Indonesian Journal of Sustainability Accounting and Management
ISSN 2597–6214 | e–ISSN 2597–6222
DOI: 10.28992/ijsam.v7S1.879

Fulfilling the Demands of Digitalization in the Accounting Profession: A Technological Knowledge Assessment for Future Accountants

Yunita Awang[1] * | Azuraidah Taib[2] | Shazalina Mohamed Shuhidan[3] | Norfadzilah Rashid[4] | Mohd Sidki Hasan[5]

[1]*Faculty of Accountancy, Universiti Teknologi MARA (UiTM) Dungun Campus, Terengganu, Malaysia*
[2]*Faculty of Accountancy, Universiti Teknologi MARA (UiTM) Dungun Campus, Terengganu, Malaysia*
[3]*Faculty of Accountancy, Universiti Teknologi MARA (UiTM) Puncak Alam Campus, Selangor, Malaysia*
[4]*Faculty of Business and Management, Universiti Sultan Zainal Abidin, Gong Badak Campus, Terengganu, Malaysia*
[5]*Malaynomic Analytic Sdn Bhd, Malaysia*

*Correspondence to: Yunita Awang, Faculty of Accountancy, Universiti Teknologi MARA (UiTM) Dungun Campus, 23000 Dungun, Terengganu, Malaysia.
E-mail: yunita@uitm.edu.my

Abstract: As the digital world continues to grow, both finance and accounting practitioners, as well as future accountants, must embrace the digital transition in order to remain relevant. Thus, this study attempts to assess the technological knowledge for future accountants and evaluate its relationship with the digitalization of the accounting profession. Employing a non-probability purposive sampling approach, online questionnaires were distributed to accounting interns from the top six public universities for accounting and finance in Malaysia. This study found a moderate level of knowledge about technology among the respondents. Meanwhile, there is a significant and weak positive relationship between knowledge about technology and the digitalization of the accounting profession. Future research could be extended to accounting students at all universities and use alternative research methodologies, such as in-depth interviews, to improve the assessment of future accountants' technological knowledge.

Keywords: accounting profession, digitalization, future accountants, knowledge, technology.

Article info: Received 17 November 2022 | revised 27 February 2023 | accepted 14 March 2023

Recommended citation: Awang, Y., Taib, A., Shuhidan, S. M., Rashid, N., & Hasan, M. S. (2023). Fulfilling the Demands of Digitalization in the Accounting Profession: A Technological Knowledge Assessment for Future Accountants. *Indonesian Journal of Sustainability Accounting and Management, 7*(S1), 25–35. https://doi.org/10.28992/ijsam.v7S1.879

INTRODUCTION

The starting point of IR4.0 in the current decade has changed the worldwide industrial needs to rely more on digital software and automatization of robotic function to replace human tasks (Sima et al., 2020). More critical tasks nowadays have been taken over via applications of software that are really connected with the internet of things. The accounting industry is also expected to adapt to similar changes, with the move towards digitalization of the accounting profession (Duong & Fledsberg, 2019). The improvement of advanced computer systems diminishes accountants workload; monotonous exercises in conventional strategies setting are made basic and simple. Careers are advancing continually in technological advances, globalization, and

intensified competition. The accounting industry is the foremost pertinent calling in which technological advances and globalization are and will be most impacted. Nevertheless, as obtaining information about companies financial statements remain important, highly skilled and expert public accountants are needed to execute their tasks ethically in accounting profession (Hermawan et al., 2021). In a digitalized environment, the accounting profession gets to be more challenging as the accountants must be more skilled in Information Technology (IT) and Accounting Information System (AIS).

As a profession, it is obvious that the role of the accounting and finance experts is a relevant part of digital skills. The challenge is to understand exactly what these competencies consist of in the changing business model in the transformed company. A shortcoming in the industry focused more on general than accounting-specific skills, especially due to the lack of data analysis (Earley, 2015). Furthermore, according to Afolabi (2014), only 2.6% of employers in the industry will not be concerned about the IT usage capabilities among the accounting graduates. To maximize accounting functions effectively and efficiently, accountants must be familiar with the software tools used in the accounting profession. Accounting software, income tax, audit, word processing and graphic software are among the software that need to be mastered in the accounting industry (Ghasemi et al., 2011). In Malaysia, software such as Financio, SQL Account, Biztory, Intuit Quickbooks, Ace Software, UBS are popular accounting software that are frequently in use. Worldwide, Enterprise Resource Planning (ERP) has become widely used in recent years, especially in large companies. Within an organisation, the employees' knowledge and competencies coupled with digital culture and skills are important factors in coping with an extensive transformation due to technologisation, automation and digitalisation of production processes and operations (Stancheva-Todorova, 2019).

Specific proficiency in information technology is required of professional accountants because it is pervasively used in the business world (IFAC, 2001 as quoted in Ismail & Abidin, 2009) and has impacted almost every area of the accounting profession today (Elliott & Jacobson, 2002). Professional accountants are confronted with new challenges and risks as technology becomes more sophisticated and complex in most enterprises (Scapens & Jazayeri, 2003). Thus, accounting students must maintain technical accounting competences and expand their knowledge in order to adapt and apply their skills in a new environment (Black, 2012). This suggests that, in addition to technical competencies, knowledge in ICT will provide crucial benefits for job placement among accounting graduates. Future accountants comprise of the present accounting students who will soon join the accounting profession (Suhaiza, 2014). In the context of this study, accounting students undergoing internship are considered as future accountants as commonly these accounting interns are in their final year of accounting courses at their respective universities and soon be joining the accounting profession. The intellectual challenges of future accountants are not automatically built however are resulted from the increasing complexities of modern work tasks and technologies tasks (Al-Htaybat et al., 2018). Numerous developments in digital technology (e.g., fintech, big data, blockchain, drone technology, social media etc.), have direct impact on the accounting profession. As technology evolves, it provides the accounting profession with exciting opportunities, accounting is the highest priority for the most disadvantaged careers. A PWC survey predicts 97.5% likelihood that accounting is automated within the next 20 years (PwC, 2015). For most bookkeeping activities carried out automatically, this will cause substantial job losses. The roles of digital accountants will also change dramatically, with new challenges to the accounting trade in tandem with the increased value of behavioral skills such as the exercise of professionals and emotional intelligence. Business consultant and forensic accounts are also expanded to include big data analysis, cloud computing, business consultancy and

assistance to customers. Any successful accountant's experience in this time of rapid change is much more precious to his customers than costly (Riddell, 2015). Mobility is also an important topic for digital accountants. The accounts are increasingly mobile as new digital communications render the virtual office a reality today (Riddell, 2015). Therefore, the necessary skills and literacy of future accountants might vary due to the different requirements of the organization. Future accountants must be equipped with the most up-to-date skills and knowledge of cutting-edge technology in order to meet the demands of the digital era.

Information Communication and Technology (ICT) is commonly regarded as a potent and widespread driver for change in economies and cultures (Jones et al., 2017). Changes in business technology influence the ICT skills that aspirant accountants and experienced accountants need to fulfil their positions. Digital technology influences the company's strategic and competitive goals, but it also impacts the consumer trends, competitive benefits and the company's market strategy (Ismail et al., 2017). In addition, digital technology has a major impact on accounting information and control systems (Mancini et al., 2017). Many automated systems, which did not exist ten years ago, are now actively used for the accounting profession with technological advancement (Tekbas, 2018). The findings have shown that the accounting profession is highly likely to be automated and digitalized soon. It is an urge that, "the accounting industry urgently needs a group of sophisticated AIS professionals that could handle sophisticated IT demands in accounting services and activities" (Pan & Seow, 2016). This signifies the needs for the aspirant accountants and experienced accountants to equip themselves with the knowledge about technology to fulfil the changing demand in the accounting profession due to digitalization. In short, digitalization leads to sustainable accounting practices in the digitized business environment. Thus, this study attempts to assess technology knowledge of future accountants and evaluate its relationship with the digitalization of the accounting profession. The underlying theory for this study is the Technology Acceptance Model (TAM). TAM is a model developed by Davis (1989) from the Theory of Reasoned Action (TRA), a psychological theory that attempts to explain people's actions by recognizing causal linkages between diverse components such as beliefs, attitudes, intents, and behaviors (Lai & Lee, 2020). TAM is one of the most influential models widely used in studies of the determinants for user acceptance and usage behavior of information technology. In this study, the component of TAM, which is perceived usefulness is related to the use of technology knowledge among future accountants towards digitalization of accounting profession.

METHODS

This study used a non-probability purposive sampling approach with future accountants as the unit of research. The future accountants consist of present accounting students who will soon join the accounting profession (Suhaiza, 2014). Specifically, the sample of study focused on the final year accounting students from top six (6) public universities for accounting and finance in Malaysia, who are exercising their internship program. In total, there are eight (8) top universities for accounting and finance in Malaysia as listed by https://www.easyuni.my. However, this study excluded the two (2) private universities to avoid discrepancy of information during the comparison made between public and private universities.

The items on knowledge about technology is measuring the technological general knowledge and knowledge about critical accounting technologies that are consistent with IR 4.0, among the respondents. This involves several questionnaire items measured based on Likert-scale of "1: Extremely low" to "5: Extremely high", adapted from various sources as described in Table 1.

Table 1 Measurement items for Knowledge about technology

Sub-section	No. of items	Sources
Technological general knowledge	7	(Shih & Chuang, 2013)
Knowledge about software	3	(Strong & Portz, 2015)
Knowledge about complex systems	2	
Knowledge about database	3	
Knowledge about office automation	5	
Knowledge about audit automation	5	
Knowledge about advanced technologies	10	

In addition, the digitalization of the accounting profession is gauging the respondents' opinion on digitalization of the accounting profession based on "opportunities for future accountants (5 items)" and "risk for future accountants (5 items)". These items are measured based on Likert-scale of "1: Strongly disagree" to "5: Strongly agree". The questionnaire items were adapted from Voss & Riede (2018).

The online questionnaires were distributed via personal contact with the Internship Coordinator for the respective six (6) public universities, who then shared the link to online questionnaires to their interns. At a minimum, three times follow-up was done by the researchers to ensure the highest possible respondents took part in the survey. The duration for data collection was about two (2) months. In total, 187 out of 546 (34.25%) respondents returned the questionnaires.

RESULTS AND DISCUSSION

This study's respondents comprised a total of 187 individuals selected from six public universities. Of this population, 20.3% (or 38 individuals) identified as male, while a significant majority, 79.7% (or 149 individuals), were female. The age distribution of the participants revealed that the majority were relatively young, with 84.0% (or 157 individuals) falling in the age group of 20 to 24 years. The duration of their internships was primarily within a period of 3 to 6 months, as reported by 97.3% (or 182 individuals).

Ethnically, the sample was predominantly Malay, comprising 79.1% (or 148 individuals), followed by a smaller portion of Chinese participants at 9.6% (or 18 individuals). The entirety of the respondents was enrolled in the Bachelor of Accountancy program at their respective universities, adding a level of homogeneity in terms of academic exposure and field of study.

In terms of their professional engagement, the interns were predominantly placed within Audit firms, which constituted 62% (or 116 individuals) of the sample. This was followed by Private Firms, representing 19.3% (or 36 individuals). The remaining internships were spread across various sectors, including Federal Government Agencies, State Government Agencies, Financial Institutions, and other sectors such as Tax firms and Essential services firms. Geographically, the majority of employers were located in Selangor (25.7% or 48 individuals) and Kuala Lumpur (23% or 43 individuals). Johor hosted 11.2% (or 21 individuals), while the rest were dispersed across various other states, each hosting less than 10% of the total respondents.

The demographic information substantiates the credibility of the respondents as suitable participants for the survey deployed in this study. To ensure the reliability of the measurements used in the study, Cronbach's Alpha

was employed. This reliability coefficient is generally considered acceptable when the value is above 0.7 and preferable when above 0.8, according to Pallant (2010). As demonstrated in Table 2, the Cronbach's Alpha values for both measured variables, Knowledge about technology (BKnowledgeTech) and Digitalization of the accounting profession (DDigiAcctgProf), were 0.963 and 0.797, respectively. These values, all falling within the acceptable range, confirm that the items used in the questionnaires were reliable and suitable for subsequent analyses in the study.

Table 2 Reliability Statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
Knowledge about technology (BKnowledgeTech)	.963	.963	35
Digitalization of accounting profession (DDigiAcctgProf)	.797	.804	10

This study refers to the level of mean score described by Landell (1997), as cited in Abdullah et al., 2017; Hairuzila & Abdullah, 2018) in interpreting the level mean scores for knowledge about technology and digitalization of accounting profession. The mean scores of 1.00-2.33, 2.34-3.67 and 3.68-5.00 are used to indicate low, medium and high scores respectively. The mean score on the knowledge about technology and digitalization of the accounting profession is summarized in Table 3.

Table 3 Mean score on the knowledge about technology and digitalization of accounting profession

	N[1]	MINIMUM	MAXIMUM	MEAN	S.D.[2]
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
D1OFA	187	2.40	5.00	3.8235	.57425
D2RFA	187	1.00	5.00	3.8353	.65339
Digitalization of 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; D1OFA = Opportunities for Future Accountants; D2RFA = Risks for Future Accountants

Overall, the knowledge of technology is at a moderate level (mean = 3.17) among the respondents. The highest mean score is on the knowledge about office automation (B5OFFICE, mean = 4.02) and the lowest mean score (B3CS, mean = 2.62) is on the knowledge about complex systems in accounting consistent with IR 4.0. Office automation gives as many commercial business suit tools such as Microsoft Office 365, Google Apps, Hyper Office, which can be effectively used in business environments (Skendzic & Kovacic, 2012). The findings of this study are consistent with the work of Asatiani et al. (2020) who found that office automation has improved the aspect of workers' organizational roles and status by improving their role more effectively and efficiently. According to the Technology Acceptance Model (TAM), the intent of an individual to utilize a technological tool is heavily determined by two principal beliefs: perceived usefulness and perceived ease of use. This fundamental model, extensively used in the field of information systems, has its theoretical foundation rooted in the idea that the perceived value and ease associated with a technological solution play a pivotal role in its adoption.

The concept of perceived usefulness, one of the core beliefs in the TAM, refers to the subjective expectation of an individual regarding the potential benefits or enhancement in their job performance they would gain from using a specific technology. This notion is profoundly explored in the seminal work by Venkatesh & Bala in 2008. In their research, they correlate perceived usefulness with the degree to which an individual is convinced that leveraging a particular technology will amplify their work output, ultimately leading to improved efficiency and effectiveness.

Applying these principles to the field of accounting, and specifically office automation, we can clearly understand the benefits. Knowledge of office automation technologies can significantly free up time and resources for accountants. With automation handling mundane, repetitive tasks, accountants can allocate their valuable time and cognitive resources towards more complex, intriguing, and high-value tasks.

The profound implication of this shift is that accountants of the future would not be limited to traditional bookkeeping. Instead, they can focus on areas such as strategic financial decision-making, risk management, financial consulting, and other tasks that require a high degree of critical thinking and expertise. Therefore, understanding and adopting these technologies not only has the potential to significantly boost productivity but can also transform the role of an accountant into a strategic partner within an organization.

Meanwhile, the overall mean score for digitalization of accounting profession is at a high level (mean = 3.83), in which the respondents opined a high level on both, the opportunities for future accountants (D1OFA, mean = 3.82) and the risk for future accountants (D2RFA, mean = 3.84). These findings reflect high opportunities as well as high risk facing future accountants in the digitalization of the accounting profession. There is a significant opportunity for accountants to broaden their level of expertise, primarily in terms of skill and knowledge of such digitalization, which may give the impression that accountants' workload will be challenging in the future (Moll & Yigitbasioglu, 2019).

In this study also, the association between knowledge about technology (BKnowledgeTech) and digitalization of the accounting profession (DDigiAcctgProf) was explored using the Pearson product-moment correlation coefficient. This statistical method is employed to measure the strength and direction of the relationship between two variables.

The calculated correlation coefficient between knowledge about technology and the digitalization of the accounting profession was found to be 0.219. According to the standards set by Cohen in 1988 and cited by Pallant in 2010, this value signifies a small correlation between the two variables under consideration.

Hence, the statistical analysis indicates a significant, albeit weak, positive relationship between the degree of knowledge about technology and the extent of digitalization in the accounting profession, confirmed by the correlation coefficient ($r = 0.219$) with a sample size of 187 and a significance level of $p < .005$.

This suggests that while an increase in technological knowledge can be associated with an increase in the digitalization of the accounting profession, the strength of this association is relatively weak. It implies that other variables not investigated in this study may also significantly contribute to the digitalization of the accounting profession.

Table 4 Correlations

		BKnowledgeTech	DDigiAcctgProf
BKnowledgeTech	Pearson Correlation	1	.219**
	Sig. (2-tailed)		.003
	N	187	187
DDigiAcctgProf	Pearson Correlation	.219**	1
	Sig. (2-tailed)	.003	
	N	187	187

**. Correlation is significant at the 0.01 level (2-tailed).

Analysis of the data in the form of a Pearson correlation matrix reveals a significant, yet weak, relationship between two specific variables: BKnowledgeTech, which stands for knowledge about technology, and DDigiAcctgProf, which signifies the digitalization of the accounting profession. The Pearson correlation coefficient value of 0.219 suggests a mild positive correlation between these two variables. It indicates that an enhancement in technological knowledge tends to correlate with a moderate increase in the level of digitalization within the accounting profession.

However, the coefficient of determination, derived from the square of the Pearson correlation coefficient, indicates that this relationship accounts for only 4.80 percent of the variance in the digitalization of the accounting profession. This percentage illustrates the extent of the variance in the dependent variable (digitalization of the accounting profession) that can be predicted from the independent variable (knowledge about technology).

This relatively low percentage suggests that while there is an impact of technological knowledge on the digitalization of the accounting profession, it is not the primary or even a significant determinant. Therefore, it can be interpreted that over 95 percent of the factors influencing the digitalization of the profession are not determined by technological knowledge alone.

These findings of this study resonate with the research conducted by Ciurea & Man (2020). Their research indicated that the future of the accounting profession is shaped by various factors, including professional accountants' expectations, acquired skills, and their ability to adapt to the demands of digitalization.

However, it is essential to note that the current study does not probe into these additional factors beyond the realm of accountants' technological knowledge skills. Thus, while this study reinforces the role of technological knowledge in the process of digitalization, it also highlights the need for more comprehensive research to fully understand the array of factors influencing the digitization of the accounting profession in the context of a rapidly evolving digital environment (Andreassen, 2020).

CONCLUSION

There is a rising speed of evolution in today's digital world. Evolution has emerged in all areas of business and private life. As such, the core of business in the contemporary digital age is being revolutionized by digitalization. Businesses are not only faced with the decision of whether to digitalize or not, but rather how efficiently they use the opportunity to remain relevant to their customers. Likewise, the practitioners in finance and accounting need to take on this digital transition to remain relevant, as the digital world continues to evolve. Future accountants must be equipped with the most up-to-date technological knowledge to excel in their profession and contribute to the organization's success. This study found a moderate level of knowledge about technology among the respondents, with the highest knowledge about office automation and the lowest knowledge is about complex systems in accounting consistent with IR 4.0. Meanwhile, there is a significant and weak positive relationship between knowledge about technology and digitalization accounting profession, indicating potential other factors that may influence the digitalization of accounting profession. As such, this study fulfilled its research objective that is to assess technology knowledge of future accountants and evaluate its relationship with the digitalization of the accounting profession. Overall, this study offers findings and insights that could be useful to educational systems and professional bodies to strengthen the digital literacy of future accountants. Since the future accountant's knowledge is only at moderate level, Universities may incorporate various digital literacies in the syllabus to strengthen student's skills and accomplishments. Moreover, professional bodies may also assimilate the digitalization expertise to improve the accounting profession in the current age. However, the current study is limited to students from a few universities, which may limit the generalizability of the findings beyond the universities. Future research could broaden the scope to include all universities with accounting students in order to improve the assessment of future accountants' technological knowledge. Future research could also explore additional qualitative research methodologies, such as in-depth interviews, to understand more about the changes in the function of accountants in a digitalized environment, as well as the accounting duties that are automated in businesses. By using in-depth interview method, it is expected that more comprehensive information can be obtained. Since it involves a personal interview, in-depth interview will provide better understanding of underlying motivations, beliefs, attitudes, and feelings of respondents on a particular subject.

ACKNOWLEDGEMENT

The authors would like to thank UiTM Cawangan Terengganu for providing financial support under the Research Collaboration Fund 2020 (600-UiTMCTKD (PJI/RMU 5/2/1) Jld. 4). In conducting the survey, research participants are provided with sufficient information to assist an informed decision as to whether to take part in research (informed consent) through the cover letter of questionnaire.

ORCID

Yunita Awang https://orcid.org/0000-0002-5737-5546

REFERENCES

Abdullah, A. A., Abd Rahman, S. N. S., & Hamzah, M. H. (2017). Metacognitive skills of Malaysian students in non-routine mathematical problem solving. *Bolema Boletim de Educação Matemática, 31*(57), 310-322. http://dx.doi.org/10.1590/1980-4415v31n57a15

Afolabi, S. O. (2014). Quality of accounting graduates: A survey of employers in Nigeria. *IOSR Journal of Business and Management, 16*(11), 29-42. available at: https://www.iosrjournals.org/iosr-jbm/papers/Vol16-issue11/Version-2/E0161122942.pdf

Al-Htaybat, K., von Alberti-Alhtaybat, L., & Alhatabat, Z. (2018). Educating digital natives for the future: accounting educators' evaluation of the accounting curriculum. *Accounting Education, 27*(4), 333-357. https://doi.org/10.1080/09639284.2018.1437758

Andreassen, R. I. (2020). Digital technology and changing roles: a management accountants dream or nightmare?. *Journal of Management Control, 31*(3), 209-238. https://doi.org/10.1007/s00187-020-00303-2

Asatiani, A., Penttinen, E., Ruissalo, J., & Salovaara, A. (2020). Knowledge Workers' Reactions to a Planned Introduction of Robotic Process Automation—Empirical Evidence from an Accounting Firm. in Rudy Hirschheim & Armin Heinzl & Jens Dibbern (ed.), *Information Systems Outsourcing* (5th edition). Springer. https://doi.org/10.1007/978-3-030-45819-5_17

Black, W. (2012). The activities of the pathways commission and the historical context for changes in accounting education. *Issues in Accounting Education, 27*(3), 601-625. http://dx.doi.org/10.2308/iace-50091

Ciurea, M., & Man, M. (2020). *The Accounting Profession from Romania in the Digitized Economy.* Paper presented at the 2nd International Scientific and Practical Conference "Modern Management Trends and the Digital Economy: from Regional Development to Global Economic Growth" (MTDE 2020).

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillside, NJ: Lawrence Erlbaum Associates.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly, 13*(3), 318-340. https://doi.org/10.2307/249008

Duong, D. C. T., & Fledsberg, K. (2019). *Digitalization of the Accounting Industry: The influence of digitalization on the accountants' role and their self-understanding. An exploratory study based on 13 Norwegian accounting firms.* Universitetet i Agder; University of Agder, Kristiansand, Norway, .

Earley, C. E. (2015). Data analytics in auditing: Opportunities and challenges. *Business Horizons, 58*(5), 493-500. https://doi.org/10.1016/j.bushor.2015.05.002

Elliott, R. K., & Jacobson, P. D. (2002). The evolution of the knowledge professional. *Accounting Horizons, 16*(1), 69-80. http://dx.doi.org/10.2308/acch.2002.16.1.69

Ghasemi, M., Shafeiepour, V., Aslani, M., & Barvayeh, E. (2011). The impact of Information Technology (IT) on modern accounting systems. *Procedia-Social and Behavioral Sciences, 28*, 112-116. http://dx.doi.org/10.1016/j.sbspro.2011.11.023

Hairuzila, I., & Abdullah, M. R. T. L., (2018). *Implementation of PBL to enhance the soft skills of engineering students*. Paper presented at SHS Web of Conferences, Volume 53: International Conference on Humanities and Social Sciences (ICHSS 2018). http://dx.doi.org/10.1051/shsconf/20185303008

Hermawan, S., Rahayu, D., Biduri, S., Rahayu, R. A., & Salisa, N. A. N. (2021). Determining Audit Quality in the Accounting Profession with Audit Ethics as a Moderating Variable. *Indonesian Journal of Sustainability Accounting and Management, 5*(1), 11-22. https://doi.org/10.28992/ijsam.v5i1.138

International Federation of Accountants Education Committee (IFAC). (2001). *Information Technology for Professional Accountants.*

Ismail, M. H., Khater, M., & Zaki, M. (2017). Digital business transformation and strategy: What do we know so far. *Cambridge Service Alliance, 10*, 1-35. available at: https://cambridgeservicealliance.eng.cam.ac.uk/system/files/documents/2017NovPaper_Mariam.pdf

Jones, P., Wynn, M., Hillier, D., & Comfort, D. (2017). The sustainable development goals and information and communication technologies. *Indonesian Journal of Sustainability Accounting and Management, 1*(1), 1-15. https://doi.org/10.28992/ijsam.v1i1.22

Lai, Y. L., & Lee, J. (2020). Integration of Technology Readiness Index (TRI) Into the Technology Acceptance Model (TAM) for Explaining Behavior in Adoption of BIM. *Asian Education Studies, 5*(2), 10. http://dx.doi.org/10.20849/aes.v5i2.816

Landell, K. (1997). *Management by menu*. London: Wiley & Sons Inc.

Mancini, D., Lamboglia, R., Castellano, N. G., & Corsi, K. (2017). Trends of digital innovation applied to accounting information and management control systems. In *Reshaping accounting and management control systems* (pp. 1-19). Springer. http://dx.doi.org/10.1007/978-3-319-49538-5_1

Moll, J., & Yigitbasioglu, O. (2019). The role of internet-related technologies in shaping the work of accountants: New directions for accounting research. *The British Accounting Review, 51*(6). http://dx.doi.org/10.1016/j.bar.2019.04.002

Ismail, N. A., & Abidin, A. Z. (2009). Perception towards the importance and knowledge of information technology among auditors in Malaysia. *Journal of Accounting and Taxation, 1*(4), 61-69.

Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using the SPSS program* (4th Edition). New York: McGraw Hill.

Pan, G., & Seow, P.-S. (2016). Preparing accounting graduates for digital revolution: A critical review of information technology competencies and skills development. *Journal of Education for Business, 91*(3), 166-175. http://dx.doi.org/10.1080/08832323.2016.1145622

PwC. (2015). Accounting jobs most at risk from automation, warns PwC. *Pricewaterhouse Coopers - Accounting Weekly*. Retrieved from https://accountingweekly.com/accounting-jobs-most-at-risk-from-automation-pwc/

Riddell, C. (2015). Digital disruption transforming the finance sector. *Acuity*. Retrieved from https://www.acuitymag.com/opinion/digital-disruption-transforming-the-finance-sector

Scapens, R. W., & Jazayeri, M. (2003). ERP systems and management accounting change: opportunities or impacts? A research note. *European accounting review, 12*(1), 201-233. http://dx.doi.org/10.1080/0963818031000087907

Shih, C.-L., & Chuang, H.-H. (2013). The development and validation of an instrument for assessing college students' perceptions of faculty knowledge in technology-supported class environments. *Computers & Education, 63*, 109-118. http://dx.doi.org/10.1016/j.compedu.2012.11.021

Sima, V., Gheorghe, I. G., Subić, J., & Nancu, D. (2020). Influences of the industry 4.0 revolution on the human capital development and consumer behavior: A systematic review. *Sustainability, 12*(10), 4035. http://dx.doi.org/10.3390/su12104035

Skendzic, A., & Kovacic, B. (2012). *Microsoft office 365-cloud in business environment.* Paper presented at the 2012 Proceedings of the 35th International Convention MIPRO.

Stancheva-Todorova, E. (2019). *The Knowledge and Skills Profile of Accountant 4.0*. 11th International Conference "Digital Transformation of the Economy and Society: Shaping the Future". Prilep, North Macedonia, October 19-20, 2019. available at: https://uklo.edu.mk/wp-content/uploads/2021/11/05-1.pdf

Strong, J., & Portz, K. (2015). IT knowledge: What do accounting students think they know? Do you know more than I do? An exploratory study. *Review of Business Information Systems (RBIS), 19*(2), 39-50. http://dx.doi.org/10.19030/rbis.v19i2.9500

Suhaiza, I. (2014). Effect of ethical ideologies on ethical judgment of future accountants: Malaysian evidence. *Asian Review of Accounting, 22*(2), 145-158. http://dx.doi.org/10.1108/ARA-08-2013-0052

Tekbas, I. (2018). The Profession of the digital age: Accounting Engineering. *IFAC Proceedings.* available at: https://www.ifac.org/knowledge-gateway/preparing-future-ready-professionals/discussion/profession-digital-age-accounting-engineering.

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision sciences*, *39*(2), 273-315. http://dx.doi.org/10.1111/j.1540-5915.2008.00192.x

Voss, E., & Riede, H. (2018). *Digitalization and workers participation: What trade unions, company level workers and online platform workers in Europe think*. Brussels: ETUC–European Trade Union Confederation. available at: https://www.etuc.org/sites/default/files/publication/file/2018-09/Voss%20Report%20EN2.pdf