Digitalization in Accounting: Technology Knowledge and Readiness of Future Accountants

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Abstract In the course of digitalization, the accounting industry will adapt to comparable developments. Finance and accounting professionals must embrace the digital shift as the digital world evolves to remain relevant. To flourish in their career, future accountants must be equipped with the most up-to-date technological knowledge. Thus, this study aims to investigate the link between future accountants' technological knowledge and technology readiness for the digitalization of the accounting profession. This study employed a non-probability purposive sampling approach as the research unit with future accountants. Online surveys were used to examine the relationship between technology knowledge and the digitalization of the accounting profession. It was delivered to 546 interns from the top six public universities in Malaysia for accounting and finance. A total of 187 respondents have participated in the survey. This study discovered a significant link between future accountants' technology readiness and the digitalization of the accounting profession. It suggests explicitly that the better-equipped accountants are to use technology, the better their capacity to adapt to technological progress in the industry. However, there is a weak relationship between technological knowledge and digitalization. As a result, an adequate focus must be given to establishing future accountants' qualifications alongside professional degrees. Their tertiary education should include more

exposure and practice to digital literacy. Although this study was confined to six public institutions, the findings may not be extrapolated to represent the opinions of all future accountants. As a result, future studies might broaden the sample selection to include private and other universities.

Keywords Digitalization, Future Accountants, Technology, Knowledge, Technology Readiness

1. Introduction

The evolution of technology in Industrial 4.0 has driven the transformation of various sectors in the current digital age. Impliedly, as a reaction to the changes, the accounting profession has been forced to adapt to the new era. The fourth industrial revolution is branded as the convergence of physical processes and digitalization in dispersed systems. This implies a significant shift in the social and organizational environment in which accounting operates, as well as the tasks, responsibilities, duties, and skills required by accountants [1].

Due to technological advancement, the corporate sector has evolved drastically in the last several decades. Additional disruption and transformation of the industry

are expected to occur during the next decade. Many new and current practitioners will face problems and opportunities and the need to conduct skills such as ethical and legal action, professional judgment practice, and emotional intelligence. One of the most significant changes in the industry is the shift from manual to automated accounting systems [2]. As a result, the scope of accountants' work is increasing, and consumer expectations are also shifting. Impliedly, accounting enhancements and changes are made possible by technological innovation and digitalization. With the advent of digitalization in the accounting industry, accountants' jobs have altered dramatically to be more closely associated with contemporary equipment and technology advancement. Furthermore, accounting evolution stages have been expanded to include: 1) traditional manual accounting; 2) mechanized accounting; 3) automated accounting; 4) robotic accounting; and 5) artificial intelligence-assisted accounting [3].

Due to technology, automation and digitization of the organization's internal production processes and operations, staff knowledge and capabilities, as well as digital culture and skills, are important variables in dealing with a wide range of transformations [4]. With the current transformation of technologies, future accountants must get ready and fortify themselves with the latest technological knowledge and skills. Therefore, this research is to examine the relationship between the knowledge about technology and technology readiness for digitalization of the accounting profession among future accountants.

2. Technology Knowledge of Future Accountants

The awareness of technology knowledge has been raised by [36] whereby accounting students need to be competent has been raised as at that moment the development of technology and globalization has started. The undergraduates in accountancy were needed to fulfil on the demanding competencies in the students for them to be employed [37]. Accounting could be said as the business language and how it was affected too is because business processes were changed because of the IT tools usage [38]. Consequently, accounting students that were compliant with technology skills and knowledge will be in high demand by the nowadays business sectors.

The technology knowledge for the students should be improved as the current skills that most managers were compiled with to be in the industry. As such, they need to have the skills and abilities to respond to the current social changes [5]. The future accountant should have the competency of technology skills and be prepared for the technology development so they would be beneficial to the industry. Information technology has been the norm of its wide usage in business organizations. In accounting

history through the development of technology also had caused the manual process of accounting to slowly diminish and stop as the systems used in accounting were preferably automated as it is faster, accurate, reliable and could access huge volume transactions. The technology affects the accountant's job scope so accountant graduates that lack competency might be left behind. The development of technology helps in creating better opportunities in the industry in the present time and is also beneficial for the future. The development of technology also improved the accountant roles from the collector and the disseminator to the interpreter and the decision-maker.

These competent accountants would be needed to do analysis and interpretation for them to communicate with the involved decision-maker [47]. The researchers [39] stated that accounting was affected because of globalization, the development of capital markets in the global and the competition of the profession with others through the drastic changes. The needs that are required to be fulfilled by professional accountants are that they need to have the ability on the information systems for them to design and make an analysis [46]. Their success was measured by the systems that were used. Accountants also were needed to always improve their competency along with the expansion of demand for their services. Those who were not prepared for this expansion would be slipped from grabbing the opportunities that arise from the expansion and development. They also needed to have a long-term learning process especially through the development changes for them to be adaptable to complex technologies.

According to Ferreira et al. [1], professional digital skills are a critical aspect in the creation and application of emerging technologies in businesses. It also indicated that the optimistic viewpoint predominates, i.e., digital transformation is more of an opportunity for accounting than a threat. Therefore, accounting students must have proper technological knowledge because IT is extensively used throughout accounting functions and is widely used in accounting sectors [6].

Thus, this study hypothesized is:

H₁: There is a positive significant relationship between knowledge about technology and digitalization of the accounting profession

3. Technology Readiness of Future Accountants

The use of technology simplified accounting by making it more convenient especially by using the mobile technology that makes accounting practice easier other than it was fast and accurate. These help accountants to be accessible on their works wherever they are and make the corporate reporting more efficient. The development of technology helps corporate reporting to be more realistic with the availability of real-time access as stated by [40].

A competent accountant should be well prepared through all this development. [41] stated that there are various uses of Big Data in the accounting sector. The accounting practices that went through digitalization still need the accountants to provide the data that needed their expertise to go into them well.

[42] stated that an accountant needs to engage with the technology readiness especially through cloud computing, analytic tools and engagement through social media that needs constant focus and attention also with the time consumed for it. Technology readiness refers to people's propensity to embrace and use new technologies for accomplishing goals in home life and at work [7]. In other words, it is a set of technology-related beliefs that collectively define a customer's, employee's, or executive's willingness to adopt new technologies to achieve his or her goals, both at work and in leisure time (www.igi.global).

Similarly, Tan and Veal [8] have reported that the graduated accountants need to be exposed more to the technology for them to be excellent. Nowadays, the world has made visual stimulations the new trend for the students that makes them driven to obtain more into virtual learning, an early approach of technology to the students. The development of technology has been the key driver of world changes, especially through the web and internet support that makes it important for the students to be on the track with these changes. The impact of technology on the result got to impress the stakeholder more positively [43]. Moreover, future accountants should be ready to adapt to the evolution of technology since technological readiness has a significant influence on technology adoption [9]. Though, future accountants' technology knowledge is depended on their attitude, whether they are intentional seeking for knowledge or not (Foong & Khoo, 2015)

Past study has shown that technology readiness consists of two elements of trust issue. One is about the positive side and another is about the negative side of technology readiness. Positivity of the technology could upgrade an individual while the negativity of it could lower an individual performance because they were stuck [44]. This positivity and negativity were classified by Parasuraman [7] as insecurity, innovativeness, discomfort and optimism. The aspect of insecurity creates distrust towards technology that might be burdening on works. Second, the innovativeness that creates more chances by using technology towards their services or products. Third, discomfort brings up the confidence issue to use the new technology properly and next, the optimism is about the trust in the technology that it would be beneficial to increase efficiency in life. Innovativeness and optimism are the contributors that help an individual to improve their technology readiness. Meanwhile, insecurity and discomfort would act as inhibitors. This is because they would pressure the technology readiness condition of a person.

Many past pieces of research have adopted Technology Readiness Index (TRI) in measuring technology readiness for various research objectives such as to determine the relationship between technology readiness and technology usage behaviours [10-14]. The TRI is a 36-item multiple-item scale with good psychometric qualities. TRI is beneficial for acquiring a thorough understanding of both internal and external customers' willingness to embrace and interact with technology, particularly computer/internet-based technologies [14]. The greater the accountants' readiness to use technology, the greater their competencies in using IT [15]. This implies that the higher the readiness accountants are to use technology, the more adaptable they will be to technological advancements.

Thus, this study hypothesized that:

H₂: There is a positive significant relationship between technology readiness and digitalization of the accounting profession

4. Research Framework

Figure 1. Research framework

The growing use of the internet, in tandem with the advancement of technology, is constantly altering the way business is conducted and the working environment of accounting professionals. Therefore, the research framework embraces two variables: technology readiness and technology knowledge as the independent variables whereas digitalization of accounting profession is dependent variable. This study is based on two theories of digitalization namely, the Technology Acceptance Model and The Unified Theory of Acceptance and Use of Technology (UTAUT). The Technology Acceptance Model (TAM) has been frequently employed in organizational studies. The theory of TAM is adapted from the theory of reasoned action. It has been considered the dominant model for explaining technology adoption at all organization levels and an individual level [16]. According to Jones et al. [17], TAM assumes that the more accepting users are to use a new system, the more likely they will devote time to learning and adopting the

new system over the old one. Perceived ease of usage and perceived usefulness are the two proposed fundamental determinants of IT adoption in this theory. In other words, using the theory of TAM, an individual's intention to use an application is explained and predicted by his perception of the technology's usefulness and simplicity.

The unified theory of acceptance and use of technology (UTAUT) was combined from several theories in 2003 by Venkatesh et al. [18]. They suggest four core constructs: performance expectancy; effort expectancy; social influence, and facilitating conditions. The mentioned four are direct determinants of behavioural intention and ultimately behaviour, and that these constructs are in turn moderated by gender, age, experience, and voluntariness of use [19]. Up to date, UTAUT has been widely used as a theoretical lens by academics undertaking empirical investigations of user intention and behaviour in technology adoption and diffusion research.

From the above discussion, both the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) aim at understanding better why users accept or reject a given technology. The theories also show user acceptance can be improved through technology design.

5. Methodology

5.1. Sample and Data

This study employed a non-probability purposive sampling approach, with future accountants serving as the

research unit. Future accountants are current accounting students who will shortly enter the accounting profession [20]. The study sample focused on a total of 546 final-year accounting students from Malaysia's top six (6) public universities for accounting and finance who are participating in the internship program. A total of 187 (34%) respondents have participated in the survey. According to <https://www.easyuni.my>, Malaysia has eight (8) top accounting and finance from public and private universities. This study, however, excluded two (2) private universities to avoid information inconsistency during the comparison of public and private institutions.

The knowledge about technology items assesses respondents' technological general knowledge and knowledge of important accounting technologies that are consistent with IR 4.0. Several questionnaire items are measured on a Likert scale of "1: Extremely low" to "5: Extremely high," as derived from Shih and Chuang [21] and Strong and Portz [22].

In addition, sixteen items were asked to determine the technology readiness level of the respondents, based on the Technology Readiness Index (TRI) as adopted with permission from Parasuraman and Rockbridge Associates Inc., 1999. Furthermore, the respondents' opinions on the digitization of the accounting profession are being gauged based on "opportunities for future accountants (5 items)" and "risk for future accountants (5 items)". These items were adapted from Voss and Riede [23] and rated on a five-point Likert scale of "1: Strongly disagree" to "5: Strongly agree". The items for the variables are listed in Table 1 as follows:

Table 1. List of variables

Opportunities for Future Accountants	1. Digitalization creates more new jobs.
	2. Digitalization reduces working time.
	3. Digitalization raises more work autonomy.
	4. Digitalization provides better agronomics (support in performing heavy, dangerous, or complex work).
	5. Digitalization enhances more gender equality for women in work.
Risks for Future Accountants	1. Digitalization introduces challenges to the work.
	2. Digitalization raises job instability.
	3. Digitalization expands working time (work from anywhere and at any time).
	4. Digitalization would increase the workload (work intensification, dependence on 'data masters' and surveillance).
	5. Digitalization increases competition among employees.

Source: adapted from Voss and Riede [23]

6. Findings and Discussion

The online questionnaires were provided through personal contact with the Internship Coordinator at each of the six (6) public universities, who subsequently shared the link to the online surveys with their interns. The researchers followed up at least three times to ensure that as many people as possible took part in the survey. The data collection period lasted roughly two (2) months. In all, 187 (34.25 percent) of the 546 respondents returned the questionnaires. SPSS is used to analyze the data.

6.1. Respondents' Demographics

The respondents were 38 (20.3%) male and 149 (79.7%) female from the six (6) selected public universities. The majority (157 or 84.0%) are between the ages of 20 and 24, and their internships last between 3 and 6 months. Malay interns account for 148 (or 79.1%) of the total, followed by Chinese interns (18 or 9.6%). All of the respondents enrolled in Bachelor of Accountancy programs at their respective universities.

The audit firms (116 or 62%) are the most common business sector to which interns are attached, followed by private firms (36 or 19.3%). Federal government agencies, state government agencies, financial institutions, and others, such as tax firms and essential services firms, make up the remaining employers.

In terms of location, the majority of employers are in Selangor (48 or 25.7%) and Kuala Lumpur (43 or 23%), with 21 percent (11.2%) in Johor. Other states have low percentages, with less than 10%. The demographic information emphasizes the respondents' credibility as survey participants for this study.

6.2. Reliability of the Instrument

Cronbach's Alpha is used to determine the measurement's reliability; values above 0.7 are deemed acceptable, while values above 0.8 are preferred [24]. The Cronbach's Alpha values in Table 2 show that all of the items in the questionnaires are reliable and can be used for further analysis.

Table 2. Reliability Statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Knowledge about technology (BKnowledgeTech)	.963	.963	35
Technology readiness (CTechReadiness)	.889	.885	16
Digitalization of the accounting profession (DDigiAcctgProf)	.797	.804	10

Table 3. Mean score

	N	Minimum	Maximum	Mean	S.D.
B1TGM	187	2.14	5.00	3.5623	.60783
B2S	187	2.00	5.00	3.4421	.62270
B3CS	187	1.00	5.00	2.6150	.82233
B4DATABASE	187	1.00	5.00	2.8966	.83887
B5OFFICE	187	2.00	5.00	4.0235	.64515
B6AUDIT	187	1.00	5.00	2.9198	.90529
B7ADVTEC	187	1.00	5.00	2.7134	.80681
Knowledge about technology (BKnowledgeTech)	187	1.58	5.00	3.1675	.56368
CTechReadiness	187	1.94	5.00	3.5682	.56088
Technology readiness					
D1OFA	187	2.40	5.00	3.8235	.57425
D2RFA	187	1.00	5.00	3.8353	.65339
Digitalization of the accounting profession (DDigiAcctgProf)	187	1.70	5.00	3.8294	.49213

Note:

n, = how big the set of numbers; N = the population size; MEAN = average of a data set; S.D. = STANDARD DEVIATION
 B1TGM= Technological General Knowledge; B2S = Software; B3CS= Complex Systems; B4DATABASE= Database; B5OFFICE= Office Automation; B6AUDIT= Audit Automation; B7ADVTEC= Advanced Technologies; CTechReadiness = Technology Readiness; D1OFA= Opportunities for Future Accountants; D2RFA= Risks for Future Accountants

Mean score of variables

In interpreting the level mean scores for knowledge about technology, technology readiness and digitalization of the accounting profession, this study uses the level of mean score described by Landell [1997, as quoted in 25, 26]. Low, medium and high scores are represented by mean scores of 1.00-2.33, 2.34-3.67, and 3.68-5.00, respectively. Table 3 summarises the mean score on knowledge about technology, technology readiness and digitalization of the accounting profession.

Referring to Table 2, the mean score of 3.17 indicates a moderate level of knowledge about technology among the respondents. The knowledge about office automation has the greatest mean score (B5OFFICE, mean = 4.02), while knowledge of complex systems in accounting has the lowest mean score (B3CS, mean = 2.62). Office automation provides a variety of commercial business suit technologies, like Microsoft Office 365, Google Apps, and HyperOffice, which may be used efficiently in work settings [27]. The findings of this study are backed up by the work of Asatiani et al., [28], who discovered that office automation has increased the effectiveness and efficiency of workers' organizational functions and status. Knowledge of office automation allows future accountants to focus on more exciting and valuable jobs by freeing up time and resources.

Additionally, the mean score of 3.57 indicates a moderate level of technology readiness among the respondents. Technology readiness is a set of technology-related attitudes that collectively determine a customer's, employee's, or executive's propensity to accept new technologies to attain his or her goals, both at work and in their leisure time (www.igi.global). Thus, the mean score reflects respondents' willingness to adopt and use new technology in their personal and professional lives [7] is at a moderate level.

Meanwhile, the overall mean score for digitalization of the accounting profession is high (mean = 3.83), with respondents expressing strong opinions on both future accountants' opportunities (D1OFA, mean = 3.82) and future accountants' risk (D2RFA, mean = 3.84). These findings show that the digitalization of the accounting profession presents both high opportunity and significant risk for future accountants. Accountants have a huge opportunity to increase their level of expertise, particularly in terms of skill and knowledge of digitalization, which may give the impression that accountants' tasks will be tougher in the future [29]. Digitalization will result in the automated processes of more ordinary and repetitive functions, allowing accountants to focus on opportunities to add value to the organization and users [30].

Multiple Regression analysis - Testing for the hypotheses

A multiple regression analysis was conducted to test for

the relationships between the two independent variables, which are knowledge about technology (BKnowledgeTech) and technology readiness (CTechReadiness) with the dependent variable, digitalization of the accounting profession (DDigiAcctgProf). Related assumptions were checked for and statistical evidence proved that there are no violations to those assumptions.

Normality assumption

The skewness and kurtosis data were used to determine normality in this investigation. The symmetrical distribution of a variable is measured by skewness, while the peak of the variable's distribution is measured by kurtosis [31]. In determining normality, a skewness value of no more than 3 and a kurtosis value of no more than 10 are acceptable [Chou & Bentler, 1995 and Kline, 1998 as cited in 32].

Table 4. Normality test

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
BKnowledgeTech	.427	.178	.908	.354
CTechReadiness	.333	.178	.273	.354
DDigiAcctgProf	-.256	.178	1.094	.354
Valid N (listwise)				

Results indicate that the data are normally distributed, with the skewness values and the kurtosis value of not more than 3 and not more than 10, respectively.

Multicollinearity assumption

Table 5 summarizes the results for multicollinearity. The tolerance value of 0.829 (>0.10), and VIF value of 1.206 (<10) indicate no multicollinearity [24].

Table 5. Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	BKnowledgeTech	.829	1.206
	CTechReadiness	.829	1.206

Multiple Linear Regression test

Table 6. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.361 ^a	.131	.121	.46137

a. Predictors: (Constant), CTechReadiness, BKnowledgeTech

b. Dependent Variable: DDigiAcctgProf

The R Square value in Table 6 highlights how much the model explains variance in the dependent variable. The value of 0.131 shows that the model i.e. knowledge about technology (BKnowledgeTech) and technology readiness (CTechReadiness) explains 13.1% of the variance in digitalization of the accounting profession (DDigiAcctgProf). However, there are also other factors contributing to the variance in digitalization of the accounting profession (DDigiAcctgProf), which are not tested within the scope of this study.

As there are two independent variables included in the model, there is a need to compare which variable contributed to the prediction of the dependent variable. Referring to Table 7, the larger beta value of 0.316 is for technology readiness (CTechReadiness). This means that technology readiness (CTechReadiness) makes the strongest contribution to explaining digitalization of the accounting profession (DDigiAcctgProf). This is consistent with Ilias, Baidi & Rahman (2020) that accounting practitioners appear to be optimistic about learning any new technology when it comes to readiness. However, knowledge about technology (BKnowledgeTech) is not making a significant contribution (Sig.value > .05). This might be because the interns are in the first stage of starting a profession. Another rational explanation is, the level of technology knowledge is dependent on students' attitudes, whether they are intentionally seeking knowledge or not. Attitude is a significant predictor of students' intention to enhance their present knowledge, which has a favourable effect on their current knowledge level [45].

Further check on the statistical significance for knowledge about technology (BKnowledgeTech) and technology readiness (CTechReadiness) as depicted in Table 6, reflects that technology readiness (CTechReadiness) makes a significant contribution (Sig. value < .05) to the prediction of the dependent variable - digitalization of the accounting profession (DDigiAcctgProf), whereas knowledge about technology (BKnowledgeTech) is not making a significant contribution (Sig. value > .05). Thus, there is a significant positive relationship between technology readiness (CTechReadiness) and the digitalization of the accounting profession (DDigiAcctgProf). It is consistent with Alkhaffaf et al. (2018) which means that the degree of technical readiness of accountants in terms of willingness,

enthusiasm, and motivation to use IT has an impact on their IT capabilities. In other words, the more prepared an accountant is to use technology, the greater their ability to use information technology.

In contrast, although knowledge about technology (BKnowledgeTech) contributed 0.088 (8.8%) to the digitalization of the accounting profession (DDigiAcctgProf), there is no statistically significant relationship between these two variables. This means future accountants are not equipped with enough exposure to the current technology and digital literacy. This may be because the digital literacy competency of Malaysian students was influenced by a variety of factors, including English language proficiency and the design of multimodal forms in digital material [33]. The result is also similar to Kongpradit et al., [34] study which found that accounting students had more digital competence but less on digital content creation. This is in line with Zhyvets's [35] study that there is a lag in accountants' competency in "digital" training from the real proficiency required for employment at an automated workplace of an enterprise accountant. Therefore, it suggests that the digital competency of future accountants must be encouraged and enhanced at both the curricular and institutional levels.

7. Conclusions

The objective of pursuing the accounting sector on continuous studying is to build professional accountants with high competency, capabilities, with wide professional knowledge, professional skill, a good value with ethics and good attitudes. They need to have the abilities and competency, especially on information technology knowledge because they would be treated as the manager of the information technology and also as the designer and the evaluator. The development of information technologies has improved access to financial and non-financial data. Most research shows how technology makes changes toward accounting life such as management accounting that needed to go through the changes of its fundamentals. Thus, this creates urgency towards the accounting graduates to not cause the accounting profession of its influence to be diminished.

Table 7. Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.597	.245		10.618	.000
	BKnowledgeTech	.077	.066	.088	1.167	.245
	CTechReadiness	.277	.066	.316	4.186	.000

a. Dependent Variable: DDigiAcctgProf

Overall, the finding shows that there is a significant relationship between technology readiness and the digitalization of the accounting profession of future accountants. It is anticipated by the fact that the accounting profession is expected to embrace a new era of digitalization that will change the way traditional accounting practices, from record-keeping to reporting requirements, from big data and data analytics to the internet of things and blockchain. Explicitly, it implies the more well-prepared accountants are to use technology, the greater their ability to adapt to technological advancement in the industry.

However, there is a trivial link in the case of technology knowledge and digitalization. Therefore, equal attention has to be given to developing the future accountant together with professional qualifications. Exposure to digital literacy and skills should be enhanced at their tertiary education. This study provides important insights for professional accounting bodies looking to increase the integration of information and communication technology (ICT) into accounting education curriculum and assessment policies. Accounting educators must be creative in their teaching and assessment strategies to effectively integrate ICT on campus and future accountants must be encouraged to explore the various technologies that are used in the industry. Nevertheless, this study is limited to only six public universities, the results may not be generalized to represent all future accountants' beliefs. Thus, future research may expand the sample selection by including private and other universities.

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