The new framework of employability skills for digital business

I M Suarta¹, I K Suwintana²

¹,²Department of Accounting, Politeknik Negeri Bali, Indonesia
E-mail: madesuarta@pnb.ac.id

Abstract: The fourth industrial revolution changes the order of business model from conventional to digital business. The general purpose of this study is to formulate a new framework for the employability skills needed by students for jobs in the digital business era. This research was conducted by analysing the contents of scholarly articles and policy documents relevant to the employability skills issue. Digital business world of work required a combination of digital and employability skills. A new framework of employability skills was proposed, included digital generic skills and personal attributes. Digital communication skills, digital teamwork skills, digital problem solving skills, creativity and innovation skills, self-management skills, and digital learning skills are part of digital generic skills. Personal attributes included honesty and integrity, work carefully and accurately, self-confidence and ability to work independently, have a pleasant personality, broad-minded and adaptability, and strong work ethics.

1. Introduction

Disruptive innovation, and new opportunities and challenges in the world of work are some examples impact of the fourth industrial revolution. Today, the industry has moved forward using digital technologies such as the Internet of Things, Artificial Intelligence, and Big Data. Many jobs will be automatically with digital technologies. The McKinsey study shows that less than 5% of jobs will be fully automated, however, about 60% of work will be semi-automatically [1]. Over the next few years the employment landscape will change, with the world of work emphasizing the importance of employability skills. Disruption in the workplace appears in various forms, ranging from the creation of new jobs which have implications for increasing skills gaps, as well as the increasing demands for labor productivity [2]. Besides that, the industrial 4.0 do not only create and destroy jobs, they also change the task that people perform on the job, and how they do it.

The fourth industrial revolution changes the order of business model from conventional to digital business. Digital business world of work requiring a combination of digital and non-cognitive skills, such as communication, and teamwork [3]. Several studies found that communication skills, problem solving skills and collaborate with peers become the major key to success in entering labour market [4, 5]. Other studies have shown that communication skills, problem-solving and decision-making skills, analytical and critical thinking skills, skills in collaboration, and continuous learning are examples of the employability skill attributes necessary to enter the workforce and are essential for career successful in the workplace [6, 7]. Employers prefer team-workers who can adapt to change and are open to learning. The skills required are not only technical know-how relevant to specific job, but also soft skills.
As cited from the Organisation for Economic Co-operation and Development that occupation specific skills are no longer sufficient for graduates to meet the needs of digital world of work, and it takes a set of employability skills [8]. Employability skills and qualifications will be able to contribute positively in the digital age workplace.

Many jobs in the digital business will be required to have more complex skills, as known employability skills. Employability skills are personal qualities that make people “employable”. They are sometimes called “soft skills” or “transferable skills” or "non-technical skills" because these skills are separate from technical knowledge and skills and can be applied to almost any job in any industry. Several studies show the importance of employability skills for higher education graduates to enter the world of work [9, 10]. The industry requiring graduates who can fulfill the demands of the new contexts and trends, such as digital business. Higher vocational education institutions are increasingly expected to engage with the challenges of the digital business world.

Employability skills are not just to 'get a job', but also how they survive and succeed in a career in the workplace. Higher vocational education institutions are often criticized for not preparing graduates with various skills according to the contexts and new trends in the current world of work. The facts show that there is an employability skill gap between those possessed by graduates and those needed by the world of work [11, 12, 13]. Graduate employability has become one of the central issues since the last two decades. Higher vocational education institutions need to make various effort to meet the identified challenges, one of which is by making a grand design to develop student employability skills.

Research on labor market and industrial needs are indispensable for formulating higher education policies in developing employability skills. This study is intended to obtain comprehensive information about the employability skills needed by digital business world of work. This study is not new, but still necessary when considering the central role of higher vocational education in the context of preparing graduates to meet the needs of the digital world of work. The objectives of this study are (1) to identify the skills needed by digital world of work, and (2) to develop a new framework of employability skills for digital business. This research contributes in formulating the employability skills development policy of vocational higher education students.

The employability skills terminology has become a discussion material for vocational education experts, especially in the context of balancing graduate skills to meet the needs of the job market. Employability skills are often equated with general skills, soft skills, transferable skills, non-technical skills, core skills, key skills, essential skills, and 21st century skills [14]. Some of employability skills concept will be discussed below.

The definition of employability skills is identical to transferable skills, that represent essential functional and enabling knowledge, skills, and attitudes required by the 21st century workplace [15]. These skills are indispensable for career success at all levels of work and education. The next definition of employability skills comes from the Conference Board of Canada [16]. Employability skills are defined as the generic skills, attitudes and behaviours that employers look for in new recruits and that they develop through training programs for current employees. Employability skills are needed to enter, stay in, and progress in the world of work, can be applied and used beyond the workplace in a range of daily activities.

A comprehensive view of the employability skills come from Australian Chamber of Commerce and Industry (ACCI) and the Business Council of Australia (BCA). Employability skills are defined as “skills required not only to gain employment, but also to progress within an enterprise so as to achieve one’s potential and contribute successfully to enterprise strategic directions”. The employability skills
consist of: communication skills, team work skills, problem-solving skills, initiative and enterprise skills, planning and organizing skills, self-management skills, learning skills, and technology skills [17]. In addition, personal attributes were also identified to describe a set of behaviours and attitudes that felt were as important as the employability skills and other job specific skills.

The changing world of work causes the prestige of employability skills to increase continuously. The changes that occur in the world of work expect workers to be able to work independently to solve problems and make decisions in the workplace, increase collaboration with work teams, workers must be creative and innovative, adapt quickly to new work environments, and have good interpersonal skills. Employability skills refer to a person's ability to work, consisting of a set of skills that increase a person's chances of being able to enter the workforce [18]. This definition provides a broader view of employability skills, not only for getting a job, but also the ability to keep a job and succeed in the workplace.

2. Method

The general purpose of this study is to formulate a new framework for the employability skills needed by students for jobs in the digital business era. This research was conducted by analyzing the contents of scholarly articles and policy documents relevant to the employability skills issue. Content analysis is one of several qualitative methods for analyzing data and interpreting its meaning [19]. This study used two approaches of content analysis: conceptual analysis and relational analysis. In conceptual analysis, a concept is chosen for examination, and the analysis involves quantifying and tallying its presence. Also known as thematic analysis, the focus here is on looking at the occurrence of selected terms within a text or texts, although the terms may be implicit as well as explicit. Relational analysis has also been termed semantic analysis [20]. Relational analysis seeks to go beyond presence by exploring the relationships between the concepts identified, focus to look for meaning or semantic relationships. Overall, this analysis reduces data to concepts that describe research phenomena. The concept referred to in this study is a conceptual framework of employability skills for the world of work in the digital business era.

The analysis stages adopt the content analysis used by Walia & Kaur [21] and Na & Ye [22]. The first stage is to formulate research topics and problems. The topic of this research is related to work ability in the digital business era. This study identifies a new conceptual framework for employability skills for the digital world of work. The second stage is to search for library materials that are relevant to the topic and research problem, using the search engine www.google.com, with the pdf document type. The key words used in this literature search are employability skills, generic skills, soft skills, personal attributes, digital business. The third stage is to evaluate the literature obtained and make a significant contribution to the discussion of research problems. This study analyzed ten scholarly articles and five policy documents. The final stage is to discuss the research results and conclude the results. The discussion of research results is directed at developing a new conceptual framework for employability skills needed by the digital workforce.

3. Results and Discussion
3.1. Skills Needed by Digital Business

The term digital business is growing in line with the massive use of digital technologies to support business operations. Initially, digital business or also known as e-business described the transformation of major business processes through the use of Internet technology [23, 24]. In general, there are 3 types of digital business, namely: (1) pure digital, (2) digital version of non-digital business, and (3) digital facilitator of non-digital business. In addition, there are also hybrid business types that combine one or all of the digital businesses that have been mentioned.

The development of digital technology such as the Internet of Things, the Internet of Systems, Big Data, to Artificial Intelligent has also changed the concept of digital business. Nowadays, digital business use digital technology to create new value in business models, customer experiences and the internal capabilities that support its core operations [25, 26, 27]. Digital businesses create competitive edges based on unique combinations of digital and physical resources.

The development of digital business has a disruptive impact on the world of work. Current trends in digital business show that the way employees work will change completely over the next decade and bear little resemblance to work as it stands today. Success in the digital era requires the right blend of business, IT and soft skills [28]. Digital business needed independent workers who are able to solve complex problems, think critically, communicate well, work with a team, and continuous learning. By 2028, the most high-value work will be cognitive in nature [29]. Employees will have to apply creativity and critical thinking to solve complex problems.

The digitalization of work is absolutely a factor nowadays. Digital technology has a disruptive impact on the workplace. There are three categories of skills needed by managers to manage the new disruptive businesses, namely: innovation, leadership, and management [30]. Innovation skills include: innovation and creativity, new business opportunities, project management, risk management, efficiency and efficacy, and networking. Leadership skills include: high-performance team management, talent management, motivation and satisfaction, communication, careers management, and leadership of multi-cultural employees. Management skills include: new models of work organization, emergent technologies, decision-making tools, big data analysis, organizational change, strategic management, social and relational knowledge.

The advancements digital business requires graduates to have a number of new skills that hinge on the advances in technology. These skills weren't even around a decade ago, but will be ever-defining skills to be competitive in the future workforce. The top ten employability skills for the future workforce: creativity, complex problem-solving, critical thinking, virtual collaboration, social intelligence, new media literacy, lifelong learning, user experience mind-set, design thinking, and responsible digital citizenship [31]. The World Economic Forum [2] predicts the order of top 10 most important skills are: complex problem solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and decision making, service orientation, negotiation, and cognitive flexibility. Creativity will become one of the top skills workers need in digital business. Workers are going to have to become more creative in order to benefit from these changes.

3.2. The New Framework of Employability Skills for Digital Business

The employability skills gap is related to the weak ability of graduates to manage jobs and tasks using digital technology. The author proposes a new framework of employability skills based on skills needed by the digital business. This framework is conceptualized as the generic skills and personal attributes. Generic skills are skills that can be used over a large number of different occupations and applied to in
a number of different situations, important for work, education and life (Table 1). The ability to communicate in developing a business using digital media, the ability to work in teams using digital media, solve complex problems using digital technology, think creatively and have digital business innovation skills, the ability to lead using digital technology, self-management skills, and the ability to learn new things in digital technology are part of the generic skills to support digital business.

Table 1. The proposed generic skill domains and elements

| Generic skills               | Skill elements                                                                 |
|-----------------------------|-------------------------------------------------------------------------------|
| 1. Digital Business Communication | • Written and oral communication skills using digital media;  |
|                              | • Business presentation skills and communicate visually;                      |
|                              | • Information skills - select, synthesize and utilize information;            |
|                              | • Interaction and negotiation skills;                                         |
|                              | • Sharing and working with digital documents;                                 |
|                              | • Ability to work collaborative;                                             |
|                              | • Ability to work effective;                                                 |
|                              | • Ability to work in a team;                                                  |
|                              | • Ability to motivate team members;                                          |
|                              | • Good analytical and critical thinking;                                     |
| 2. Digital Business Teamwork | • Ability to select, synthesize and utilize information;                     |
| 3. Digital Business Complex Problem Solving | • Capable of solving problems;                                                |
|                              | • Decision making.                                                           |
|                              | • Business contextual skills;                                                |
|                              | • Business acumen;                                                           |
|                              | • Able transform ideas into business opportunities;                          |
| 4. Business Creativity and Innovation | • Have an entrepreneurial spirit;                                             |
|                              | • Have strong business sense;                                                |
|                              | • Highly motivated and challenging person.                                    |
|                              | • Ability to work under pressure;                                            |
|                              | • Ability to work with target;                                               |
| 5. Self-Management Skills    | • Ability to prioritize work;                                                |
|                              | • Ability to work effectively;                                               |
|                              | • Time management skills;                                                    |
|                              | • Having self motivation.                                                     |
|                              | • Able to adapt to the digital work environment;                            |
|                              | • Having a high willingness to learn;                                        |
| 6. Business Digital Learning Skills | • Ability to perform multiple assignments;                                  |
|                              | • Adapting to company culture;                                               |
|                              | • Likes the challenges in the workplace;                                     |

Communication skills relate to the abilities a person has in the context of speaking, listening, writing and reading using digital technology to develop business. Interpersonal communication skills are essential in business especially when people are an important source of information. Graduates need to be equipped with communication skills such as: written and oral communication skills using digital media.
media; business presentation skills and communicate visually; information skills - select, synthesize and utilize information; interaction and negotiation skills; sharing and working with digital documents. In digital business age, everyone needs to be able to use email, messenger, texting and other methods of digital communicating. Digital communication skills are essential to succeed in the workplace [32, 33]. There’s a rapidly increasing demand in the job market for people with digital media skills.

Digital transformation describes a seismic shift in how organisations operate – not just using technology to enhance traditional ways of working but using it to fundamentally change what work gets done. The impact of all these changes on employees will be significant, although nobody can say for certain what the changes or the impact will be. Successful teamwork today demands new approaches, attitudes and skills to handle change digital business [34]. Employees need to be able to work together effectively to implement, manage and grow company as a result of digital transformation. Teams and teamwork, therefore, are becoming ever more important and are a key factor in all this change. To enter the world of digital work, graduates must have a number of teamwork skills such as: ability to work collaboratively; ability to work effectively; Ability to work in a team; ability to motivate team members.

Problem solving means finding solutions when faced with difficulties or setbacks. When employers talk about problem-solving skills, they are often referring to the ability to handle difficult or unexpected situations in the workplace as well as complex business challenges. Digital problem solving involves the use of the skills, strategies, and approaches (including mindsets) needed for solve problem and decision making in a digital business context. It’s requires the support of a number of other skills, such as information and digital literacy [35]. Problem solving skills are highly sought after by employers as many companies rely on their employees to identify and solve problems. Job seekers are expected to have the ability to identify problems, analyze and think critically for solutions, and have the courage to make decisions.

Employers also perceive attitudes and behavior at work which are personal values and are not based on certain skills, they are also felt as important as generic skills and occupation specific skills. Personal values represent the individual potential of a graduate, included honesty and integrity, work carefully and accurately, self-confidence and ability to work independently, have a pleasant personality, broad-minded and adaptability, and strong work ethics. Integrity in the workplace comes in many forms, but above all refers to having upstanding character traits and work ethics including sound judgement, honesty, dependability, and loyalty [36, 37]. Integrity is one of the core values that employers look for in potential employees. To act with integrity is to ensure that every decision made is based on thoroughly ethical and moral principles. Trust, honour, and honesty are key elements to the concept of integrity.

4. Conclusion

The fourth industrial revolution changes the order of business model from conventional to digital business. Digital business world of work requiring a combination of digital and non-cognitive skills. Many jobs in the digital business will be required to have more complex skills, as known employability skills. Employability skills are the subject of long discussions about jobs and the labor market among policy makers and researchers. A new framework of employability skills was proposed based on the skills required by digital businesses, included generic skills and personal attributes. Digital business communication skills, digital business teamwork skills, digital business complex problem solving skills, business creativity and digital innovation skills, self-management skills, and digital business learning
skills are part of digital generic skills. Personal attributes included honesty and integrity, work carefully and accurately, self-confidence and ability to work independently, have a pleasant personality, broad-minded and adaptability, and strong work ethics.

This new framework for employability skills can be adapted to develop a higher vocational education curriculum. For future research, we recommend conducting a cross-industry survey, with a focus on identifying employability skills that are important to the world of digital business work.

5. References

[1] Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, J., Batra, P., Sanghvi, a. S 2017 Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages. New York: McKinsey Global Institute. Retrieved July 6, 2020, from https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages

[2] World Economic Forum 2016 The future of jobs: employment, skills and workforce strategy for the Fourth Industrial Revolution. Geneva, Switzerland: World Economic Forum. Retrieved July 7, 2020, from http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf

[3] Abelha, M., Fernandes, S., Mesquita, D., Seabra, F., & Ferreira-Oliveira, A. T. 2020 Graduate Employability and Competence Development in Higher Education-A Systematic Literature Review Using PRISMA. Sustainability, 12 (15), 1-27. doi:10.3390/su12155900

[4] Ali, F. M., Othman, A. R., & Ahmad, N. B 2017 Graduate’s Marketable Skills: An Empirical Investigation Of Its Effect On Perceived Marketability Of Yemeni Graduates In The Arab Gulf States. Asian Journal of Science and Technology (AJST), 8(11), 6497-6509. Retrieved from https://www.journalajst.com/graduate%E2%80%99s-marketable-skills-empirical-investigation-its-effect-perceived-marketability-yemeni?page=1

[5] Succi, C., & Canovi, M 2019 Soft skills to enhance graduate employability: comparing students and employers’ perceptions. Studies in Higher Education. doi:10.1080/03075079.2019.1585420

[6] Low, M., Botes, V., Dela-Rue, D., & Allen, J 2016 Accounting Employers’ Expectations - The Ideal Accounting Graduates. e-Journal of Business Education & Scholarship of Teaching, 10(1), 36-57.

[7] Abayadeera, N., & Watty, K. 2016 Generic skills in accounting education in a developing country: Exploratory evidence from Sri Lanka. Asian Review of Accounting, 24(2), 149-170.

[8] OECD 2019 OECD Skills Outlook 2019: Thriving in a Digital World. Paris: OECD Publishing. doi:doi.org/10.1787/d880bc12-en.

[9] Chowdhury, T. A., & Miah, M. K. 2019 Perceptions of students and employers regarding employability skills for entry-level positions in marketing and sales. Australian Journal of Career Development, 28(1), 3-13. doi:10.1177/1038416217751566

[10] Jewell, P., Reading, J., Clarke, M., & Kippist, L 2020 Information skills for business acumen and employability: A competitive advantage for graduates in Western Sydney. Journal of Education for Business, 95(2), 88-105. doi:10.1080/08833232.2019.1610346

[11] Scott, F. J., Connell, P., Thomson, L. A., & Willison, D. 2019 Empowering students by enhancing their employability skills. Journal of Further and Higher Education, 43(5), 692-707. doi:10.1080/0309877X.2017.1394989

[12] Moore, T., & Morton, J 2017 The myth of job readiness? Written communication, employability, and the ‘skills gap’ in higher education. Studies in Higher Education, 42(3), 591-609. doi:10.1080/03075079.2015.1067602

[13] Smith, E., & Teicher, J 2017 Re-thinking skill through a new lens: evidence from three Australian service industries. Journal of Education and Work, 30(5), 515-530. doi:10.1080/13639080.2016.1243231
[14] NCVER. 2013 Defining generic skills: A at glance. Adelaide, Australia: National Centre for Vocational Education Research (NCVER).

[15] Overtoom, C 2000 Employability skills: An update. ERIC Digest No. 220. Columbus, OH: ERIC Clearinghouse on Adult, Career, and Vocational Education. Retrieved July 12, 2019, from http://www.ericdigests.org/2001-2/skills.htm

[16] Conference Board of Canada 2000 Employability skills 2000+. Retrieved July 28, 2019, from http://www.conferenceboard.ca/docs/default-source/edu-public/esp2000.pdf

[17] DEST 2002 Employability skills for the future. A Report by the Australian Chamber of Commerce and Industry (ACCI) and the Business Council of Australia (BCA) for the Department of Education, Science.

[18] Belt, V., Drake, P., & Chapman, K 2010 Employability Skills: A Research and Policy Briefing. Briefing Paper Series. UK Commission for Employment and Skills. Retrieved February 22, 2019, from http://www.educationandemployers.org/wp-content/uploads/2014/

[19] Schreier, M 2012 Qualitative content analysis in practice. Thousand Oaks, CA: Sage.

[20] Palmquist, M. E., Carley, K.M., and Dale, T.A 1997 Two applications of automated text analysis: Analyzing literary and non-literary texts. In C. Roberts (Ed.), Text Analysis for the Social Sciences: Methods for Drawing Statistical Inferences from Texts and Transcripts. Hillsdale, NJ: Lawrence Erlbaum Associates.

[21] Walia, Paramjeet Kaur and Kaur, Manpreet, "Content Analysis of Journal Literature published from UK and USA" 2012 Library Philosophy and Practice (e-journal). 833. https://digitalcommons.unl.edu/libphilprac/833

[22] Jin-Cheon Na & Yingxin Estella Ye. 2017 Content analysis of scholarly discussions of psychological academic articles on Facebook. Online Information Review, 41(3): 337-353. https://doi.org/10.1088/1742-6596/1833/1/012034

[23] Amor, D 2000 The e-business (r)evolution. Upper Saddle River, NJ: Prentice Hall PTR.

[24] Beynon-Davies, P 2004 E-Business. Basingstoke: Palgrave McMillan.

[25] OECD 2014 “The digital economy, new business models and key features”, in Addressing the Tax Challenges of the Digital Economy. Paris: OECD Publishing. doi:https://doi.org/10.1787/9789264218789-7-en

[26] Ablyazo, T., Asatururov, J., & Koscheyev, V 2018 Digital technologies: new forms and tools of business activity. SHS Web of Conferences 44, 00004. doi:https://doi.org/10.1051/shsconf/20184400004

[27] Kotarba, M 2018 Digital transformation of business models. Foundations of Management, 10 (1), 123-142. doi:10.2478/fman-2018-0011

[28] Shein, E 2019 Filling the digital transformation skills gap. Retrieved June 20, 2020, from https://www.cio.com/article/3393181/filling-the-digital-transformation-skills-gap.html

[29] Cheremond, R 2019 HR leaders take note: social developments, digital business, consumer behaviors, emerging technologies and more will change how people will work in 2028. doi:https://www.gartner.com/smarterwithgartner/6-wa

[30] Sousa, M. J., & Rocha, À 2019 Skills for disruptive digital business. Journal of Business Research, 94(1), 257-263.

[31] Andriotis, N 2017 Beat the Machines with these 10 Employability Skills for the Future!. Retrieved June 27, 2019, from https://www.talentlms.com/blog/top-ten-employability-skills-future/

[32] Marsh, E 2018 The Digital Workplace Skills Framework: Ensuring the workforce is ready to work digitally. Digital Work Research. Retrieved July 12, 2020, from https://digitalworkresearch.com/wp-content/uploads/2018/02/The-Digital-Workplace-Skills-Framework-final.pdf

[33] Adinde, I., Duella, N., Förster, A., Harris, L.-R., Kinhal, R., Bhatnagar, P., Vuorikari, R. 2019. Digital Skills Insights 2019. Geneva, Switzerland: International Telecom.

[34] Kispeter, E 2018 What digital skills do adults need to succeed in the workplace now and in the next 10 years? Digital Skills and Inclusion Research Working Group Evidence Brief, Warwick
[35] Castek, J., Jacobs, G., Gibbon, C., Frank, T., Honisett, A., & Anderson, J 2018 Defining Digital Problem Solving. Advancing Digital Equity in Public Libraries: Assessing Library Patrons’ Problem Solving in Technology Rich Environments. Retrieved July 2, 2020, from https://pdxscholar.library.pdx.edu/digital_equity_toolkit

[36] Dixon, S. B. (n.d.). The Importance and Implementation of Honesty in the Workplace. Southern Adventist University. Retrieved July 5, 2020, from https://sadiedixon.files.wordpress.com/2017/12/research-paper.pdf

[37] Westfall, B 2017 Why honesty is the secret ingredient of successful organizations. Retrieved July 5, 2020, from https://www.softwareadvice.com/resources/whyhonesty-is-the-secret-ingredient-of-successful-organizations/