

## Work readiness of graduates in the digital age: A literature review

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### ABSTRACT

The robust development of the knowledge economy, profound globalization process, and digitalization in every corner of modern life have created an urgent need for high-quality labour. Thus, this review-of-literature research is an attempt to synthesize theories relating to students' work-readiness in the digital era. The study draws on the information collected from Scopus-data-based journal articles published from 2010 to 2023 pertaining to the work readiness of graduate students, factors affecting their capabilities to meet the job requirements in the digital age, and recommendations for stakeholders. It is revealed that the dominant factors influencing students' work readiness include human capital, social capital, cultural capital, psychological capital, and digital literacy. Some suggestions to enhance work-readiness for graduate students in the digital workplace are further discussed. Accordingly, the need to raise students' awareness of self-improving their capital, the integration of career responsiveness into educational programs, and the collaboration between enterprises and universities should be taken into consideration.

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### 1. Introduction

The robust development of the knowledge economy, along with the profound globalization process, has created an urgent need for high-quality labor. Accordingly, university graduates must meet the requirements of competence and knowledge in their field of study and concurrently master skills relating to the job (Harvey, 2001). As a consequence, the ability to meet the job requirements of students has attracted a lot of attention from researchers because this issue is considered a predictor of employability, work performance, and career prospects of graduates (Caballero, Walker, & Fuller-Tyszkiewicz, 2011). Many studies have asserted the close link between higher education and employment in which the work readiness of graduate students acts as an important outcome standard of higher education (Billett, 2012; Oprean, 2007).

Work-readiness (also expressed in some terms such as *work preparedness*, and *workforce readiness*) is defined as a set of competencies, knowledge, and attitudes to facilitate students actively participating in the job market and contribute to the overall goals of the organization (Mason, Williams, & Cranmer, 2006). Communication skills, technology savvy, problem-solving and teamwork skills, ability to learn and understand the world of work, etc., are prerequisite criteria of candidates in today's labour market. These factors contribute to the success of students when participating in real work. Particularly, in the current digital era, many new jobs are constantly formed, accompanied by a rapid change in the working environment, leading to the mastery of many new job skills. Therefore, individuals must perpetually improve their knowledge and skills

to keep up with the requirements of the labor market. For this reason, equipping students with career-ready skills in the digital age has been one of the top priorities of universities around the world because it is a means to enhance the quality of human resources. Thus, there have been relatively many studies in the world related to the ability to meet job requirements and factors affecting the ability of graduates to meet the job requirements.

In Vietnam, the past two decades have witnessed the increasing attention of scholars on student employability issues. Studies have addressed the lack of job-readiness skills and the shortage of job skills among graduates, which consequently fall short of employers' expectations (Tran, Ngo, Nguyen, Le, & Ho, 2022). Tran, Vu, and Ngo (2021) also discovered that there is relatively a mismatch between graduate skills and employers' requirements. Specifically, graduates lack important attributes including professional and soft skills. Additionally, in response to today's dynamic labour market, research that addressed employability in the post-Covid labor market and digital transformation was implemented to identify the requisite skills for graduates (Huynh & Nguyen, 2021). Although these authors referred to the ability to meet job requirements in the digital transformation, including graduate capital, 4.0 skills, and attributes, the in-depth conclusions about digital skills and 4.0 skills have not been satisfactorily mentioned.

In short, there is still ostensibly a research gap in the employability of Vietnamese students in the digital era which motivates us to conduct a review of the literature regarding graduate work readiness worldwide and nationwide. This study is an attempt to investigate the concept of work readiness, job requirements in the digital age, factors affecting the capability to meet the job requirements in the digital age, and recommendations for stakeholders in enhancing graduate employability.

## **2. Research methodology**

### **2.1. Research overview**

Drawing on the review of literature, this study aims at synthesizing, systematizing and developing the theories concerning graduate work-readiness in the digital age. The knowledge in this research is intended to provide theoretical background and useful insights to lay the foundation for empirical studies about graduate work readiness in the digital era.

The study delves into the concept of work readiness, job requirements in the digital era, factors influencing the ability to meet job requirements in the digital era, and recommendations for students, university leaders, and organizations to enhance graduate employability in the new context.

### **2.2. Research methods**

This study overviewed the research collected from the Scopus database in the year 2010 - 2023. The reason for choosing research articles within this period is that the recent decade has witnessed an explosive discussion of digitalization and its impacts on social changes. Therefore, a great number of scholarly articles worldwide have been published to address this issue. The data included 30 research articles regarding graduate work-readiness in the digital age.

In order to obtain the necessary information, initially, the author used the search terms to collect the articles from Scopus namely: "work readiness", "digital era", "digital age", "graduate employability", "work readiness in digital age/era", "solutions/recommendations to enhance work-readiness". Subsequently, some criteria were applied to select the relevant papers including:

- The articles were published during the years 2010 - 2023;
- The articles are full-paper version;
- The articles in English as they are published in Scopus-indexed journals;
- The articles must relate to graduate work-readiness;
- The articles must relate to employment in the digital era.

Subsequently, the data was researched and categorized in terms of concepts of graduate work-readiness, job requirements in the digital age, factors influencing the capability to meet the job requirements in the digital age, and recommendations for students, higher education institutions, and enterprises to enhance graduate work-readiness.

The author then scrutinized and synthesized the relevant information to work on the paper. Specifically, of 30 articles, there are 03 literature review papers, 02 conference papers, and 25 journal articles. The literature review papers provide in-depth definitions and concepts about graduate work readiness and job requirements in the digital age. The other research from conferences and journals are all empirical studies that encompass both quantitative and qualitative research. These studies collected data from varied participants including students, graduate students, employees, higher education institution leaders, and enterprise managers via some major research instruments such as questionnaires and interviews.

### **3. Research results and discussion**

#### ***3.1. Concept of graduate work readiness***

Graduate work readiness is defined as the set of skills, knowledge, attitude, and level of understanding that enables employees to actively participate in the job market and contribute towards corporate goals (Caballero & Walker, 2010). People who are able to meet job requirements can successfully satisfy the necessary criteria at work (Harvey, 2001). Professional knowledge, communication skills, ability to use technology, problem-solving skills, teamwork skills, ability to learn, and understanding of the world of work, etc. are required attributes of candidates in today's workplace. Work readiness is also considered an important predictor of students' employability (Bridgstock, Goldsmith, Rodgers, & Hearn, 2016) and students' possibility to succeed at work (Caballero et al., 2011).

#### ***3.2. Job requirements in the digital age***

Nowadays, rapid changes in technology, digitization, and globalization are creating dramatic transformations in the structure of the workplace. Technologies such as artificial intelligence, robotics, 3D printing, big data, Internet of Things, machine learning, nanotechnology, renewable energy technology, and biotechnology are becoming more and more mainstream. These technologies gradually eradicate old jobs and create new ones (OECD, 2018). Accordingly, new technologies require new skills relevant to performing highly skilled jobs (Campbell, 2018). New technologies and knowledge are constantly being updated, which means that workers must constantly retrain and upgrade their skills to maintain employability (Deloitte, 2020). In this context, fresh graduates will encounter a highly competitive, dynamic, and volatile labor market (Lock & Kell, 2020). Therefore, to thrive in the digital age, apart from qualifications and professional knowledge, students need to develop other competencies to improve their employability. Van Laar, Van Deursen, Van Dijk, and Haan (2017) emphasize that skills such as

problem-solving, communication, and digital content creation are essential elements in the digital age. Qualified individuals can have the ability to use high technology, communicate in a digital environment, share resources through online tools, connect and collaborate with colleagues through digital tools, interact with and participate in professional communities, and possess cross-cultural communication skills. These skills are closely linked to job requirements in the digital age, and become the key attributes to help graduates meet the needs of the labor market in the digital era.

### ***3.3. Factors affecting the capability to meet the job requirements in the digital age***

In order to meet the job requirements when entering the labor market, along with professional knowledge students need to equip themselves with necessary competencies such as communication skills, time management skills, lifelong learning, pre-graduation work experience, creative thinking, critical thinking, etc. (Picatoste, Pérez-Ortiz, Ruesga-Benito, & Novo-Corti, 2018). Up to now, the conceptual framework of work capacity to meet students' job requirements has been proposed by many researchers. Caballero et al. (2011) developed a conceptual framework of job responsiveness with four factors including personal characteristics, understanding of the job (Organizational acumen), work competence, and social intelligence. Holmes (2013) also suggested a model including factors affecting students' employability and made some recommendations to integrate these factors into training programs. These factors are human capital, social capital, and personal behavior.

Later, Tomlinson (2017) extended this concept and proposed five types of competencies into the conceptual framework, including human capital, social capital, cultural capital, psychological capital, and identity capital. In another study, Clarke (2018) proposed a model of six factors affecting students' work readiness, namely: human capital, social capital, personal attributes, personal behavior, work readiness, and the labor market.

Other studies also postulated that in order to meet the demand for a digital workplace; the following capital is needed: human capital, social capital, cultural capital, psychological capital, and digital literacy. Specifically, human capital refers to 1) the innate capacity associated with each person's inborn factor, 2) professional knowledge gained through training, and 3) skills and experiences accumulated from life and work (Bontis, 1998). Hinai and Bhuiyan (2021a) affirmed that human capital has a strong influence on graduate's ability to meet the job requirements in the digital age. Social capital is defined as the social competence formed from recognition and networks that individuals can utilize to seek their own benefits. This competence enables people to function properly in today's digitalized world (Hinai & Bhuiyan, 2021b). Additionally, cultural capital encompasses values, knowledge, and skills relating to the culture of an individual, which facilitates the success of a corporation. Cultural capital has a positive relationship with employees' work performance (Santos, Neto, & Verwaal, 2018). Moreover, psychological capital, including self-efficacy, hope, optimism, and resilience, is also a required criterion in the current workplace. Masole and Dyk (2016) stated that this competence exerts considerable influence on work readiness and work performance as it consolidates self-belief and self-awareness to achieve job objectives. Finally, digital literacy is an essential competency to integrate into today's knowledge society. This competence comprises knowledge, skills, and behaviours relating to the effective use of digital devices such as smartphones, tablets, and laptops in collaborative and communicative activities. In the past, computers operated independently and separately; gradually transformed into data connections on the Internet and social media. In the digital age, digital competence plays

the role of an essential “life skill” which enables employees to participate in online communities and social networks with behavior norms. They also evaluate information, perform logical analysis, and capture value-added solutions. On a global scale, big corporations and national governments are crazing for the digital workforce (Abas, Yahaya, & Din, 2019). As a result, there is an urgent need for a change in organizational culture and learning style for all businesses in the world. As digitalization results in the creation of new jobs which also means a change in job skills, graduates need to equip themselves with digital capabilities to keep up with the requirements of the labor market. Accordingly, Unesco (2018) proposed a digital competency framework including seven competency groups: 1) operating software equipment, 2) information and data capacity, 3) communication and cooperation in the digital environment, 4) digital content creation, 5) security, 6) problem-solving, 7) competence relating to the occupation.

In the workplace environment, digitally savvy and skilled employees will make it easier for them to develop innovative thinking and create valuable products and services for customers (Abas et al., 2019); thereby improving employee performance. Bejaković and Mrnjava (2020) also argue that digital competence plays an extremely important role in economic and social development activities and increases employability in the labor market. These authors also assert that the lack of this capacity makes it difficult for employees to integrate into the digital economy and digital society.

In short, this study has addressed five main factors influencing the capability to ensure the work-readiness of graduate students pertaining to human capital, social capital, cultural capital, psychological capital and digital literacy. These attributes enable students to stay competitive domestically and internationally in today’s digital world.

Up to now, the topic of factors affecting the capability to meet the job requirements in the digital age has enormously attracted researchers’ attention. The facilitation of such factors among students requires the collaboration of many stakeholders, including students, higher education institutions, and enterprises, because higher education and job training are generally at a slower pace in comparison with the ongoing trends. As there is an urgent need to bridge the gap between graduate skills and actual labour job market demand, cultivating graduate competencies in the higher education system to prepare students for novel and unknown knowledge in this ever-changing world is thoroughly discussed in many research articles. The following section will elucidate the suggestions for the above-mentioned groups in order to enhance the work readiness of graduate students.

#### **4. Recommendations for stakeholders in enhancing graduate employability in Vietnam**

Digital transformation is an inevitable process, bringing higher operational efficiency and professionalism, thereby improving labor productivity, and ensuring the sustainable and long-term development of enterprises. In the context of globalization and digitalization, it is extremely essential to develop human resources capable of adapting to the job requirements in new conditions. Many studies have suggested measures for stakeholders to improve the work readiness of students after graduation. The literature review also reveals that scholars recommend focusing on three target groups which are students, higher education institutions, and enterprises.

For the student group, Mainga, Murphy-Braynen, Moxey, and Quddus (2020) posit that students need to raise their awareness of learning skills (belonging to human capital) such as lifelong learning, active learning, self-directed learning, etc. to meet job requirements in today’s

dynamic, volatile and automated labor market. Students should be equipped with soft skills of social competence, such as the ability to work collaboratively in groups and projects, self-construction, and co-creation of knowledge. In the Vietnamese context, a number of industry sectors are suffering from inadequately-skilled job applicants, which leads to low productivity and weak competition of the domestic labour force, causing impediments to regional and international integration. As the lack of sufficiently skilled graduates still causes a lot of concern for Vietnamese society, the efforts of students to develop themselves with appropriate knowledge, skills, and attitudes to stay competitive and productive in today's globalized world is an urgent need.

Regarding higher education institutions, the integration of career development plans and career responsiveness into training curricula should be executed (Potgieter, Coetzee, & Ferreira, 2023) in order to equip human, social, psychological, cultural, and digital competencies for students from the time they are studying at universities. In addition, Ma'dan, Imail, and Daud (2020) also recommend that universities need to adjust appropriate modifications to the curriculum, integrating value-added activities to enhance the ability to meet job demands. Moreover, educational institutions and industries should have close collaboration to identify the demand of the labour market. Organizing workshops coordinated between employers and universities, inviting walk-in lecturers from industry experts, and involving industry employers and experts in designing the curriculum should be taken into consideration in order to enhance graduate competencies in the digitalized world (Kumar, Patel, & Prikshat, 2019). Practically, higher education institutions need to provide reality-based and application-oriented learning instead of theory-based lessons. In that way, students are equipped with the necessary skills to meet the changing demands of industry.

For the enterprise group, it is vital to closely co-operate with higher education institutions to accommodate up-to-date knowledge and skills in the labor market to facilitate the construction of educational programs relevant to digitalization. Updated knowledge such as AI (Artificial Intelligence), 5G technology, high-tech robots, IoT (Internet of Things), big data analytics, Technology Biology (Bioengineering), Nanotechnology, Machine learning, Cloud-based data processing, Blockchain technology, etc. need to be coordinated by enterprises and universities to design and develop programs that are responsive to job practices (Mainga et al., 2020). Further, in collaboration with higher education, industrial employers should provide favorable conditions for students' internships, industrial visits, and expert lectures as a way to familiarize students with the requirements and challenges of the job. To this end, it is vital for the government to formulate conducive policies to strengthen the effective cooperation between businesses and educational institutions.

## **5. Conclusions**

Students' work-readiness has recently attracted extensive attention from scholars as it is an important indicator for predicting the possibilities of students to work efficiently in the digital era. This study primarily synthesizes the related theories and empirical research pertaining to students' work readiness, factors influencing their preparedness for the job market in a digital context, and recommendations for all the stakeholders to enhance graduates' capabilities to work in today's workplace environment. Particularly, it is vital for students to raise their awareness of enhancing their capital, including human capital, social capital, cultural capital, psychological capital, and digital literacy. Moreover, the integration of career development and career responsiveness into training programs and the collaboration between enterprises and higher education institutions

should be encouraged to maximize work readiness for graduate students. It is hoped that the research paper provides the theoretical background for researchers to conduct empirical research on this issue in the future and serves as a valuable source of references for students, institutions, and enterprises.

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