspects of life, including the workplace, learning, and everyday life. These influences are increasingly felt at all levels of education, particularly in higher education institutions. As ICT enables an increasing degree of customization of learning and teaching for individual students, it is worth asking whether and how trust/distrust in ICT technology influences students' career readiness. Trust, on the one hand, helps decision-making by reducing uncertainty about the consequences of interactions and, on the other hand, enhances the desire to establish and maintain a relationship with a trusted person or object. Therefore, according to the literature, it has been assumed that ICT trust positively influences the career readiness of young adults, which is a prerequisite for a successful transition from the education market to the labour market.

As current research indicates, every relationship is also accompanied by a certain level of distrust. Defining distrust in general and with regard to technology in particular is a difficult challenge. So far, research on distrust in relation to technology is at an initial stage (Bewsell, 2012). However, the emotional perspective of distrust is worth investigating. It has important practical value. It allows attempts to better understand the fears, anxieties and barriers of technology users and develop ways to reduce them.

ICT is a driving force for change in the labour market, and technology literacy is the third fastest-growing core skill (World Economic Forum, 2023). Therefore, attitudes toward ICT, such as trust and distrust, are an essential element of career readiness and facilitate the transition from education and training to the labour market. The curriculum of students in the area of career readiness is based on the improvement of digital competencies (Hua et al., 2022; Newell & Ulrich, 2022). People refer to digital competencies to achieve goals that are important to them in an effective manner, including effective functioning in the labour market (Kowalczyk, 2022). Empirical research shows that both students and employers see a relationship between digital competencies and employability (Pirzada & Khan, 2013). The EU Commission defined these competencies in areas such as interacting through technologies, sharing information and content, engaging in online citizenship, collaborating through digital channels, netiquette, and managing digital identity (Ferrari, 2013). Trust treated as attitude (Nguyen, 2022) is necessary in all mentioned areas and according to the DigComp report, attributes are the parts of the digital competences (Vuorikari et al., 2022). We assume that achieving competence in these dimensions requires a balance between trust and distrust of ICT. In particular, we put a lot of sensitive information (e.g., personal data, CV content, copies of documents) in the digital space and, in order to keep our activities safe, we need to realistically assess the ICTs used to verify the tools used.

Therefore, it has been assumed that ICT trust positively influences the career readiness of young adults, which is a prerequisite for a successful transition from the education market to the labour market.

Given the lack of research on distrust in this context, the questions raised are whether and how ICT distrust can be a reason for career exclusion and a barrier to entry into the labour market and whether and how gender determines specific patterns of the impact of ICT trust and distrust on career readiness. This research is part of an increasingly popular trend related to eliciting value-added ICT use behaviours aimed at increasing productivity and learning outcomes.

The rest of the paper is structured as follows. The paper begins by presenting the issue of career readiness. Next, the paper delves into various studies related to trust in ICT and distrust in ICT. It then considers gender issues in relation to career readiness, ICT and trust. The paper then explains the methodology, presents the research results, discusses research limitations, and provides concluding remarks on the findings.

1. Theoretical background

1.1 Career readiness

Even before the COVID-19 pandemic, the working environment was very difficult for graduates entering the labour market due to the enormous technological variability, turbulence, outsourcing practices and remote work (Mahmud et al., 2022; Sholikah, 2021). In the post-pandemic period, as a result of, among other things, a real surge in technological changes, this problem is even greater. Research has shown that in order to increase employability and the chances of a successful career, it is important during one's education to acquire transferable

competencies, which include critical thinking, problem-solving, negotiation and decision making (Mahmud et al., 2022). Digital competencies play an instrumental role with respect to the ones mentioned above, but, importantly, they are also transferable (Kowalczyk, 2022). In addition, qualitative research conducted in France shows that a contextual factor in the form of digital transformation has an impact on the intra- and inter-organizational transferability of public sector employees' careers (Culié et al., 2021). The personal need for continuous development has already become a standard in professional functioning, and employers and training companies increasingly prepare their proposals for training in digital format; thus, it is difficult to learn, train, and develop without digital competencies these days. Although young people often have extensive experience in using technology, this experience often does not transfer to the area of education (Corrin et al., 2020). In the pandemic period especially highlighted that, digital literacy shortages resulted in digital exclusion from the labour market, and this was due to enforced technological changes which became firmly established in the world of work: from job searching, through performing and improving one's work, to receiving remuneration for it. Unfortunately, in Poland, Romania, Bulgaria, Slovakia, Hungary and Cyprus, the risk of digital exclusion in 2020 was 10% higher than in other EU countries. Several reasons for the digital exclusion of employees are observed in enterprises, the main ones being motivational barriers (42%) and mental barriers (38%) (both factors being mentioned jointly in 18% of cases), with other responses including digital illiteracy (30%), material barriers (18%), and no barriers (13%) (Lacova et al., 2022). While it is true that young people studying at universities in Poland are more digitally competent compared to the rest of society, their level of above-basic overall digital skills is comparable to that possessed by 55–64 years-old residents of the Netherlands, which has a leading position in Europe in terms of digital literacy (Eurostat, 2023a).

Career readiness is defined as useful resources in terms of labour market adaptation and willingness to undertake tasks and change status (Sampson et al., 2013). Research shows that career readiness is connected with career maturity, socioeconomic status, and one's psychological locus of control (Sholikah, 2021). Career readiness is also dependent on the ability to make the right decisions, which affect career development as well as a range of family, economic, market, and social conditions. Along with career readiness comes increased insight and adequate assessment of one's abilities, interests, and skills. Career readiness is fostered by a higher level of core self-evaluation and fewer perceived barriers, and it helps a person obtain knowledge about the labour market and adjust their educational choices accordingly (Sampson et al., 2013); on the other hand, a lower level of career readiness means a lower level of occupational knowledge (Hirschi, 2011). According to research conducted in eight OECD countries, financial advantage, which is regarded as a measure of career success, is influenced by the following (OECD, 2021a):

- Thinking about the future, which consists of career certainty (the ability to name an expected occupation in adulthood); career ambition (the expectation of working in a professional or managerial role; career alignment (the educational plans of a student can typically be regarded as appropriate for entry to their occupational expectation); and instrumental motivation towards school (a student is able to draw a connection between the education they are engaged in and a potential future in work). In all the above-mentioned aspects, there is a statistically significant correlation with internet research;
- Exploring the future (through career conversations with teachers; support from family members and friends; engaging with people in work through career talks or job fairs; workplace visits or job shadowing; application and interview skills development activities; occupationally-focused short programmes);
- Experiencing the future, e.g., through part-time work (up to 10–15 hours per week) and volunteering).

Shaping career readiness begins in the early stages of education and is designed to familiarize young people with the requirements of the world of work and support them in exploring and experiencing their chosen occupations. Although the world of work is increasingly digital (including, e.g., remote work, online recruitment and selection, online team communication, online searching and content creation) and requires ICT literacy, it is also inherently

connected with functioning in the real world (OECD, 2021b). It must be emphasized that literacy in using digital tools enhances people's careers, but it does not transfer their functioning to an autonomous, virtual environment.

In order to improve career readiness related to students' digital literacy, curricula are being developed, such as at Florida University, based on developing opportunities within identified areas of artificial intelligence literacy regardless of student discipline. Preparing graduates to address digital challenges based on digital technologies, including artificial intelligence (AI), supports the development of their professional potential and ensures faster adaptation to the challenges of the 21st century workplace (Southworth et al., 2023). There are numerous examples of using AI in everyday life – from self-driving cars to smart homes and voice assistants (Ng et al., 2021). For example, about 66,000 Alexa skills are available in the US, but only 33% of consumers think they are already using various AI platforms. It is estimated that 85 million jobs worldwide could potentially be replaced by AI and other automation technologies by 2025, and intelligent robots could replace 30% of the human workforce globally by 2030 (Nick, 2023). An International Standard Classification of Occupations study conducted in the US and Canada on regulated occupations shows that those with a future (e.g., medical care, veterinary care, IT support) are significantly less threatened by automation than those in decline (e.g., business, finance and insurance; transport and trade; sales, office support and administration; production), where this threat is significant (Mann et al., 2020). It is therefore imperative that the preparation of candidates for a career in the latter occupations should include the ability to work with machines and ICT literacy. It is necessary to use AI in the curriculum, which should be supported by enabling AI in different areas; helping students to know and understand AI; showing how to use and apply AI; creating and evaluating AI; and emphasizing AI-related ethical issues (Southworth et al., 2023).

1.2 Trust and distrust in ICT

The concept of trust is difficult to define, as it is variously understood within the scientific disciplines exploring it, i.e., psychology, sociology, economics, management, political science and others (Lewicka & Zakrzewska-Bielawska, 2020). Most research considers trust in interpersonal relationships, where one party is the trustor and the other the trustee. However, it is worth noting that trust relates to a specific context, e.g., organizational or online, and has a specific scope (Jarvenpaa et al., 2004). A party to a trust relationship is most often a person, but it can also be an institution, an intelligent device, an object that performs a function, or a technology (Lewicka et al., 2017). Of particular interest seem to be considerations of trust related to the emergence of humanoid robots, which are given a mechanical identity (Rakowska, 2021). The concept of trust is shifting to an expanding group of objects, with the assumption that at least one party to this relationship is human. Obviously, this situation raises many questions and concerns. The main one concerns the question of whether and to what extent the category of trust can be applied to the relationship between a human being and a material object. Other questions concern the antecedents of trust, its types and its consequences.

Technology trust is a particular type of trust in which an individual as a user places trust in technology (Xu et al., 2014). Previous definitions of technological trust emphasize the following aspects of the relationship between humans and technology (Lee & See, 2004): i) the expectation of help in achieving goals, i.e., usability of technology; ii) the anticipation of reliability predictability; the expectation of effectiveness and efficiency of devices from the perspective of the creators of the technology; and iii) a particular type of relationship characterized by uncertainty and vulnerability.

Research indicates that the user's level of trust in technology influences the strategy of its use (Bagheri & Jamieson, 2004). A lack of trust in the technology precludes its full use, which can lead to a decrease in productivity and a failure to exploit opportunities. The focus of technology trust is on the context of ICT. This is because people rely on them to an unprecedented degree and the digital environment is highly uncertain and risky. Interesting research contexts related to our research are: trust in online communication (Benlian & Hess, 2011), trust in government websites (Teo et al., 2008), trust in software (Lankton et al., 2014), cloud services (van der Werff et al., 2019), chatbox service (Balakrishnan & Dwivedi, 2021).

A trust construct comprising three dimensions is most used to examine technological

trust (Lankton et al., 2014): i) functionality, the degree to which an individual believes that a system or its components have the necessary functions to accomplish specific tasks or goals; ii) reliability, the degree to which the individual believes that the technology will continuously perform correctly, consistently and flawlessly; and iii) helpfulness, the degree to which the individual believes that the technology will provide adequate and responsive assistance.

It should be noted that these dimensions arose from the adaptation by analogy of the generally accepted dimensions of interpersonal trust, i.e., competence, benevolence and integrity for the purpose of trust in technology. We cannot attribute competence to ICT, but only to functionalities that help people to achieve their goals. Technical systems can show their reliability by providing functionality according to designed capabilities, consistently and continuously.

Technology cannot show benevolence, but it can respond to the needs and expectations of users and thus provide support and assistance to them. Trust in technology is also determined by individual factors such as propensity to trust, gender, and cultural factors. It is also linked to the organizational context with which the use of the technology is associated. The organizational context sets the framework using the institutional dimensions of structural confidence and situational normality, which influence the extent of trust in a given technology (Ejdys, 2018).

Trust is a positive mental state that implies a positive expectation of a partner or object, which allows one to cope with uncertainty about the surrounding world. It helps to act or to respond to various types of uncertain situations or events. Most definitions of trust indicate that, despite positive expectations, the individual is aware of the possible negative consequences of trusting. Trust is, therefore, accompanied by distrust. The question of whether trust and distrust are opposing phenomena in one dimension or whether their relationship is more complex has attracted the attention of researchers (Cho, 2006). Initially, these relationships were described as opposing states located at two opposite ends of a single continuum. In contrast to trust, where positive connotations are assumed, distrust was understood as a negative expectation resulting from the attribution of negative intentions to a person or object, linked to risk and the possibility of harm.

Although trust and distrust are defined by scholars in different ways, it is currently accepted that they are related but distinct and separate constructs. That is, lack of trust is not necessarily associated with high distrust and low distrust with high trust. However, linking the two constructs implies that they influence each other to some extent, e.g., a decrease in distrust may have positive consequences for trust, while on the other hand, a high level of distrust is likely to be a symptom of low trust in the relationship (Lewicka & Zakrzewska-Bielawska, 2022). Researchers leaning towards this view note that loss of trust is not always associated with the development of distrust. They emphasize that distrust can be reduced without inducing trust and vice versa (Ullman-Margalit, 2004). A growing group of researchers also indicate that distrust protects individuals from the negative consequences of relationships (Bewsell, 2012). It causes individuals to take protective measures and to check the consequences of the functionalities offered. Distrust refers to certain negative expectations or things that are feared. It can also be defined as an unwillingness to be vulnerable because of an expected violation (Komiak & Benbasat, 2008). Distrust defines a situation as one in which we need to protect ourselves and increase our vigilance. In this sense, it is a control mechanism that signals risk and reduces uncertainty (McKnight & Chervany, 2001). In this state, one actor has no reason to trust the other and has many reasons to be cautious and vigilant. Distrust can be considered as a mental state, a belief and feeling, and as a behaviour (Bewsell, 2012).

Based on the dimensions concerning interpersonal distrust following McKnight and Chervany (2001), the dimensions of distrust as a belief can be distinguished: i) distrusting belief competence/functional belief, based on the belief that the technology will not meet expectations regarding its functionality; ii) distrusting belief predictability, based on the belief that the technology will not be equally efficient and will not guarantee the expected standardized level of service quality over time; and iii) distrusting belief benevolence/helpfulness based on the belief that the technology is not able to satisfy the needs of a given user, e.g., the expected level of security, guarantee of privacy.

In turn, distrust as a behaviour may include behaviours aimed at reducing perceived risks,

e.g., withdrawal of reliance on technology and, in severe cases, avoidance of technology use.

The Edelman Trust Barometer indicates that although trust in the technology sector remains high, there is growing concern about the effects of rapid technological development and dynamic change, particularly among people in economically weaker countries. Annual reports indicate that people around the world are becoming increasingly distrustful of the world around them, including institutions. Among the factors causing distrust are many that are related to technology. Many respondents express concern about the future of work. These concerns are generated by factors related to technology, automation, the gig economy and the need to retrain from and learn new skills. Furthermore, 73% of global respondents worry about their data privacy, 60% agree that the use of technology to replace human workers will increase income inequality, 65% fear that technology will make it impossible to know if what people are seeing or hearing is real. The above data points to the need for increased research on distrust of technology.

1.3 Gender issues with regard to career readiness, ICT and trust

Researchers' views on career readiness between women and men are not homogenous. The research did not obtain conclusive results. On the one hand, men manifest higher levels of career readiness through career decision self-efficacy and confidence in abilities, while women identify more with their career identity. Women perceive more barriers and experience more role conflict. On the other hand, some studies (including meta-analyses) have not shown that gender is a factor influencing career self-efficacy decisions. This suggests the indirect relationship between gender and career readiness is mediated or moderated by other factors (Parietti et al., 2016). Furthermore, career choices, education and career exploration are strongly marked by direct and indirect social influences (Ikonen et al., 2020). Already, boys' early choice of a "math track" based educational pathway correlates with their greater propensity to compete and makes them more privileged in their career pathway, compared to girls choosing a "literature track" (Buser et al., 2012).

The results of studies on gender differences with regard to ICT literacy are inconclusive, but in those based on self-assessment, higher competencies of male students are often apparent (Siddiq & Scherer, 2019). This is partly due to men's overestimation of their competencies and the harsher self-assessment of women, who additionally feel that there is a cultural acceptance for their lack of competencies in this area (Kowalczyk, 2022). Women are also characterized by a greater fear of ICT, which is not, as is the case with men, modified by experience (Broos, 2005). In contrast, extensive research based on meta-analysis in which ICT literacy was measured through performance-based assessments showed that female students have higher levels of it. While this effect is relatively small, it cannot be ignored (Siddiq & Scherer, 2019). Gender differences also relate to the extent of self-expression. Women express themselves in digital media through blogs about their lives (e.g., style, family), while men write more about professional or technical issues. This greater tendency for women to self-express may be explained by the fact that they (like bloggers and vloggers in general) tend to have higher levels of neuroticism and higher (in relation to people in general) levels of extraversion (Okdie & Rempala, 2020). Also, stereotypes play an important role in gender differences as they can help explain both behaviours and declarations relating to ICT and career choices. Descriptive gender stereotypes describe what women like and what men like, while prescriptive gender stereotypes describe what each gender should like (Heilman & Parks-Sramm, 2007). It is gender stereotypes that, at least to some extent, influence women's less frequent choice of IT careers and their lower interest in technology (Luxoft Poland, 2023), as well as greater social acceptance for gaps in their digital competencies (Raluca & Phillips, 2022). Moreover, women who escape such stereotypes frequently have to face negative social evaluation.

The results of studies on gender differences in trust are also not conclusive. This is due to the multiplicity of study contexts and factors that may influence the results, such as social context, norms, societal structure and gender roles. Experimental research on gender differences in trust provides mixed results (Mukherjee, 2020). Some indicate that men are more trusting than women (Wu et al., 2020), while other studies (Bellemare & Kröger, 2007) find that women are more trusting than men.

Some studies point to factors that demonstrate the contextualization of gender trust, such as social distance, payout level, gender diversity, or lack thereof in the dyads studied (Mukherjee, 2020). Researchers in this area confirm that gender context is worth undertaking in trust research because of the practical implications for, among other things, social policy education and management.

2. Research methodology

Despite the increasing importance of ICT in everyday life and the economy, the state of research on trust and distrust in ICT is still unsatisfactory. Therefore, the following objectives were set in this study: to determine the impact of trust and distrust in ICT on the career readiness of the students surveyed and to identify gender differences in the impact of trust and distrust on career readiness. Three research questions were therefore posed:

RQ1: Whether and how does ICT trust influence career readiness?

RQ2: Whether and how does ICT distrust influence career readiness?

RQ3: Is the presumed relationship between ICT trust and ICT distrust determined by gender?

2.1 Tools

Career readiness was measured using the career readiness scale developed by Bańka (2015), which consisted of 15 items grouped into three factors using factor analysis. This scale was developed in accordance with the contextual approach, and it examines the intensity of behaviours enabling a smooth transition from the education market to the labour market. In other words, it examines a person's readiness to change their dominant role from that of a student to that of an employee.

Items forming this scale, due to the dynamics of changes – generational, technological, and caused by the pandemic – that have taken place in the labour market have been subjected to the principal components factor method which was used to analyze and uncover the underlying structure of the data. To interpret the factors that are considered relevant, an orthogonal varimax rotation of the loading matrix was performed, and the items were sorted (Abdi, 2003). All of the items of the career readiness scale were loaded onto three components, like in the earlier version of the test (Tab. 1). However, the structure of the factors was slightly different. The following three dimensions were distinguished: determination (7 items), relating to courage and perseverance in pursuit of a career; sacrifice (3 items), relating to willingness to make sacrifices and acceptance of being discriminated against in the labour market; and engagement (5 items), relating to bravery and perceiving the career as the main life value.

The same method was used to analyze issues of trust and distrust. The study was able to extract a single component of ICT trust, which includes six items related to the dimensions extracted from the literature review (Lankton et al., 2014), i.e., functionality, helpfulness, reliability,

Tab. 1: PCA results on career readiness dimension – Part 1

Items	Loadings	Communalities	MSA
Career readiness – determination (Eigenvalue 5.452; % of variance 36.35; Cronbach's alpha 0.862; KMO 0.864; Bartlett test sig. 0.000)			
I know that there will always be someone who will know more than me, but I still believe that it is not worth postponing the career of your dreams until you gain more experience	0.774	0.621	0.846
I believe that everyone should fight for their position in the labour market	0.768	0.614	0.891
I believe that anyone who wants their professional career to continue to develop should not hesitate if it is a good time to take it up	0.756	0.585	0.897
I realize that there is a lot of competition in the job market, so I believe it is important to get involved in a career as early as possible	0.754	0.582	0.871

Tab. 1: PCA results on career readiness dimension – Part 2

Items	Loadings	Communalities	MSA
When expanding career opportunities is at stake, I am ready to increase my efforts in the field of interest, even at the expense of my free time	0.640	0.596	0.908
The opportunity to make a career is an important life goal that I cannot give up	0.622	0.606	0.891
My desire to pursue a worthwhile career is so strong that there are a few factors that could deter me from this intention	0.604	0.605	0.871
Career readiness – engagement (Eigenvalue 2.482; % of variance 16.55; Cronbach's alpha 0.804; KMO 0.834; Bartlett test sig. 0.000)			
In order to meet the conditions for starting and continuing the career I am interested in, I am ready to work for some time, even for a very low salary	0.757	0.610	0.893
In order to realize my career plans, I am ready to postpone the moment of getting married until my career stabilizes	0.738	0.573	0.889
For an attractive career, I am ready to persevere even if my loved ones do not accept it	0.710	0.566	0.908
For an attractive career, I am ready to give up stability for a longer period of time, such as buying my own apartment	0.710	0.600	0.917
For an attractive career, I am ready to give up social and cultural entertainment for a long time	0.608	0.384	0.907
Career readiness – sacrifice (Eigenvalue 1.016; % of variance 6.77; Cronbach's alpha 0.707; KMO 0.671; Bartlett test sig. 0.000)			
I would rather live with the constant psychological risk of work than be stuck in poverty	0.742	0.602	0.924
I am willing to sacrifice my personal and family life for a while to gain prospects for a worthwhile career	0.604	0.641	0.912
For a good career, I am willing to endure various risks, such as the risk of being treated badly at work	0.530	0.565	0.890

Note: Extraction method – principal component analysis; rotation method – varimax; loadings below 0.53 are not presented; McDonald's omega 0.873.

Source: own

helpfulness and enjoyment of ICT (e.g., Using ICT makes me have more free time; or ICT is becoming more user friendly (intuitive)).

Based on literature sources, a scale was created to measure distrust in ICT (Komiak & Benbasat, 2008; Lewicka & Zakrzewska-Bielawska, 2022; McKnight & Chervany, 2001). In the case of ICT distrust, five components were created (Tab. 2): harmful ICT (e.g., I am afraid that ICTs can be used to peep at and eavesdrop on people); digital anxiety (e.g., I prefer to limit my use of ICTs for fear of being cheated/exploited); digital Illiteracy (e.g., I try to avoid changing communication devices (such as mobile phones, tablets) because of the accompanying stress); human-ICT competition (e.g., I fear ICT will make humans no longer necessary for certain jobs); and ICT scepticism (e.g., There are significant risks in using ICT). Three items from ICT distrust that did not load on the appropriate component were removed. Responses were given using a 7-point Likert-type scale, where 1 meant strongly disagree and 7 meant strongly agree.

Cronbach's alpha coefficient was used to assess the reliability of the individual scales. Their values exceeding 0.7 were considered as acceptable (Taber, 2018). For the overall

test, McDonald's omega coefficients were determined, its value being acceptable (Hayes & Coutts, 2020). The Kaiser-Meyer-Olkin (KMO) test measures the common variance between the components. The KMO value between 0.8 and 1.0 indicates that the sample is adequate. KMO values between 0.7 and 0.79 are average, 0.6 and 0.69 are medium (Shrestha, 2021). The Bartlett test of sphericity checks whether variables are intercorrelated. When

Tab. 2: Results of PCA on ICT trust and distrust dimensions – Part 1

Items	Loadings	Communalities	MSA
ICT distrust – harmful ICT (Eigenvalue 7.839; % of variance 34.08; Cronbach's alpha 0.876; KMO 0.887; Bartlett test sig. 0.000)			
I am concerned that ICT is being used to manipulate people	0.829	0.728	0.901
I am concerned that ICT can be used to spy and eavesdrop on people	0.814	0.719	0.897
ICT contributes to addiction	0.733	0.604	0.935
I am concerned that ICT can be used to damage someone's image	0.708	0.571	0.946
I am concerned that ICT is significantly changing the way we live	0.655	0.655	0.928
ICT distracts people from real problems in the world	0.629	0.570	0.958
ICT distrust – digital anxiety (Eigenvalue 2.994; % of variance 13.02; Cronbach's alpha 0.851; KMO 0.856; Bartlett test sig. 0.000)			
I am afraid my superiors use ICT to control what I do	0.784	0.671	0.928
I am very concerned that someone is using technology to spy and eavesdrop on everything I do	0.774	0.717	0.913
I am afraid of websites like Google, Yahoo, and Bing because they might allow other people to hurt me	0.725	0.692	0.926
I am afraid that robots may take over the world	0.679	0.645	0.929
I prefer to limit the use of ICT for fear of being cheated/used	0.597	0.655	0.945
ICT distrust – digital illiteracy (Eigenvalue 1.656; % of variance 7.20; Cronbach's alpha 0.793; KMO 0.693; Bartlett test sig. 0.000)			
I try to avoid changing communication devices (such as mobile phone, tablet) because of the stress involved	0.822	0.742	0.888
I feel anxious when I have to learn a new operating system on my computer (e.g., changing from Windows 7 or 8 to Windows 10)	0.816	0.725	0.892
If I need to use the new ICT, I feel anxious that I will not be able to fulfil my tasks as planned	0.649	0.632	0.943
ICT distrust – human-ICT competition (Eigenvalue 1.095; % of variance 4.76; Cronbach's alpha 0.806; KMO 0.659; Bartlett test sig. 0.000)			
I fear that, thanks to the development of ICT, many people will lose their jobs	0.836	0.792	0.858
I am afraid that ICT will make a human no longer necessary in some professions	0.795	0.769	0.861
ICT security is not enough to make me feel safe using this technology	0.600	0.639	0.936

Tab. 2: Results of PCA on ICT trust and distrust dimensions – Part 2

Items	Loadings	Communalities	MSA
ICT distrust – ICT scepticism (Eigenvalue 1.071; % of variance 4.66; Cronbach's alpha 0.761; KMO 0.817; Bartlett test sig. 0.000)			
ICT meets my expectations to a small extent	0.701	0.577	0.925
I believe that ICT companies should be more sensitive to the needs of users	0.677	0.605	0.892
I am afraid that I will not complete my tasks due to the unreliability of ICT	0.620	0.574	0.917
ICT companies fail to deliver on technology functionality promises	0.582	0.514	0.928
Recommendations, even from people who are significant to me, do not increase my acceptance of ICT	0.507	0.409	0.944
The use of ICT involves significant risk	0.473	0.452	0.946
ICT trust (Eigenvalue 4.061; % of variance 0.677; Cronbach's alpha 0.904; KMO 0.900; Bartlett test sig. 0.000)			
I believe that ICT is useful.	0.843	0.711	0.870
I am pleased to be able to use ICT news, including new applications, available updates	0.841	0.708	0.886
Thanks to ICT, I do not miss what is important, and I am up to date	0.829	0.687	0.915
Using ICT helps me make good decisions	0.819	0.671	0.906
Improving my ICT competencies makes me trust these solutions more and more	0.817	0.666	0.925
ICT makes the world a better place	0.786	0.618	0.904

Note: Extraction method – principal component analysis; rotation method: varimax; loadings below 0.47 are not presented; McDonald's omega 0.873.

Source: own

analyzing the test results, *p*-values lower than the assumed significance level are considered appropriate. Components obtained within the separated groups can, therefore, be treated as correct. In each case, the obtained statistics are satisfactory.

2.2 Research group

The research was conducted among Polish university students whose education was in occupations identified by the International Standard Classification of Occupation as threatened by automation (Mann et al., 2020). On the basis of desk research, the authors assumed that their trust/distrust of ICT would be particularly important for their level of career readiness and subsequent professional success. The 871 respondents were a heterogeneous group of students aged 18 to 25 years. Women predominated in the survey, and men accounted for approximately 34% of the respondents (three people refused to disclose their gender). This is due to the overall feminization of education in Poland, with 63% of females and 50% of males aged 18 to 24 in formal education in 2021 (Eurostat, 2023b), the ratio of females to males varies by field of study and was estimated to be 6 : 4 among students in the fields of study included in the survey (Statistics Poland, 2018). Analyzing the respondents in terms of their professional work, at the time of completing the survey, 52% of them were employed, and less than 5% had an allowance or disability pension. 12% declare that they have already worked professionally but quit their job, and 3% were dismissed from work. Two people were on parental leave.

Respondents completed an online version of the questionnaire prepared in Google Forms, which comprised 43 items and a metric. The research was anonymized to ensure full confidentiality of respondents, and approval was obtained from the Research Ethics Committee.

3. Results and discussion

3.1 Results

At the initial stage, the data obtained were analyzed in terms of mean scores of the parameters studied for the whole group and separately for both genders (Tab. 3). Among the dimensions constituting career readiness, the highest score was achieved by the respondents in terms of determination, followed by sacrifice and the lowest by engagement. In addition, women scored significantly higher on the determination dimension and significantly lower on the engagement dimension. This means that they (compared to men) are hopeful and optimistic about their careers and have a sense of self-efficacy, while they perceive it less as the overriding value in life. They do not want to invest all their energy in their career.

On the scales measuring ICT distrust, gender differences were also noted. Women experienced higher levels of digital anxiety and felt more threat from human-ICT competition for jobs.

In the second step of the statistical analysis, the confirmatory factor analysis (CFA) was conducted. The authors assumed the direction of the interaction of the variables which they included in the model. The methodological approach adopted made it possible to verify these assumptions. In the tested model dimensions measuring ICT trust-distrust are causally related to three dimensions measuring career readiness. The three versions of the model were elaborated: for the general group scores and separately for each gender. Thanks to this, differences in the impact of ICT trust on men's and women's readiness for a career have been demonstrated.

The statistics values obtained for each model are similar and acceptable in each case. The best fit of the model was obtained for the full data set. The determination of the model parameters for three significantly different data sets allowed us to increase the credibility of the results obtained. The calculation was carried out using MLE estimators, and the obtained results were standardized. The quality of fit of the models to the data was assessed using typical statistics (Tab. 4).

In the next step of the research procedure, the structural equation models (SEM) were estimated. Visualization of the model is shown in Fig. 1. All constructs in the model were treated as latent variables based on items obtained earlier in exploratory analysis. The calculations were made in the STATA environment. The results of the estimation are presented in Tab. 5.

Tab. 3: Descriptive statistics

Variables Mean		Total scores		Women's scores			Men's scores			Women vs men
		Mean	S.D.	Mean	S.D.	Median	Mean	S.D.	Median	*p* (*t*-test)
Career readiness	Determination	5.18	1.07	**5.30**	**1.06**	**5.43**	**5.04**	**1.02**	**5.14**	**0.000**
	Engagement	3.88	1.34	**3.83**	**1.38**	**4.00**	**4.07**	**1.25**	**4.00**	**0.005**
	Sacrifice	4.13	1.25	4.11	1.30	4.00	4.13	1.16	4.20	0.287
ICT trust		4.74	1.25	4.75	1.23	5.00	4.74	1.27	4.83	0.706
ICT distrust	ICT skepticism	3.88	0.96	3.89	0.96	4.00	3.39	0.91	4.00	0.361
	Digital illiteracy	3.10	1.42	3.17	1.45	3.00	3.00	1.35	3.00	0.327
	Harmful ICT	4.87	1.21	4.95	1.21	5.00	4.85	1.16	4.83	0.198
	human-ICT competition	4.28	1.40	**4.45**	**1.39**	**4.67**	**3.96**	**1.34**	**4.00**	**0.000**
	Digital anxiety	3.22	1.32	**3.31**	**1.33**	**3.20**	**3.09**	**1.29**	**3.00**	**0.011**

Note: Values in bold – coefficients significantly different from zero with significance level 5%.

Source: own

It is crucial to note that the SEM analysis in general is based on correlational analysis. The correlational analysis does not establish causality but rather identifies the presence of a relationship between the variables under investigation. The direction of the relationship is determined solely by the researcher's priori assumptions. Despite its limitations, there is no clearly superior alternative to utilizing SEM analysis. Statistically identifying causality requires having data in the form of time series, which is not yet feasible in studies of this nature.

The patterns revealed in the SEM allowed the authors to categorize the independent variables. The ICT trust dimension was classified as a career catalyst. This variable explains all

Tab. 4: Model fit statistics

	Model 1 (men and women)	Model 2 (women only)	Model 3 (men only)
Absolute measures			
RMSEA	0.058	0.063	0.056
GFI	0.822	0.795	0.748
Incremental-fit measures			
CFI	0.860	0.845	0.853
TLI	0.848	0.832	0.841
Size of residuals			
SRMR	0.071	0.071	0.088

Source: own

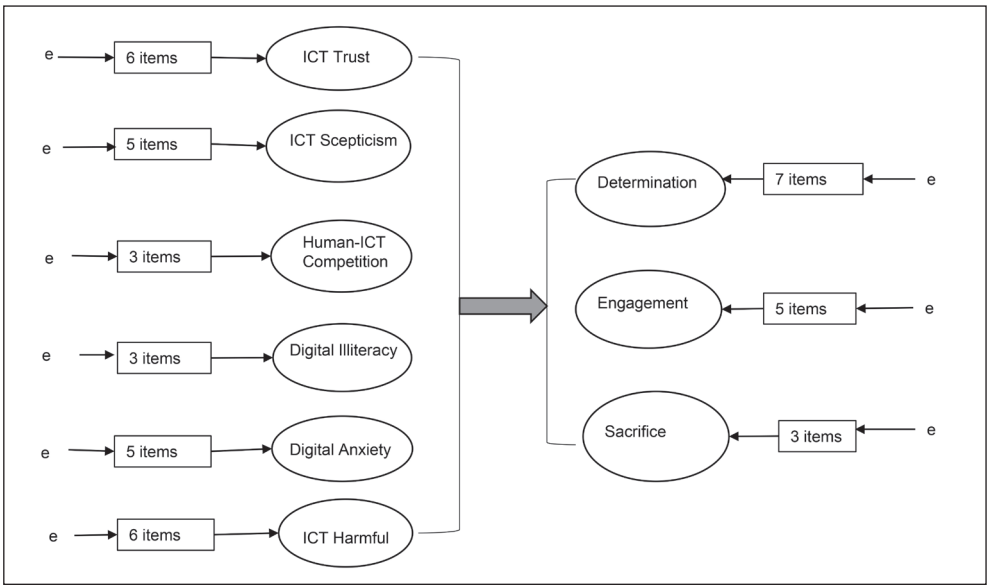

Fig. 1: Visualization of the tested structural equations model

Source: own

dimensions of career readiness. For women, ICT trust has the same effect as in the general model on career readiness. In contrast, for men, the relationship between ICT trust and engagement did not emerge.

The explanatory variable human-ICT competition is a component of the same category as above. It explains in a statistically significant way that an increase in its level contributes to greater determination towards a career goal. This relationship is observed in the overall respondents as well as in the male group. Women, although they achieve significantly higher levels of this variable, it is not a catalyst for them.

The independent variable that makes up the career inhibitors category is digital illiteracy, which statistically significantly explains the decrease in determination in the two models – general and female. The greater the perception of a lack of competence, the lower the career push, the weaker the goal orientation, which may result in difficulties in the transition from education to the labour market and passivity. However, this pattern was not apparent in men, despite the same level of illiteracy declared.

The second variable from the group of career inhibitors is harmful ICT, which statistically significantly determines a decrease in career engagement, as above, in two of the analyzed general and female models. Men do not decrease their engagement under the influence of this type of distrust, despite achieving a comparable perception with women of ICT as a tool that can be used to hurt others.

Tab. 5: The results of CFA

Standardised			Model 1 (men and women)			Model 2 (women only)			Model 3 (men only)		
Career readiness		Trust and distrust	Beta	SE	*p*	Beta	SE	*p*	Beta	SE	*p*
Determination	←	**ICT trust**	**0.29**	**0.04**	**0.000**	**0.27**	**0.04**	**0.000**	**0.34**	**0.060**	**0.000**
Determination	←	**ICT scepticism**	0.12	0.07	0.095	0.12	0.08	0.130	0.12	0.170	0.469
Determination	←	**Digital illiteracy**	**−0.25**	**0.07**	**0.001**	**−0.20**	**0.07**	**0.006**	−0.30	0.200	0.141
Determination	←	**Harmful ICT**	0.06	0.06	0.339	0.04	0.07	0.576	0.12	0.120	0.299
Determination	←	**human-ICT competition**	**0.14**	**0.06**	**0.028**	0.02	0.08	0.803	**0.23**	**0.100**	**0.022**
Determination	←	**Digital anxiety**	−0.01	0.07	0.866	0.00	0.08	0.964	−0.10	0.130	0.442
Engagement	←	**ICT trust**	**0.14**	**0.04**	**0.002**	**0.15**	**0.05**	**0.002**	0.13	0.080	0.086
Engagement	←	**ICT scepticism**	0.10	0.08	0.206	0.13	0.09	0.126	−0.35	0.220	0.102
Engagement	←	**Digital illiteracy**	−0.07	0.08	0.383	−0.10	0.08	0.221	0.37	0.260	0.156
Engagement	←	**Harmful ICT**	**−0.15**	**0.07**	**0.034**	**−0.17**	**0.08**	**0.027**	0.11	0.150	0.458
Engagement	←	**human-ICT competition**	0.08	0.07	0.267	0.05	0.08	0.531	0.05	0.120	0.678
Engagement	←	**Digital anxiety**	0.11	0.08	0.179	0.12	0.09	0.161	0.01	0.160	0.947
Sacrifice	←	**ICT trust**	**0.01**	**0.04**	**0.000**	**0.12**	**0.05**	**0.012**	**0.16**	**0.070**	**0.022**
Sacrifice	←	**ICT scepticism**	0.10	0.08	0.197	0.15	0.08	0.073	−0.32	0.190	0.096
Sacrifice	←	**Digital illiteracy**	−0.04	0.08	0.570	−0.06	0.08	0.438	0.22	0.230	0.343
Sacrifice	←	**Harmful ICT**	−0.02	0.07	0.728	−0.08	0.07	0.307	0.18	0.013	0.179
Sacrifice	←	**human-ICT competition**	0.02	0.07	0.787	−0.02	0.08	0.834	−0.02	0.110	0.867
Sacrifice	←	**Digital anxiety**	0.09	0.08	0.245	0.10	0.09	0.263	0.014	0.14	0.311

Note: Values in bold – coefficients significantly different from zero with significance level 5%.

Source: own

The authors noted yet a third category of variables-career neutral. These included ICT scepticism and ICT anxiety, in their cases there was no statistically significant effect on the career readiness dimensions in any of the models studied.

3.2 Discussion

In response to the identified research gaps, in this study the authors sought to add to the body of knowledge on two issues: the impact of trust and distrust in technology on dimensions of career readiness and the identification of those dimensions of trust and distrust that are determined by the gender of the respondent. Three groups of factors influencing career readiness were identified: catalysts, inhibitors and neutrals (Fig. 2).

The literature reports inconsistent findings on career readiness between men and women. Some show higher readiness among men, others among women, while a third testifies to a lack of gender differentiation (Parietti et al., 2016). The current study observed higher readiness among women in the dedication dimension, lower readiness in the engagement dimension and no gender difference in the sacrifice dimension. This result therefore confirms the differential role of gender in the context of career readiness.

ICT trust fosters goal determination, a sense of career-related self-efficacy and optimism. Since trust itself promotes risk-taking (Waskito et al., 2023), the ICT trust can be seen as a catalyst for enabling proactive career readiness behaviour. Its positive association with engagement indicates a kind of heroism and recognition of career as an overriding life value. According to the authors, it enables women to overcome, identified and described in earlier studies (Parietti et al., 2016), the tendency to feel role conflict and mental barriers. They can also identify more with their profession and career path.

Trust also has its dark side. It can lead to negative consequences, such as an excessive tendency to comply, which can be an invitation to abuse (Molina-Morales et al., 2011). Excessive trust may be associated with

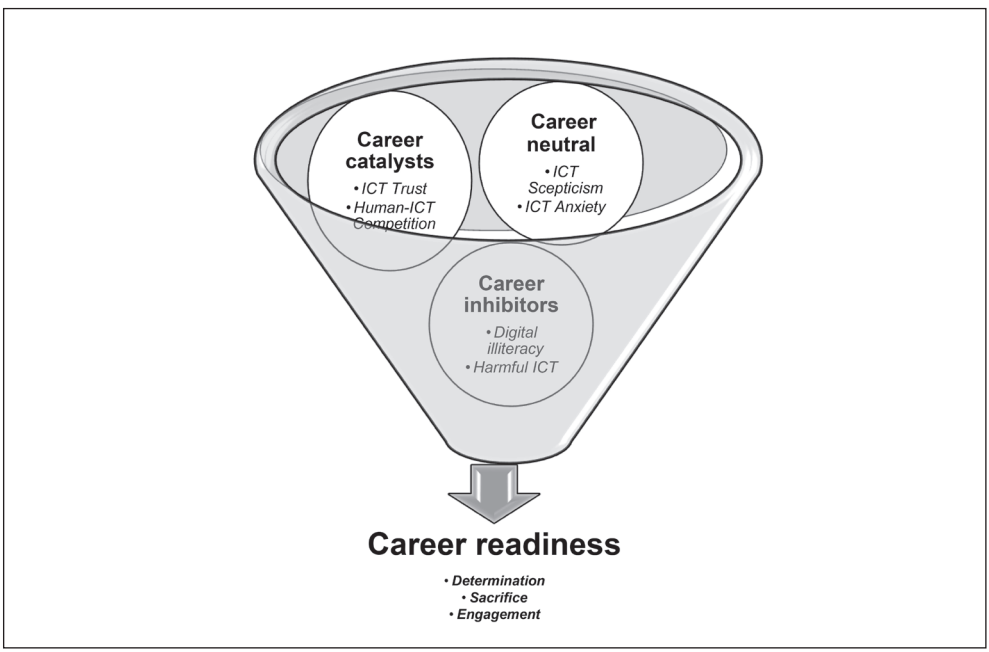

Fig. 2: **Funnel model of trust and distrust in ICT**

Source: own

a weakening of trustor control behaviour and trustee opportunistic behaviour (Lewicka, 2019). Therefore, high levels of ICT trust may result in an increased willingness to make sacrifices and acquiescence to even unethical and discriminatory labour market practices.

Human-ICT competition, on the other hand, loses its catalytic function for women, which can be explained by their fear of competition (Buser et al., 2012), and this hinders career-related action. The perception of ICT solutions as rivals to compete with and who may prove more desirable than a man for a job is stimulating and offers opportunities to gain an advantage, but mainly to men.

Digital Illiteracy in the case of women may be a derivative of their excessive self-criticism (Quirós et al., 2018). In addition, a lowered tolerance for their own incompetence, which, when they perceive it, can have negative effects on career readiness.

The second inhibitor is harmful ICT, causing the willingness to heroically fight for a career and stake everything on it to diminish with the perception of the potential danger of using ICT tools. Research suggests that the lack of confirmation of this relationship in the male model may be due to the fact that they are less vulnerable and less sensitized to unfair actions (Hashmi & Waqar, 2018). A second reason may be the gender-determined brain asymmetry and brain patterns made visible by neuroimaging methods. Female brains, having connections between the hemispheres, are predisposed to holistic judgement, appealing to intuition, and responding empathetically also towards strangers and even hostile people. Male brains are dominated by the connection between structures located on the same side, empathy is "pragmatic," shown only to people sympathetic to them (Keverne, 2017).

In summary, the variables in the category of career inhibitors are not significant for the male respondents. In the case of women, they may make the transition from the education market to the labour market more difficult, prompting them to decrease the intensity of their efforts in pursuing a career.

Relatively low levels of ICT anxiety did not affect career readiness, although the literature reports its negative association with digital skills, job and career satisfaction (Rahmani et al., 2023). The study found that women were significantly more affected by ICT anxiety, which may be explained by their use of anxiety coping strategies such as focusing on emotions or avoidance. These strategies are sometimes rated as less effective than the problem-focused strategies used by men (Mark & Smith, 2018). The results observed in the study may also be due to gender stereotypes determining men's lower willingness to admit to digital anxiety (Mark & Smith, 2018).

3.3 Limitations

Only selected variables were analyzed in the study and although the model tested was a good fit, it is not excluded that other parameters, e.g., other digital competence components, influence career readiness. Furthermore, the study group represented only selected universities and faculties, which may make it difficult to extrapolate the results to the entire population of young adults. The study did not control for individual variables, apart from gender and age, which may have an important role in shaping the relationship between confidence in technology and career readiness, e.g., experience, economic status, interests, and personality traits (especially neuroticism and extraversion).

Conclusions

The pace of change, and the difficulty in distinguishing between what is real and what is not real, intensifie the perceived fears of respondents and make them feel that technology is out of control. This fact necessitates research on trust and distrust in technology and their antecedences and implications.

Directions for future research in identifying the antecedents of trust and distrust in ICTs may concern personal characteristics (e.g., personality, digital skills, education level and truck including in curriculum AI issues, character of job and level of automation, demographic factors, digital experience); organizational characteristics (e.g., organizational support, sector, size of the organization, IT solutions used, compatibility of digital systems used, innovation readiness); or environmental characteristics (e.g., social factors, legal solutions, degree of digitalization of society).

Research on the implications of trust and distrust in ICT may cover areas such as the degree of use of digital solutions, user satisfaction with various ICT solutions, dimensions and dynamics of careers based on digital skills, digital pathologies

– e.g., technophobia and technophilia, characterized by inadequate response to digital stimuli, digital well-being or the functioning of an organization where digital solutions are introduced in personnel management.

The authors also see potential in the application of research methods and procedures involving the use of experiments, including those conducted in augmented reality and longitudinal studies giving the possibility to assess the change in trust over time depending on a set of variables, e.g., experience of use.

In the application dimension, research on ICT trust and distrust can be used to design new technological solutions so that they induce the desired attitudes towards ICT in users, preparation of programmes to promote ICT solutions among groups characterized by distrust towards digital technologies or preparation of methods and workshops to bridge the digital gap and prevent digital exclusion.

Acknowledgments: *The project financed within the Regional Initiative for Excellence Programme of the Minister of Science and Higher Education of Poland, years 2019–2023, grant No. 004/RID/2018/19, financing 3,000,000 PLN and supported by funds granted by the Minister of Science of the Republic of Poland under the "Regional Initiative for Excellence" Programme for the implementation of the project "The Poznań University of Economics and Business for Economy 5.0: Regional Initiative – Global Effects (RIGE)." Publication financed by the subvention for maintenance and development of research potential of AGH University of Science and Technology.*

References

Abdi, H. (2003). Factor rotations in factor analyses. In *Encyclopedia for research methods for the social sciences* (pp. 792–795). Sage.

Bagheri, N., & Jamieson, G. A. (2004). Human performance, situation awareness, and automation: Current research and trends. In D. A. Vincenzi, M. Mouloua, & P. A. Hancock (Eds.), *Human performance, situation awareness, and automation: Current research and trends* (pp. 54–59). Lawrence Erlbaum Associates, Inc.

Balakrishnan, J., & Dwivedi, Y. K. (2021). Role of cognitive absorption in building user trust and experience. *Psychology and Marketing*, *38*(4), 643–668. https://doi.org/10.1002/mar.21462

Bańka, A. (2015). Konstrukcja i walidacja Skali Gotowości do Kariery (SGK) [Construction and validation of the career readiness scale (CRS)]. *Czasopismo Psychologiczne. Psychological Journal*, *21*(2), 273–290.

Bellemare, C., & Kröger, S. (2007). On representative social capital. *European Economic Review*, *51*(1), 183–202. https://doi.org/10.1016/j.euroecorev.2006.03.006

Benlian, A., & Hess, T. (2011). The signaling role of IT features in influencing trust and participation in online communities. *International Journal of Electronic Commerce*, *15*(4), 7–56. https://doi.org/10.2753/jec1086-4415150401

Bewsell, G. R. (2012). Distrust, fear and emotional learning: An online auction perspective. *Journal of Theoretical and Applied Electronic Commerce Research*, *7*(2), 1–12. https://doi.org/10.4067/s0718-18762012000200002

Broos, A. (2005). Gender and information and communication technologies (ICT) anxiety: Male self-assurance and female hesitation. *CyberPsychology & Behavior*, *8*(1), 21–31. https://doi.org/10.1089/cpb.2005.8.21

Buser, T., Niederle, M., & Oosterbeek, H. (2012). *Gender, competitiveness and career choices* (NBER Working Paper No. 18576). NBER Working Paper Series. National Bureau of Economic Research. https://doi.org/10.3386/w18576

Cho, J. (2006). The mechanism of trust and distrust formation and their relational outcomes. *Journal of Retailing*, *82*(1), 25–35. https://doi.org/10.1016/j.jretai.2005.11.002

Corrin, L., Apps, T., Beckman, K., & Bennet, S. (2020). The myth of the digital native and what it means for higher education. In A. Attrill-Smith, C. Fullwood, M. Keep, & D. J. Kuss (Eds.), *The Oxford handbook of cyberpsychology* (pp. 98–114). Oxford University Press.

Culié, J.-D., Vo, L. C., & Philippe, X. (2021). L'influence de la transformation digitale sur l'évolution des carrières: Opportunités perçues et inertie structurelle au sein de collectivités territoriales [The influence of the digital transformation on the evolution]. *Politiques et Management Public*, *38*(3), 277–298. https://doi.org/10.3166/pmp.38.2021.0016

Ejdys, J. (2018). Building technology trust in ICT application at a university. *International Journal of Emerging Markets*, *13*(5), 980–997. https://doi.org/10.1108/IJoEM-07-2017-0234

Eurostat. (2023a). *Individuals' level of digital skills (from 2021 onwards)*. https://ec.europa.eu/

eurostat/databrowser/view/ISOC_SK_DSKL_I21__custom_5241706/default/table?lang=en

Eurostat. (2023b). *Participation rate of young people in formal education by sex age and labour status*. https://ec.europa.eu/eurostat/databrowser/view/EDAT_LFSE_18__custom_959098/bookmark/table?lang=en&bookmarkId=f8dd0a96-2ac7-4224-be85-5b086cbc38b8

Ferrari, A. (2013). DIGCOMP: A framework for developing and understanding digital competence in Europe. In *JRC Scientific and Policy Reports*. Joint Research Centre, Institute for Prospective Technological Studies. European Commission. https://doi.org/10.2788/52966

Hashmi, S., & Waqar, S. (2018). Perceived organizational justice and workplace reactivity among telecommunication employees: Gender as moderator. *Pakistan Journal of Psychological Research*, *33*(2), 521–540.

Hayes, A. F., & Coutts, J. J. (2020). Use Omega rather than Cronbach's alpha for estimating reliability. But.... *Communication Methods and Measures*, *14*(1), 1–24. https://doi.org/10.1080/19312458.2020.1718629

Heilman, M. E., & Parks-Sramm, E. J. (2007). Gender stereotypes in the workplace: Obstacles to women's career progress. In S. J. Correll (Ed.), *Social psychology of gender* (pp. 47–78). Elsevier.

Hirschi, A. (2011). Career-choice readiness in adolescence: Developmental trajectories and individual differences. *Journal of Vocational Behavior*, *79*(2), 340–348. https://doi.org/10.1016/j.jvb.2011.05.005

Hua, D. M., Davison, C. B., & Gondi, V. K. (2022). Enhancing student career readiness through skills infusion. *Information Systems Education Journal*, *20*(5), 27–33.

Jarvenpaa, S. L., Shaw, T. R., & Staples, D. S. (2004). Toward contextualized theories of trust: The role of trust in global virtual teams. *Information Systems Research*, *15*(3), 250–267. https://doi.org/10.1287/isre.1040.0028

Keverne, E. B. (2017). *Beyond sex differences: Genes, brains and matrilineal evolution*. Cambridge University Press.

Komiak, S. Y. X., & Benbasat, I. (2008). A two-process view of trust and distrust building in recommendation agents: A process-tracing study. *Journal of the Association for Information Systems*, *9*(12), 727–747. https://doi.org/10.17705/1jais.00180

Kowalczyk, E. (2022). Digital competences of Generation Z in the area of work and professional development. *Scientific Papers of Silesian University of Technology Organization and Management Series*, *159*, 169–182. https://doi.org/10.29119/1641-3466.2022.159.13

Lacova, Ż., Kurakova, I., Horehajova, M., & Vallusova, A. (2022). How is digital exclusion manifested in the labour market during the COVID-19 pandemic in Slovakia? *Forum Scientiae Oeconomia*, *10*(2), 129–151. https://doi.org/10.23762/FSO_VOL10_NO2_7

Lankton, N. K., McKnight, D. H., & Tripp, J. (2015). Technology, humanness, and trust: Rethinking trust in technology. *Journal of the Association for Information Systems*, *16*(10), 880–918. https://doi.org/10.17705/1jais.00411

Lankton, N., McKnight, D. H., & Thatcher, J. B. (2014). Incorporating trust-in-technology into expectation disconfirmation theory. *The Journal of Strategic Information Systems*, *23*(2), 128–145. https://doi.org/10.1016/j.jsis.2013.09.001

Lee, J. D., & See, K. A. (2004). Trust in automation: Designing for appropriate reliance. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *46*(1), 50–80. https://doi.org/10.1518/hfes.46.1.50_30392

Lewicka, D. (2019). *Zarzadzanie kapitałem ludzkim a zaangażowanie pracowników* [Human capital management and employee engagement]. Wydawnictwo C.H. Beck.

Lewicka, D., Karp-Zawlik, P., & Pec, M. (2017). Organizational trust and normative commitment. *Annales Universitatis Mariae Curie-Skłodowska, sectio H, Oeconomia*, *51*(3), 71–83. https://doi.org/10.17951/h.2017.51.3.71

Lewicka, D., & Zakrzewska-Bielawska, A. F. (2020). Interorganizational trust in business relations: Cooperation and coopetition. In A. F. Zakrzewska-Bielawska & I. Staniec (Eds.), *Springer Proceedings in Business and Economics, Contemporary Challenges in Cooperation and Coopetition in the Age of Industry 4.0* (Vol. 4, pp. 155–174). Springer International Publishing.

Lewicka, D., & Zakrzewska-Bielawska, A. F. (2022). Trust and distrust in interorganisational relations – Scale development. *PLOS ONE*, *17*(12), 0279231. https://doi.org/10.1371/journal.pone.0279231

Liu, F., Xiao, B., Lim, E. T. K., & Tan, C.-W. (2017). Investigating the impact of gender differences on alleviating distrust via electronic word-of-mouth. *Industrial Management & Data Systems*, *117*(3), 620–642. https://doi.org/10.1108/imds-04-2016-0150

Luxoft Poland. (2023). *Raport z badania społeczności IT* [IT community survey report]. https://bulldogjob.pl/it-report/2023

Mahmud, M. I., Amat, S., Abu Bakar, A. Y., Kee, C. P., & Othman, Z. (2022). The effects of career readiness course on students career decision self-efficacy during COVID-19. *Special Education*, *2*(43), 273–281. https://doi.org/10.48080/jae.v17i3.86

Mann, A., Denis, V., Ekhtiari, H., Forsyth, T., & Chambers, N. (2020). *Dream jobs? Teenagers' career aspirations and the future of work*. OECD. https://www.oecd.org/education/dream-jobs-teenagers-career-aspirations-and-the-future-of-work.htm

Mark, G., & Smith, A. P. (2018). Coping and its relation to gender, anxiety, depression, fatigue, cognitive difficulties and somatic symptoms. *Journal of Education, Society and Behavioural Science*, *25*(4), 1–22. https://doi.org/10.9734/jesbs/2018/41894

Mcknight, D. H., Carter, M., Thatcher, J. B., & Clay, P. F. (2011). Trust in a specific technology: An investigation of its components and measures. *ACM Transactions on Management Information Systems*, *2*(2), 1–25. https://doi.org/10.1145/1985347.1985353

McKnight, D. H., & Chervany, N. L. (2001). Trust and distrust definitions: One bite at a time. In R. Falcone, M. Singh, & Y. H. Tan (Eds.), *Lecture Notes in Computer Science. Trust in cybersocieties* (Vol. 224, pp. 27–54). Springer-Verlag. https://doi.org/10.1007/3-540-45547-7_3

McKnight, D. H., Liu, P., & Pentland, B. T. (2020). Trust change in information technology products. *Journal of Management Information Systems*, *37*(4), 1015–1046. https://doi.org/10.1080/07421222.2020.1831772

Molina-Morales, F. X., Martínez-Fernández, M. T., & Torlo, V. J. (2011). The dark side of trust: The benefits, costs and optimal levels of trust for innovation performance. *Long Range Planning*, *44*(2), 118–133. https://doi.org/10.1016/j.lrp.2011.01.001

Mukherjee, S. (2020). What drives gender differences in trust and trustworthiness? *Public Finance Review*, *48*(6), 778–805. https://doi.org/10.1177/1091142120960801

Newell, M. J., & Ulrich, P. N. (2022). Competent and employed: STEM alumni perspectives on undergraduate research and NACE career-readiness competencies. *Journal of Teaching and Learning for Graduate Employability*, *13*(1), 79–93. https://doi.org/10.21153/jtlge2022vol13no1art1534

Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). Conceptualizing AI literacy: An exploratory review. *Computers and Education: Artificial Intelligence*, *2*, 100041. https://doi.org/10.1016/j.caeai.2021.100041

Nguyen, C. T. (2022). Trust as an unquestioning attitude. In *Oxford Studies in Epistemology* (Vol. 7, pp. 214–244). Oxford University Press. https://doi.org/10.1093/oso/9780192868978.003.0007

Nick, G. (2023). *101 artificial intelligence statistics* [Updated for 2023]. TechJury.

OECD. (2021a). *Career readiness in the pandemic: A summary of project findings*. Organisation for Economic Co-Operation and Development (OECD). https://doi.org/10.1787/e9544a77-en

OECD. (2021b). *Career readiness in the pandemic: Insights from new international research for secondary schools* (Vol. 44). Organisation for Economic Co-Operation and Development (OECD). https://doi.org/10.1787/8b1215dc-en

Okdie, B. M., & Rempala, D. M. (2020). Socially connecting thgrough blogs and vlogs: A social connections approach to blogging and vlogging motivation. In A. Attrill-Smith, C. Fullwood, M. Keep, & D. J. Kuss (Eds.), *The Oxford handbook of cyberpsychology* (pp. 394–412). Oxford University Press.

Parietti, M., Lower, L., & McCray, K. (2016). The career readiness of intercollegiate athletes: Is there a gender gap? *Journal of Issues in Intercollegiate Athletics*, *9*, 283–302.

Pirzada, K., & Khan, F. N. (2013). Measuring relationship between digital skills and employability. *European Journal of Business and Management*, *5*(24), 124–134.

Rahmani, D., Zeng, C., Chen, M., Fletcher, P., & Goke, R. (2023). Investigating the effects of online communication apprehension and digital technology anxiety on organizational dissent in virtual teams. *Computers in Human Behavior*, *144*, 107719. https://doi.org/10.1016/j.chb.2023.107719

Rakowska, A. (2021). *Różnorodność zasobów ludzkich w organizacji – Istota, dylematy, wyzwania* [Diversity of human resources in the organization – Essence, dilemmas, challenges]. Wydawnictwo UMCS.

Raluca, D., & Phillips, T. (2022). The gender digital gap: Shifting the theoretical focus to systems analysis and feedback loops. *Information, Communication & Society*, *26*(10), 2071–2087. https://doi.org/10.1080/1369118x.2022.2069507

Sampson, J. P., McClain, M., Musch, E., & Reardon, R. C. (2013). Variables affecting readiness to benefit from career interventions. *Career*

Development Quarterly, *61*(2), 98–109. https://doi.org/10.1002/j.2161-0045.2013.00040.x

Sholikah, M. (2021). Roles of career maturity mediating the effects of locus of control and socioeconomic status on career readiness. *International Journal of Evaluation and Research in Education (IJERE)*, *10*(3), 781–789. https://doi.org/10.11591/ijere.v10i3.21127

Shrestha, N. (2021). Factor analysis as a tool for survey analysis. *American Journal of Applied Mathematics and Statistics*, *9*(1), 4–11. https://doi.org/10.12691/ajams-9-1-2

Siddiq, F., & Scherer, R. (2019). Is there a gender gap? A meta-analysis of the gender differences in students' ICT literacy. *Educational Research Review*, *27*, 205–217. https://doi.org/10.1016/j.edurev.2019.03.007

Southworth, J., Migliaccio, K., Glover, J., Glover, J., Reed, D., McCarty, C., Brendemuhl, J., & Thomas, A. (2023). Developing a model for AI across the curriculum: Transforming the higher education landscape via innovation in AI literacy. *Computers and Education: Artificial Intelligence*, *4*, 100127. https://doi.org/10.1016/j.caeai.2023.100127

Statistics Poland. (2018). *Adult education 2016. Statistical analyses*. https://stat.gov.pl/obszary-tematyczne/edukacja/edukacja/ksztalcenie-doroslych-2016,3,3.html

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, *48*(6), 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Teo, T. S. H., Srivastava, S. C., & Jiang, L. (2008). Trust and electronic government success: An empirical study. *Journal of Management Information Systems*, *25*(3), 99–131. https://doi.org/10.2753/mis0742-1222250303

Thatcher, J. B., Carter, M., Li, X., & Rong, G. (2013). A classification and investigation of trustees in B-to-C e-commerce: General vs. specific trust. *Communications of the Association for Information Systems*, *32*(1), 107–134. https://doi.org/10.17705/1cais.03204

Ullman-Margalit, E. (2004). Trust, distrust and the in-between. In R. Hardin (Ed.), *Distrust*. Russell Sage Foundation.

Van der Werff, L., Fox, G., Masevic, I., Emeakaroha, V. C., Morrison, J. P., & Lynn, T. (2019). Building consumer trust in the cloud: An experimental analysis of the cloud trust label approach. *Journal of Cloud Computing*, *8*, 6(2019). https://doi.org/10.1186/s13677-019-0129-8

Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2, the digital competence framework for citizens: With new examples of knowledge, skills and attitudes*. Publications Office of the European Union. https://doi.org/10.2760/490274

Waskito, J., Kussudyarsana, K., Imronudin, I., & Linansya, W. (2023). The impact of organizational justice on the organizational citizenship behavior of contract workers in Indonesia: The role of exchange quality and multifocal trust. *Gadjah Mada International Journal of Business*, *25*(1), 72–92. https://doi.org/10.22146/gamaijb.65476

Wong, L.-W., Tan, G. W.-H., Ooi, K.-B., & Dwivedi, Y. (2023). The role of institutional and self in the formation of trust in artificial intelligence technologies. *Internet Research*, *34*(2), 343–370. https://doi.org/10.1108/intr-07-2021-0446

World Economic Forum. (2023). *Future of jobs report 2023*. https://www.weforum.org/reports/the-future-of-jobs-report-2023/

Wu, Y., Hall, A. S. M., Siehl, S., Grafman, J., & Krueger, F. (2020). Neural signatures of gender differences in interpersonal trust. *Frontiers in Human Neuroscience*, *14*, 225. https://doi.org/10.3389/fnhum.2020.00225

Xu, J., Le, K., Deitermann, A., & Montague, E. (2014). How different types of users develop trust in technology: A qualitative analysis of the antecedents of active and passive user trust in a shared technology. *Applied Ergonomics*, *45*(6), 1495–1503. https://doi.org/10.1016/j.apergo.2014.04.012