EMPLOYABILITY AND IT COMPETENCY OF ACCOUNTING GRADUATES IN RESPONDING TO 4IR

NUR LIYANA BINTI ZOLKIFLI

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by

NUR LIYANA BINTI ZOLKIFLI

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LIST OF ABBREVIATIONS

4IR	Fourth Industrial Revolution
AAT	Association of Accounting Technicians
ACCA	Association of Chartered Certified Accountants
ACL	Audit Command Language
AI	Artificial Intelligence
AICPA	American Institute of Certified Public Accountants
AR	Augmented Reality
BDA	Big Data and Analytics
CGMA	Chartered Global Management Accountant
CGPA	Cumulative Grade Point Average
CL	Cover Letter
CPA	Certified Public Accountant
CV	Curriculum Vitae
ERP	Enterprise Resource Planning
IA	Intelligence Automation
ICAEW	Institute of Chartered Accountants in England and Wales
IFAC	International Federation of Accountants
IMA	Institute of Management Accountants
IOT	Internet of Things
IT	Information Technology
MDEC	Malaysia Digital Economy Corporation
MEB	Malaysia Education Blueprint
MIA	Malaysian Institute of Accountants
MITI	Ministry of International Trade and Industry
ML	Machine Learning
MoHE	Ministry of Higher Education
MPC	Malaysia Productivity Corporation
NCT	Neo-Correspondence Theory
RPA	Robotic Process Automation
SSR	Server Reporting Services
VR	Virtual Reality

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KEBOLEHPASARAN DAN KOMPETENSI TEKNOLOGI MAKLUMAT GRADUAN PERAKAUNAN DALAM MEMBERI TINDAK BALAS TERHADAP REVOLUSI PERINDUSTRIAN KE-4

ABSTRAK

Revolusi Perindustrian Keempat (4IR) telah memperluas penggunaan teknologi dengan pantas dan mempengaruhi perniagaan, termasuk sektor perakaunan di mana peranan perakaunan dan tugas para akauntan berubah dengan agak pantas. Sebagai tindak balas kepada situasi ini, kajian ini bertujuan untuk mengenal pasti dan menganalisis kecekapan Teknologi Maklumat (IT) yang diharapkan dari lulusan perakaunan Malaysia pada era 4IR untuk mempersiapkan mereka untuk pasaran pekerjaan untuk meningkatkan keupayaan mereka dalam bekerja. Jurang antara jangkaan majikan terhadap lulusan perakaunan dan apa yang dirasakan oleh graduan mengenai kecekapan IT yang dikehendaki daripada mereka telah menyumbang kepada pembentukan model IT kompetensi pada akhir kajian ini. Dalam kajian ini, Neo-Correspondence Theory (NCT) akan digunakan untuk memberikan perspektif konseptual dalam memeriksa kompetensi IT pelajar lulusan perakaunan dan harapan majikan di tempat kerja dalam konteks 4IR. Kajian ini menggunakan pendekatan kualitatif untuk meneroka persekitaran kerja dan keperluan kompetensi IT dari perspektif majikan dan pengalaman pembelajaran pendidikan tinggi lulusan perakaunan. Data adalah berdasarkan kepada temu ramah separa berstruktur dan penjelajahan dokumentari, dan dianalisis menggunakan pendekatan analisis bertema. Kajian ini mendapati terdapat jurang antara jangkaan majikan dan kecekapan IT graduan perakaunan berhubung dengan kompetensi IT yang sepatutnya mereka miliki dalam era 4IR. Teknologi baru muncul memerlukan graduan perakaunan mempunyai

kecekapan IT yang relevan dan mencukupi untuk memastikan kebolehpasaran mereka. Kajian ini mencadangkan rangka kerja kecekapan IT 4IR untuk melibatkan kemahiran yang berkaitan dengan IT dalam era 4IR. Terdapat empat kategori kemahiran, termasuk kemahiran teknikal, data dan kemahiran digital, kemahiran perniagaan dan kemahiran profesional. Rangka kerja yang dicadangkan sebegini harus diterapkan dalam kurikulum perakaunan untuk memastikan graduan perakaunan dilengkapi dengan baik untuk bekerja dalam persekitaran 4IR.

EMPLOYABILITY AND IT COMPETENCY OF ACCOUNTING GRADUATES IN RESPONDING TO 4IR

ABSTRACT

The Fourth Industrial Revolution (4IR) has rapidly expanded the use of technology and impacted businesses, including the accounting sector where the role of accounting and duties of accountants are changing quite extensively. In response to this situation, this study aims to identify and analyse the expected information technology (IT) competency of Malaysian accounting graduates in the 4IR. The gap between the job market's expectations upon accounting graduates' competency level has led to the formation of IT competency model at the end of the study. In this study, Neo-Correspondence Theory (NCT) is used as a theoretical lens to examine the IT competency amongst accounting graduates and the employers' expectations in the workplace within the context of 4IR. This study uses a qualitative approach to explore the work environment and IT competency requirements from the perspectives of employers and accounting graduates. The data were collected using semi-structured interviews and documentary reviews and analysed using a thematic analysis approach. This study found that there is a gap between employers' expectations and accounting graduates' IT competency concerning the IT competency expected in the 4IR era. Emerging technologies require accounting graduates to have relevant and sufficient IT competencies to ensure their employability. This study proposes a 4IR IT competency framework to entail the skills associated with IT in the 4IR era. There are four categories of skills (namely technical skills, data and digital skills, business skills, and professional skills) that are set to be the foundations for IT competency as reflected in the framework. Such framework is proposed to be a reference point for developing

future accounting curriculum to ensure that accounting graduates are well-equipped to work in the 4IR environment.

CHAPTER 1

INTRODUCTION

1.1   Introduction

This chapter provides a general introduction to the study by describing the structure and background of the study. It begins with a brief discussion on the fourth industrial revolution (4IR), followed by the employability of graduates in Malaysia, the IT competency of accounting graduates, and an overview of higher education in Malaysia. Next, the problem statement is presented and followed by the research objectives, research questions, and significance of the study. Finally, this chapter defines key terms and is followed by an outline of the contents for the remaining thesis chapters.

1.2   Background of the Study

Following the recent advancement of automated technologies that make up the 4IR, businesses around the globe have experienced significant changes in how they do business (MIA, 2019). Many sectors, such as manufacturing, transportation, construction, and communication, are utilising advanced technologies to increase product efficiency, materialise cost savings in production, and enhance the overall productivity of goods and services (MPC, 2018).

The rapidly changing business environment, in line with technological advances, has led to changes in the accounting landscape and the future of the accounting profession. The strong relationship between accounting and technology has pressured accountants to update their information technology (IT) competency in performing accounting-related tasks (Abdullah et al., 2020). Whilst most graduates have realised the importance of outstanding soft skills in competing for a job, there have been arguments that they are not ready for the market, and employers further demand additional skills for 4IR (Abdullah et

al., 2020). In conjunction with the technologies adopted by the companies in 4IR, employers now demand potential employees with sufficient IT knowledge to align with the ever-changing business environment (Ali et al., 2016). Such a demand is of no exception to future employees with an accounting background (termed as accounting graduates), which this study attempts to explore.

By using a qualitative approach, this study aims at analysing (1) the main expectations of employers concerning accounting graduates' IT competency in the era of 4IR; (2) the accounting graduates' IT competency level based on knowledge and experience gained during higher education in fulfilling their respective employers' demand; and (3) the gap between employers' expectations and accounting graduates' IT competency level. At the end of the study, a desirable IT competency model for accounting curriculum enhancement in Malaysian higher education institutions will be proposed to reduce the gap between employers' expectations of accounting graduates' IT competency level. Interestingly, this study presents an in-depth analysis of the IT competency that accounting graduates should possess to enhance their employability.

1.2.1 Fourth Industrial Revolution (4IR) in Malaysia

The business world has undergone four critical phases of industrial revolutions, which started in the 18th century through a series of change processes. Whilst the first three industrial revolutions were transformative towards our modern society with the advancements in the steam engine, the age of science and mass production, and the rise of digital technology, respectively, the world has now progressed towards the fourth revolution (Kruskopf et al., 2020; MIA, 2019).

4IR refers to the transformation of many industries via new technologies, like the accounting industry. It is distinguished by innovative technology that combines the physical, digital, and biological worlds, influencing all disciplines, sectors, and the

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economy. Bio printing, for example, uses a digital file (digital) to print an item, such as human organs (physical) with cells and biomaterials (biological) (National 4IR Policy, 2021).

The National 4IR Policy was launched in 2021 to drive Malaysia's 4IR agenda that promotes coherence in implementing and harnessing the leveraging of technologies being used in 4IR. It is served as a guideline to address risks from the technologies of 4IR while maintaining values and culture to transform the socio-economic development of the country (National 4IR Policy, 2021). The Malaysia Digital Economy Corporation (MDEC) and Ministry of International Trade and Industry (MITI) are among the government agencies and ministries that are welcoming and continuously supporting and developing the implementation of 4IR in Malaysia by setting out several initiatives for the industry (Abdullah et al., 2017).

4IR is transforming every aspect of the industry and becoming an inevitable topic of discussion, including in the accounting sector. 4IR brings together a variety of emerging innovations that will have a significant impact on business. Figure 1.1 below shows nine inter-related pillars of 4IR that have been reflected in the MIA Digital Technology Blueprint report by the Malaysian Institute of Accountants (MIA) (MIA, 2019).
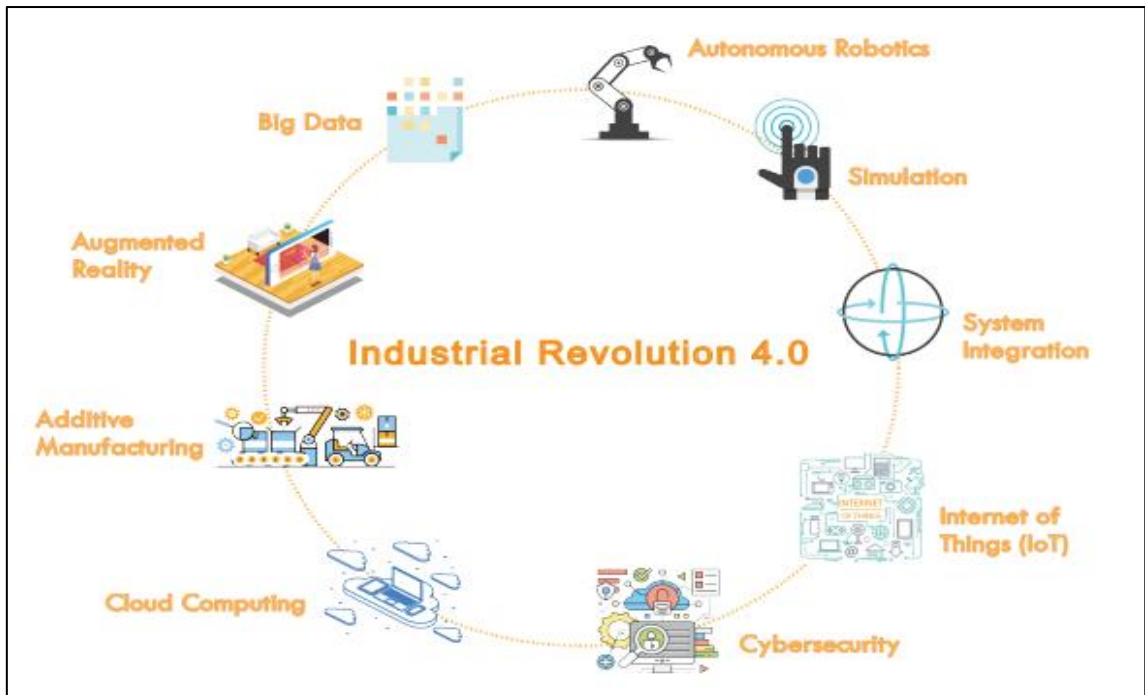
Figure 1.1 Nine Inter-related Pillars of Industrial Revolution 4.0

Source: MIA (2019)

MIA (2019) highlighted that this revolution is defined by the emergence of new technologies, including nine inter-related pillars as above. 4IR significantly influences many sectors, such as manufacturing, information, and communication technology (ICT), especially regarding how new technologies have placed new requirements on people. Their skill sets are subject to change as 4IR imposes new ways of doing things. People are expected to have specific fundamental technical skills, such as knowledge of IT, organisational and process understanding, and the ability to engage with current interfaces (Maria et al., 2018).

Malaysian must choose whether to seize the opportunity to thrive and become one of the most economically developed countries in the world with innovative individuals or face the risk of being left behind (Abdullah et al., 2017). Therefore, the National 4IR Policy specifies four policy thrusts, one of which is to equip the people with 4IR knowledge and skillsets through the following strategies.
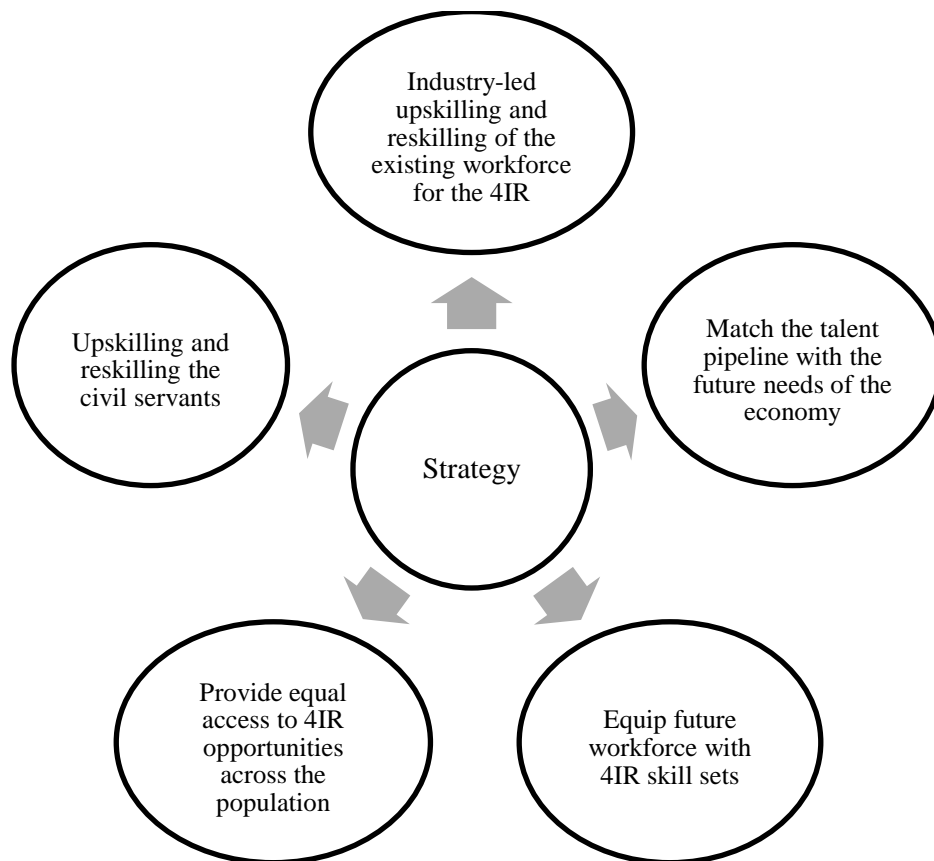
Figure 1.2 Strategy

Source: National 4IR Policy (2021)

The above strategy shows that the government is emphasizing its efforts in equipping people with the right skills and knowledge for the 4IR environment, ensuring the adaptability of people in managing and utilizing the technological tools, and subsequently ensuring the employability of people, especially youth and graduates (National 4IR Policy, 2021).

1.2.2 Employability of Graduates in Malaysia

The employment landscape has evolved with significant changes in market models. Employers demand competent future employees to align themselves with the technological advancement practised by organizations. The demand is influenced by the

evolution and transformation of new technology, which integrates high-tech systems with physical items such as machines and computers (Rahmat et al., 2019). In developing countries like Malaysia, 4IR has begun to entirely reinvent working process cultures, substantially affecting the nature of work that changes culture, markets, employment, and people's lives (Rahmat et al., 2019).

The employability of graduates has received much attention in Malaysia due to the changes in prospective employers' demand towards the accounting profession. The capability of graduates to market themselves to employers is the focal point of employability. The capability does not only reflect the graduates' professional understanding but also includes their general skills and attitudes (Saad & Md Idris, 2015). The unemployment rate of graduates in Malaysia has increased over time due to various reasons, which include the lack of employability skills (Hanapi & Nordin, 2014), the skills mismatch (Rahmat et al., 2019), and the lack of 4IR skills among graduates of higher institutions (Abdullah et al., 2020).

Higher education and students must address these reasons; improving graduates' employability skills is a critical component of higher education to enable them to get jobs in the 4IR job market (Yusof & Jamaluddin, 2017), where IT competency has become a crucial skill that graduates should possess.

1.2.3   IT Competency of Accounting Graduates in 4IR

IT has been widely used in accounting, auditing, taxation, and finance jobs. How business and accounting practitioners consume IT resources, exchange knowledge and resources, and access goods and services are all evolving due to new and developed technologies (MICPA, 2020). Consequently, IT competency has become a crucial set of competencies to be demonstrated by a graduate. It was ranked as one of the top skills by employers in the rapid advancement of IT and highly developed accounting systems. It might be impossible for accountants to conduct the tasks without the intervention of IT applications relevant to the industry's development in the era of 4IR (Ahmi et al., 2016; Ismail et al., 2020; Klibi & Oussii, 2013).

Technology to be Used in the Next 3 Years

Technology	2017	2019
Data Analytics Tools	35%	52%
Accounting Software	46%	51%
Cloud Applications	40%	49%
Microsoft Applications	36%	38%
Artificial Intelligence	15%	36%
Audit Software	24%	27%
Tax Software	22%	23%
Practice Management	17%	22%
Secretary Software	14%	19%
Fintech	19%	17%
Others	7%	6%
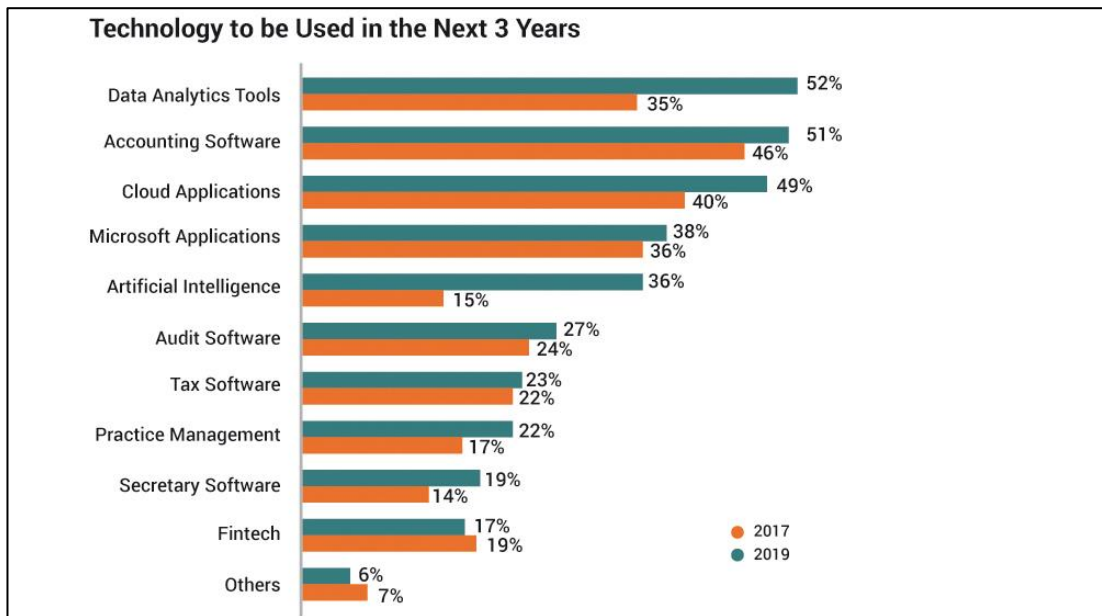
Figure 1.3 Technology to Be Used In the Next Three Years

Source: MIA (2020)

Figure 1.3 above shows the difference between the survey performed in 2017 and 2019 on the technology expected to be utilized in the next three years in Malaysia. It has indicated a notable increase in 2019 compared to 2017 for almost all the technologies listed in the diagram above.

New jobs and roles that are more complex and require a higher level of thinking will grow in relation to IT and automation. It is important to be upskilled and equipped with the necessary competency to reduce unemployment risk (Esser et al., 2019). As technology advances, accounting graduates inevitably must enhance their creative and social skills and relocate to tasks less prone to automation (Frey & Osborne, 2013). Bonekamp and Sure (2015) believe that the demand for cross-functional management capabilities, interdisciplinary cooperation, IT, and programming skills might increase proportionately.

Findings from previous studies, such as by Azmi et al. (2018) and Hoe (2020), which have been conducted on the relationship between employment and graduate skills, have indicated that IT competency has been listed as one of the skills that help to bridge the gap between the expectations of the employers and graduates. IT competency is claimed to be able to reduce the unemployment rate because the integration of IT and tasks has prompted employers to select candidates with more IT competency (Azmi et al., 2018; Hoe, 2020; Kenayathulla et al., 2019). For example, employers prefer candidates for audit positions with the ability to use advanced software such as Python, Audit Command Language (ACL), and Alteryx (Hoe, 2020). As such, this study looks further into the IT competency that accounting graduates must possess to secure employment in the era of 4IR.

1.2.4 Higher Education in Malaysia

Higher education is responsible for regulating the policy to endure the impacts in producing future graduates for 4IR workforce requirement. Educational institutions worldwide must revise the syllabus promptly and consistently to meet the needs of the rapidly changing global economy. The focus should be on producing high-quality graduates who are reliable and able to work, as this will benefit the industry and the national economy (Raimee & Radzi, 2020).

The Education 4.0 Framework under Malaysia Education Blueprint (MEB) for Higher Education 2015-2025 has addressed the 4IR challenges. Consecutively, universities must be prepared to adapt and change their curriculum and delivery so that graduates can obtain employment. Likewise, educators should place greater emphasis on outcomes and performance while also pursuing technologies and innovations that meet the needs of students. This will give the students a better learning experience during their higher education (Omar & Hasbolah, 2018).

Malaysia is determined to improve the quality of graduates produced by higher education institutions. One of the efforts is the Ministry of Higher Education (MoHE) Malaysia has developed MEB 2013-2025 for a sustainable education system transformation. In MEB, the students are aspired to have the six primary attributes, which the higher education system is built around the same six student attributes. The attributes are shown in Figure 1.4 below.

Figure 1.4 Six Primary Attributes

Source: Malaysia Ministry of Education (2015)

For accounting higher education, the enhancement of the structure for accounting curriculum is based on *Hala Tuju 3*, released in 2015 with the collaboration between the Malaysian Institute of Accountants (MIA) and MoHE. *Hala Tuju 3* aimed to rectify some weaknesses in *Hala Tuju 2* regarding the quality of accounting graduates. Part of the weaknesses identified from implementing *Hala Tuju 2* was the less emphasis on achieving accounting students' competencies in university. Furthermore, there was unsatisfactory among employers regarding the students' soft and technical skills such as communication, interaction, ability to apply technical knowledge, critical thinking, and problem-solving skills (Halatuju 3, 2015; Ku Bahador & Haider, 2017; Norman et al., 2018).

IT applications, including UBS, BIZTRAK, Audit Express, Peach 3, Microsoft Office (Microsoft Access, Excel, Word, and Visual Basic) and SPSS, have been embedded in the accounting curriculum as guided in *Hala Tuju 2*. However, the assessment of *Hala Tuju 2* has shown that the employers regarded IT competency of the students as very low. Hence, *Hala Tuju 3* has been initiated after five years of *Hala Tuju 2* to enhance the learning outcomes of the accounting program by considering the current demands of the profession and industry (Halatuju 3, 2015).

The quality of education is measured by the employers' dissatisfaction with accounting graduates' soft skills and technical knowledge (Halatuju 3, 2015; Ku Bahador & Haider, 2017; Norman et al., 2018). Currently, accounting higher education institutions in Malaysia are utilising *Hala Tuju 3* as a reference, standard, and guideline for updating and revising the accounting programmes. One of the objectives of *Hala Tuju 3* is to highlight the importance of competency in both technical and soft skills in accounting education. This ensures that the accounting programs at local

institutions are up to date with worldwide trends in this field (Ku Bahador & Haider, 2017; Norman et al., 2018).

1.3 Problem Statement

Unemployment among graduates is a problem that has been discussed decades ago in Malaysia (Azmi et al., 2018; Hanapi & Nordin, 2014). Provided below is the statistics of the unemployment rate in Malaysia from 1999 to 2020 from World Bank:

Figure 1.5 Unemployment Rate from 1999 to 2020

Source: O'Neill (2021)

According to O'Neill (2021), the unemployment rate in Malaysia as of 2020 was approximately 3.38 percent. The rate has shown an increase in 2020 compared to the previous two years, in 2018 and 2019. Although Malaysia's unemployment rate is considered low compared to the United States and other European countries, its

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importance and implications are significant and substantial (Hanapi & Nordin, 2014; O'Neill, 2021). Nevertheless, young people, including graduates, are the majority of the population contributing to job seekers and unemployment (O'Neill, 2021).

Provided below is the statistics of the youth unemployment rate in Malaysia from 1999 to 2020 from World Bank:
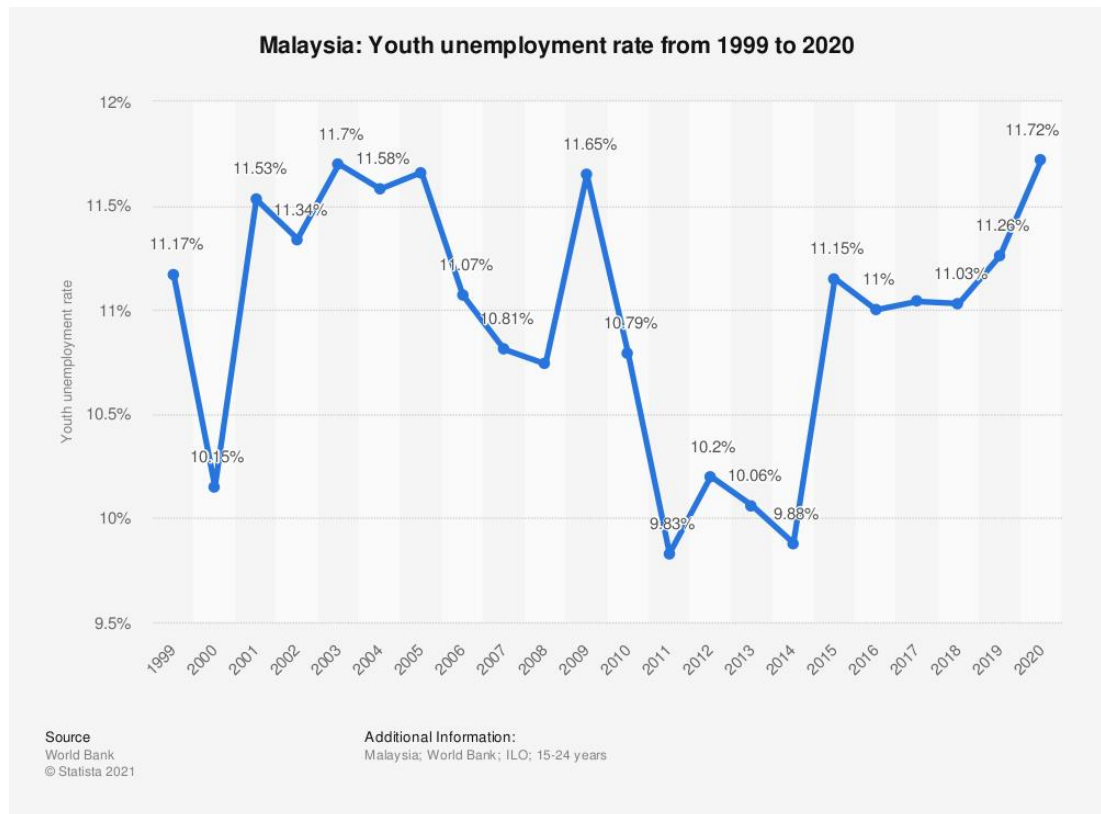
Figure 1.6 Youth Unemployment Rate from 1999 to 2020

Source: O'Neill (2021)

Figure 1.6 above shows that the youth unemployment rate, including the number of graduates, increased yearly from 2016 until 2020. The graduates face difficulties getting jobs due to lacking relevant capabilities, expertise, competencies, and personal values (O'Neill, 2021; Shamsuddin et al., 2015).

Malaysia produces many graduates, but the unemployment rate has risen sharply from 9.83 percent in 2011 to 11.72 percent in 2020. These new statistics are a

worrying indicator for young people struggling to compete with other graduates, especially in the coming years as Malaysia shifts to 4IR (Rahmat et al., 2019).

Employers claim that graduates lack the necessary knowledge, skills, and attitudes, indicating a mismatch between supply and demand for graduates (Malaysia Ministry of Education, 2015). The mismatch of skills has long been a problem in Malaysia, where the job applicant, especially fresh graduates, do not meet market demand. This issue has contributed to unemployment (Al Nejam et al., 2017; Low, 2020). Our education system today produces over 300,000 graduates annually, and one of the most worrying aspects of this is that Malaysia has one of the highest graduate unemployment rates in Asia (Low, 2020).

As technology disruptions restructure sectors and change the types of jobs available, resolving this mismatch will likely become more challenging. To prepare Malaysian youth for this uncertain future, they must be equipped with transferable skills, strong ethical underpinnings, and the resilience and entrepreneurial spirit to create new possibilities for themselves and others (Malaysia Ministry of Education, 2015).

MoHE has reported the lack of employability skills among Malaysian new graduates as a critical concern (NST, 2020). According to the existing literature in the study by Tanius et al. (2018), the difference between employers' standard and graduate employability competencies (also known as the skills gap) is one reason for the employability issues. Like many other nations, Malaysia has a significant skills gap where there have been massive differences in the skills expected by employers and the skills graduates possess. The skill supply of today's graduates is insufficient to satisfy the industry's needs (Tanius et al., 2018).

More digital jobs are being generated as Malaysia faces an era of rapid globalization with the enforcement of 4IR (Low, 2020). As digital technology has been increasingly on the rise, universities need to prepare their graduates for digital jobs.

Dr. Sumitra Nair, Vice President of Talent Development and Digital Entrepreneurship, Malaysia Digital Economy Corporation (MDEC), has stated the following: "On the supply side, according to a 2018 Randstad survey, close to 90 percent of the workforce in Malaysia believe they do not have skills for a digital workplace, while graduate unemployment had also seen an increase due to the lack of digital skills. The Ministry of Education Malaysia (MOE) Graduate Tracer Study 2018 states that 1 out of 5 graduates are unemployed, and acquiring digital skills has been acknowledged as part of the solution" (Nair, 2021).

Integrated and intelligent machines introduced in 4IR are better at performing routine tasks than the human workforce. They can perform the tasks error-free without any breaks and more efficiently (Kruskopf et al., 2019). Therefore, learning to work with machines is crucial not only to ensure employability but to eliminate redundancies, perform routine tasks more efficiently and ultimately focus on core high-skilled tasks, as well as to take on an advisory role that cannot be performed or replaced by machines to bring higher value to the employers (Kruskopf et al., 2019). With sufficient IT competencies to be compatible with technological advancement, graduates might be able to suit themselves with the current need of job roles.

The Future of Jobs Report 2020 by the World Economic Forum has presented the list of roles recognized as being in high demand and increasingly redundant within the organization in Malaysia.

Table 1.1 Emerging and Redundant Job Roles

	Emerging	Redundant
1	Data Analysts and Scientists	Data Entry Clerks
2	Strategic Advisors	Administrative and Executive Secretaries
3	Internet of Things Specialists	Accounting, Bookkeeping and Payroll Clerks
4	Digital Transformation Specialists	Human Resources Specialists
5	Digital Marketing and Strategy Specialists	Mining and Petroleum Extraction Workers
6	Big Data Specialists	Mechanics and Machinery Repairers
7	AI and Machine Learning Specialists	Environmental and Occupational Health and Hygiene Professional
8	Cyber Security Specialists	Assembly and Factory Workers
9	Software and Applications Developers	Accountants and Auditors
10	Renewable Energy Engineers	Business Services and Administration Managers

Source: World Economic Forum (2020)

Table 1.1 above gives the impression that while many job roles have emerged due to technological growth, many have become redundant as automated machines and technologies have replaced those roles. The roles of accounting, bookkeeping and payroll clerks were recorded as the third-highest redundant roles, while accountants and auditors were in the ninth position. The above-emerging roles will require accounting graduates to have technology savvy and IT competency to manage and analyse the data to demonstrate their tasks efficiently.

The role of the university in providing the curriculum and teaching components is not in line with the skills of future employees required in the industry. As a result, graduates have difficulty getting jobs that suit their competencies and qualifications compared to what employers require. While also poses a problem where graduates are unable to apply what they have learned in educational institutions to their professional fields (Hanapi & Nordin, 2014).

As technology continues to grow and IT continues to evolve, the specifics of the IT knowledge and abilities required vary over time. As a result, relying on previous

research to determine IT knowledge and business abilities demanded by the market force and implementing by educators in the curriculum for accounting graduates may not be sufficient and relevant (Spraakman et al., 2015).

Thus, this study helps to identify the recent necessary IT competency in the accounting industry by gathering information from key stakeholders while comparing it to the level of IT competency learned by accounting graduates during their time in Malaysian public universities, at the same time, identifying the gaps to better understand the areas of improvement to sustain the accounting profession and ensure that accounting graduates are future-proof in the 4IR. This study intends to analyse the expectation of employers and match those skills with those of accounting graduates to indicate the skill/expectation gaps.

The gap between employers' expectations in terms of IT competency of accounting graduates and the IT competency currently possessed by accounting graduates in the 4IR era is investigated in this study. The IT learning experience of accounting graduates is explored to identify whether it has been sufficient in meeting the market demand (i.e., employers' expectations). Following such exploration, this study proposes an IT competency model that can serve as a reference point for enhancing accounting education in Malaysia. In addition, this study analyses how accounting education can play an important role in preparing and guiding students during their higher education journey by equipping them with technical knowledge and soft skills and (more importantly) with IT competency to meet challenging work environments.

1.4   Research Objectives

The general objective of this study is to analyse the expected IT competency of Malaysian accounting graduates in the era of the 4IR to prepare them better for the job market, thus enhancing their employability. This study attempts to address the specific objectives as follows:

a) To explore the expectations of employers with regards to accounting graduates' IT competency in the era of the 4IR.

b) To investigate accounting graduates' IT competency level based on the knowledge and experience gained during their higher education in fulfilling their respective employers' demands.

c) To identify the gap between employers' expectations and accounting graduates' IT competency level.

d) To develop a desirable IT competency model for accounting curriculum enhancement in Malaysian higher education institutions.

The IT competency level of accounting graduates in this study refers to IT competency that has been developed through their learning experiences in higher education institutions and the IT competency they can possess during their early working experience.

1.5   Research Questions

The following are the research questions for the study:

a) What are the expectations of employers with regards to accounting graduates' IT competency in the era of the 4IR?

b) What are the accounting graduates' IT competency levels in fulfilling their employer's demands?

c) What is the gap between employers' expectations and accounting graduates' IT competency levels?

d) What is the desirable IT competency model for accounting curriculum enhancement in Malaysian higher education institutions?

1.6   Significance of the Study

The demand for new competencies among accounting graduates is growing and has been discussed widely since the 1980s (Rahman et al., 2007). The studies pertaining to this issue shall be undertaken from time to time as the environment in which accounting is practised follows the changes in the business environment. Given that Malaysia is also experiencing profound technological changes and is looking forward to the 4IR, the IT competency of accounting graduates has become a critical skill demanded by the industry. Many studies have been conducted in other countries to discuss this matter, such as Australia, New Zealand, the United Kingdom and others (Daff, 2021; Jackson et al., 2022; Spraakman et al., 2015). However, there are only a few studies that have been conducted in Malaysia, such as the study on IT competency in accounting by Alsabahi, Ku Bahador, and Mat Saad (2020) and the study on incorporating IT competencies in the accounting curriculum by Ku Bahador and

Haider (2017). Therefore, the lack of research in Malaysia leads to the need for additional research presently.

This study contributes in terms of efficiency, productivity, and organization to the key stakeholders: employers, accounting graduates and accounting educators.

In order to identify the requirements of employers concerning the IT competence of accounting graduates, this study provides the platform for employers to deliver their desires and expectations on the IT competency they are looking for when hiring accounting graduates. This finding serves as a reference for accounting graduates to learn and prepare themselves efficiently to comply with the current need and employment standards.

For employers, the results of examining whether the IT competencies possessed by accounting graduates align with their demands will provide insight into future actions that employers can take to provide a resolution for better employee productivity. For example, an employer may provide training on how to fully utilize audit software if the results show that most accounting graduates still do not meet the employer's expectations. Besides, this study focuses on the gap between the skills expected by employers and the accounting students' learning experience in the curriculum of higher learning institutions in relation to the 4IR. Thus, enabling accounting educators to identify the crucial skills to be further developed among students and, therefore, take the initiatives to provide the equivalent education. By so doing, students can get themselves ready and adapt to the fast-changing technology environment in the future.

Apart from that, this study constructs the new IT competency model based on the interviews and the documentation review of the previous studies conducted on the competency models. The improvised IT competency model specifically for accounting

graduates in Malaysia becomes a reference for accounting educators and accounting graduates to enhance the learning and training process. Furthermore, it helps accounting educators organize the syllabus of accounting education efficiently to improve accounting graduates' productivity.

This is in line with the initiative of the government to produce individuals with the equivalent skills and knowledge to meet the current market needs, as stated in the National 4IR Policy, "The existing and future workforce will be equipped with the necessary skills to meet changing industry demands. Competency frameworks incorporating redesigned jobs, and new roles and skills, are also needed to provide the necessary information to guide the development of a highly skilled talent pool. This will enable industries to adopt and harness 4IR technologies to uplift productivity and competitiveness" (National 4IR Policy, 2021, p.55).

Consequently, equipping the accounting graduates with the appropriate competencies, as mapped in the competency model, will contribute to the employability rate of the graduates due to the skills incompatibility of the accounting graduates. Thus, it will indirectly contribute to economic growth.

1.7   Definition of Key Terms

1.7.1   Information Technology (IT)

IT constitutes of hardware and software products, information system operations and management processes, as well as the human resources and skills needed to utilize those products and processes (IFAC, 2014). IT is related with the management and control of technology in a variety of domains, including but not limited to processes, computer software, information systems, computer equipment, programming languages, and data structures.(Ghasemi et al., 2011; Hesam, 2017).

1.7.2   Competency

Competency is defined as the characteristics possessed by an individual that serve as the criteria for effective performance in a job or given situation (Spencer & Spencer, 1993). Competency is known as the knowledge, skills and abilities required for high performance (Mirabile, 1997). Similarly, it is defined by Rothwell (2002) as knowledge, skills, and abilities of an individual to execute important work tasks effectively.

1.7.3   Competency Model

Competency models are defined as the list of competencies whether functional or behavioural that are vital to perform a job effectively for a particular role that could contribute towards organizational excellence (Fogg, 1999; Mohd Noor & Dola, 2009). They are developed from extensive analysis on the factors that affect and separate the performance of high performers with low performers (Mirabile, 1997). The number of competencies in a competency model is dependent on the complexity and nature of the job as well as the values and culture of the organization but generally the list of competencies are organized in a hierarchical form or in clusters with descriptions

(Shippmann et al., 2000). Competency models offer a holistic view on the competencies required to perform and excel in a job and provides insights that are useful for the process of hiring, training and assessment (Rodriguez et al., 2002).

1.7.4 Employability Skill

Employability is made up of two terms "employment" and "ability", which refer to an individual's ability to work, either to be employed or to be self-employed (Azmi et al., 2018; Forrier & Sels, 2003).

Employability skills are a collection of accomplishments, understanding, and personal attitudes/qualities that indicate a person's ability to obtain desired employment and be competitive in their career path (Yusof & Jamaluddin, 2017) and are also known as job readiness skills (Azmi et al., 2018). In general, employability skills are those types of knowledge and skills that students require to meet different job demands in the labour market once they finish their studies. Graduates must have those competencies or qualifications to be hired (Azmi et al., 2018; Yusof & Jamaluddin, 2017).

1.8 Organization of the Research

This thesis consists of six (6) chapters in total. Chapter 1 presents the introduction and overview of the whole study which includes the problem statement, research objectives, research questions, significance of the study, and definition of key terms.

The rest of this study is organized as follows: Chapter 2 presents the collection of literature reviews associated with the topic that is of interest to this study encompassing a general overview and specific focus on the concepts, theories, and findings of the 4IR and its impacts, employability, IT competency of accounting

graduates, and the roles of accounting education. It also discusses issues such as the gap between employers' expectations and accounting graduates' learning experiences in relation to IT competency, as well as discussion on some of the existing competency frameworks. Chapter 3 describes the theoretical framework adopted in this study. Meanwhile, Chapter 4 outlines the research design and describes the methods being employed in this study.

Chapter 5 presents the results and discussion based on the research methodology outlined in Chapter 4. This chapter also focuses on the interpretation of the findings and the results from the analysis. Lastly, Chapter 6 presents the conclusions and recommendations of the research. At the end of the chapter, discussions on the contributions, limitations, and recommendations for future studies are presented.

1.9 Summary

In summary, one of the causes of unemployment for accounting graduates in Malaysia is their inability to meet the expectations of employers in the 4IR era. The adoption of 4IR emerging technologies in the accounting profession has required accounting graduates to possess the necessary IT competencies. Therefore, accounting education should provide them with a relevant IT syllabus to ensure they have sufficient learning experience and can have the right IT skills during their initial working period. In the next chapter, a review of the existing literature is carried out to explain the main elements of the study's objective.

CHAPTER 2

LITERATURE REVIEW

2.1   Introduction

This chapter aims to describe, analyse, discuss, and provide insight on the research topic from the collection of the previous studies.

To understand the relationship between employers' expectations, skills possessed by accounting graduates and accounting graduates' learning experience within the 4IR accounting curriculum environment, the job markets' expectation in relation to IT competency and to develop a desirable IT competency model, the background and history of 4IR as well as the impact of it on business, employment, and accounting profession will first have to be understood from the extant literature. The following section will discuss the collected literature on the skills expected by the industry, the skills perceived by accounting graduates and the gap between these two parties. The findings of the skills expected by the employers and necessary skills for accounting graduates in the era of 4IR will bring us to the next section, which looks at the role and importance of accounting educators in reducing the gap and helping students to develop the competencies through the improvise of accounting syllabus and framework.

To develop a desired IT competency model for accounting graduates in Malaysia at the end of this study, this chapter reviews some previous studies in relation to the IT competency model, both in Malaysia and abroad.