Model of Blockchain Technology in Malaysian Accounting Education Learning Context: A Theoretical Paper

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ABSTRACT
In order to ensure that accounting graduates are well-prepared to meet the expectations of the job market, the educators play a crucial role in universities by making significant contributions in the implementation of the accounting curriculum. This concept paper focuses on the model that shows the impact of institutional pressures on Malaysian accounting education learning context (teaching methods, accounting syllabus and accounting lecturers’ knowledge) in teaching blockchain technology and the influences toward accounting graduates’ technological competency in blockchain technology adoption. This theoretical paper was written solely using data gathered via library research methods, conducted by examining prior research to support the discussion throughout this study. As a result, it is believed that there is connection between institutional pressure which encompasses three dimensions (coercive, mimetic, normative) that offer a comprehensive perspective for examining its influence on the learning environment of accounting education, and eventually could also affects the adoption of blockchain. This model can be a guideline that may enhance future practices and strategies in accounting curriculum by integrating emerging technologies, specifically blockchain technology.

Contribution/Originality: This study contributes to Malaysian accounting education literature on blockchain technology adoption model. This study may help other researchers, government officials, university administrators, accounting professors, professional accounting organisations, and information system industry leaders.

1. Introduction
In this era of digitalisation, people are connected to each other instantly through the empowerment of digital networking. Over the last few years, a technological revolution
has been taking place as the digital market has grown (Chomiak-Orsa & Liszczyk, 2020). According to Asonitou (2020), blockchain is primarily an accounting technology that by working as a method of bookkeeping with universal entry, able to boost up the efficiency of the procedure for monitoring operations and properties. Technically, blockchain is a distributed ledger technology and peer-to-peer network (Shahidehpour et al., 2020). The blockchain ledger is not governed by a single entity. To put it another way, a blockchain is nothing more than a collection of blocks, where it is composed of a header and a body (Kausar, Sadiq & Asif, 2021).

For the recent years, research in blockchain and accounting is being explored intensively all over the world. It has been noted that the analysis carried out by Pimentel et al. (2020) summarised those main categories of academic research related to blockchain in accounting into seven groups as current trends of research: future applications of blockchain technology are discussed along with their effects on accounting, auditing, financial reporting for digital assets, case studies, governance, and taxation. In addition, blockchain has yet to become a common accounting issue, and the majority of the literature is conventional. The researchers further categorized that the blockchain topics that are most frequently mentioned into four parts which encompass the profession of accounting’s evolving role; chances and issues of using blockchain technology; emerging barriers for audit profession; and the rule of cryptoassets (Garanina, Ranta & Dumay, 2022).

Based on literature search through Google Scholar and Scopus as popular research database, there are quite a number of research papers published globally on the topic related to blockchain technology in various education scopes, but majority are in IT courses. Undeniable, there are also studies which exploring the area of accounting education but most of the research applied qualitative methodology such as systematic literature review, interview, case study, bibliographical research and so on (Al-Htaybat et al. 2018; Qasim & Kharbat, 2020; Surianti, 2020; Asonitou, 2020; Samaduzzaman, 2020; Tsiligiris & Bowyer, 2021; Stern & Reinstein, 2021; Novak, Barišić & Žager, 2022). Some of them also developed and proposed education designs/framework such as research conducted by Qasim and Kharbat (2020), and Tsiligiris and Bowyer (2021) on incorporation of blockchain into accounting programme but yet it was merely recommendations and require more in-depth studies on its feasibility.

Besides that, previous research has shown a discrepancy between accounting education and industry technology usage (Al-Htaybat et al., 2018). It is interesting to know that the study on blockchain technology in the accounting curriculum within Malaysia higher education institutions in the form of academic published research is found unexplored yet. Eventually, this study is emphasized is to look into the effects of institutional pressures on the Malaysian accounting education learning context in teaching blockchain technology and the influences toward accounting graduates’ technological competency in blockchain technology adoption.

The relationship between accounting education and professional accountants is established by an excellent accounting curriculum that may generate talented accountants as well as skilled expert accounting professionals (Shaban 2018). Hence, this study is significant and relevant to be conducted to fulfil the research gap as blockchain technology is growing rapidly in this digitalization era. According to Felski and Empey (2020), professionals think that graduates ought to have a fundamental understanding of blockchain, but students do not. This is true even though experts, academics, and
students think that curriculum should include instruction on blockchain technology because understanding this technology is crucial for accounting educators, students, and professionals.

A study has been carried out in line with MIA’s Digital Technology Blueprint in 2018 to assess accounting graduates’ future skill sets and comprehend how developing technologies are currently being adopted in the higher education institutions in Malaysia. As a summary, the study broadly discussed on the latest technologies in the accounting curriculum, accounting lecturers training types, strategies for implementation and the potential skillset of accounting graduates. Whereas the results of the study were obtained through a thorough literature review, surveys and roundtable discussion and presented in the descriptive manner with graphical display. More than 15% of respondents who were asked how far these new technologies had been incorporated into the accounting school syllabus said they had not, particularly in the case of blockchain and artificial intelligence (MIA, 2020).

In conjunction with the study by MIA (2020), the findings and recommendations imply that the scope of accounting education in Malaysia has a great space for future research in connection with the digital economy era. Simultaneously, Malaysia government is very supportive in nourishing the efforts against digital economy, for example the launch of Malaysia Digital Economy Blueprint (2021 – 2030) and Malaysia Education Blueprint (2013 – 2025). The initiative of government implies the importance of sustainability in this digital transformation era is being taking care of. To cope with this attention, a potential academic value for further investigation exists especially on the scopes which are scarcely being explored or has limited research about the concerned topics even though research regarding blockchain is intensive in recent accounting literature.

On the other hand, according to Heang et al. (2019), early employment challenges of many Malaysian accounting graduates indicate that they are not prepared to work in the industry yet. The expectations of the accounting profession in the marketplace are not being met by the existing accounting curriculum. In addition, according to the research by Purnamasari et al. (2019), the lack of preparation given by academic institutions left accounting students unfit to enter the Industry 4.0 employment market. After graduation, accounting graduates are unable to manage technology-based accounting systems and processes (MS, Kulal & Kanchan, 2022). Therefore, beginning the changes now is crucial because current students will soon work as managers using blockchain and other disruptive technologies as well as professionals in accounting and auditing (Garanina, Ranta & Dumay, 2022).

As such, the entire theoretical paper discusses in depth of the model development for the adoption of blockchain technology in Malaysian accounting education learning context. Not many studies have focused on blockchain technology particularly in the learning environment in Malaysia. This theoretical paper therefore incorporates previous studies on blockchain technology, accounting education, institutional theory, and accounting graduates’ technological competency. The researchers hope that this theoretical paper will contribute to the field of knowledge related to the blockchain technology in accounting curriculum, particularly in Malaysia education context.
2. Blockchain Technology and The Development of Accounting Profession

The accounting sector has seen significant changes as a result of the development of modern technologies, such as blockchain, big data, artificial intelligence and other cutting-edge technology (Kokina & Davenport, 2017; Kotb et al., 2019). Blockchain is a new network-based technology that is going to have a big impact on most industries, including accounting (Psaila, 2016; Bonson & Bednarova, 2019). As mentioned by Asonitou (2020), blockchain is fundamentally an accounting technology. The accounting profession will be responsible for ensuring that the promises of transparency and accountability made by blockchain technology are kept as it develops and new and different uses are discovered (IFAC, 2021). With blockchain, the efficiency of accountants will be greatly increased because a significant amount of time will be made available and the expense of maintaining and reconciling registers will be decreased (Pugna & Duţescu, 2020). Accounting professionals benefit from blockchain because it provides complete assurance on asset ownership and history and decreases the expense of keeping and reconciling ledgers (ICAEW, 2018).

On the other hand, Asif et al. (2022) argues that the accountancy profession's skill set will shift to include IT expertise. Digital skills are given a lot of attention, and while they "stand out as crucial ones regardless of career stage," however "the demand for a given competency area will vary depending on the professional level." The improvement of accountants' professional skills has a significant impact on their professional development (Asonitou & Kavoura, 2019).

From 2015 onwards, the Securities Commission (SC) and Bank Negara Malaysia (BNM) have been pioneering the development of fintech in Malaysia as part of the government's initiative to capitalise on the blockchain industry's explosive expansion. In addition, various government agencies, in short name called as MIGHT, MDEC, and MaGIC, concentrate the Fourth Industrial Revolution (IR4.0) with blockchain technology. According to MIGHT, the Ministry of Science, Technology, and Innovation (MOSTI) is carefully examining blockchain technology to make sure that the nation is not left behind in the blockchain race.

3. Blockchain Technology and Accounting Education

Due to the various changes in international accounting standards, accounting education is the foundation for the success of the accounting profession (Cooke & Wallace, 1990). With the aim of preparing future accountants and potential entrepreneurs to appreciate the risks and the management of their profession, accounting education is one of the sciences that should teach the computing tools through a variety of teaching and learning methods, such as case studies, role playing, and experiential learning (Asonitou & Kavoura, 2019).

In addition, according to Samaduzzaman (2020), blockchain has the possibility to change higher education and offer a substitute for current methods of securing and guaranteeing lifelong learning. Similarly, Blankley, Kerr and Wiggins (2019) claimed that modern accounting students gain useful experience using a variety of IT tools in their accounting classes, both hardware and software. Importantly, Garanina, Ranta and Dumay (2022) proposed that the accounting and finance programmes at higher education institutions need to be updated to better prepare students to implement blockchain and making decisions for the ever-changing job market.
As per the study by MIA (2020), it is essential to integrate emerging technologies like artificial intelligence (AI), blockchain, data science, and cybersecurity into the accounting curriculum because future accounting graduates will need to know these things. Generally, 73 academicians in total replied to the study, including 26 from private universities and 47 from public universities. 92% of responders are associate professors, senior lecturers, or lecturers with expertise in financial accounting, management accounting, auditing, and taxation (MIA, 2020). On top of that, over 80% of respondents have teaching experience more than 10 years (MIA, 2020). The report pointed the fact that accountants are consumers instead of programmers because one of their duties is to support information technology specialists and system experts in determining if data is pertinent (MIA, 2020). However, they have to comprehend the system's overall operation and the database idea. All accounting lecturers should be familiar with or have exposure to emerging technologies. This study significantly pointed out the education area.

The Malaysia Education Blueprint (2013-2015) has emphasised the importance of enhancing the manner in science, technology, engineering, and mathematics (STEM) subjects are taught throughout the system of education and the significance of ICT innovation in schools at the grassroots level of education. However, there is a mismatch between how technology is used and how computational thinking is taught in schools, as well as a lack of ICT facilities and insufficient bandwidth. These create obstacles that keep students and teachers from adopting digital technologies (Malaysia Digital Economy Blueprint). Therefore, it is crucial to ensure that higher education institutions are working strategically towards the same direction of these blueprints. Education is the production line of multiple grades of graduates to fulfil the different market expectation. In this context, the role of accounting education is importantly inclusive. Figure 1 shows the blockchain technology and accounting education learning context model, which was developed based on the prior literature. The detailed explanation of each item in this model will be discussed in the following sections.

Figure 1: Blockchain Technology and Accounting Education Learning Context Model
3.1. Underpinned Theory: Institutional Theory

The model in Figure 1 was developed based on the underpinning theory of institutional theory, which encompasses coercive, mimetic, and normative pressure. The fundamental of the theory emphasises that the external environments setting significantly affect organisational behaviour and practices in order to gain external legitimacy (DiMaggio & Powell, 1983). This theory argues that organisations behaviour is directed by customs, rules, restrictions, and demands of pertinent audiences (Scott, 1995). According to Circa, Almășan and Popa (2021), isomorphism is the key concept of institutional theory, which is the process of organisations changes or respond to adopt the same structures and practices in dealing with the environmental competition on resources and customers. As outlined by DiMaggio and Powell (1991), institutional isomorphism or more commonly known in the term of “pressures” are divided into coercive, mimetic and normative pressures. In accordance to them, as a theoretically understanding, coercive pressure is related to formal processes such as regulations ruled by government; in the case that managers/organisations pursue socially constructed values formed by professionals, it is caused by normative pressure; and mimetic pressure happen as a result of the organisational behaviour change similarly after observing the successful model presented by its’ competitors. As a result of institutional pressures (coercive, normative, mimetic), organisations become increasingly similar within their organisational field, as they need to conform to the expectations of their environment (Circa et al., 2021).

3.1.1. Coercive Pressure and Accounting Education Learning Context

Coercive pressure occurs when a powerful authoritative entity such as a government agency forces (coerces) an organisation and its employees to act in a specific manner (Kam et al., 2020). Organisations are required to comply policies at the national level to acquire physical resources including data connectivity, the bare minimum of resources, and technology for applications of cutting-edge technology (Dubey et al., 2019). In the case of education, there will be a change of education policy direction to be in line and comply to the imposed regulation.

For accounting programmes, higher education institutions in Malaysia must struggle with pressure from local authorities to comply, such the Ministry of Higher Education Malaysia (MOHE) (Leow et al., 2021). This includes the national education long-term policy such as Malaysia Education Blueprint (2013-2025). One of the respondents (position as lecturer) mentioned that Malaysia’s governmental universities are developing a plan to update the curriculum of accounting programmes taught in universities (Zolkifli, Azhar & Jalaludin, 2022).

Law and legal issues may be the source of coercive forces, which affect universities (Dobija et al., 2019). The Malaysian Fintech ecosystem faces many difficulties, one of which is the inability to interact with the government and work together on a national scale (Digital Finance Institute, 2016). Therefore, the Malaysian government may consider developing or improving government-funded initiatives that promote skill development and offer incentives to colleges to integrate STEM-related coursework into their curricula, and create or enhance Fintech incubators (Jamil & Seman, 2019). Therefore, the compliance to the existing regulations could significantly impact on the direction of accounting education domain in Malaysia.
3.1.2. Mimetic Pressure and Accounting Education Learning Context

Mimetic pressure is the pressure that emerges when institutions attempt to deal with uncertainty mimic the behaviours and conduct of other allegedly similar-setting institutions as a solution (Ouyang et al. 2020). Universities have attempted to mimic other prototypes in comparable circumstances in the field of higher education by using mimetic processes (Tiron-Tudor et al., 2022). In this relation, the tested result by Grassa, Khlif and Khelil (2022) found that mimetic pressures are supported while the adoption of Islamic accounting education-focused programmes in regional colleges by the UAE Government attributable to Islamic universities established in Malaysia, Indonesia, and Pakistan.

As in Malaysia, it has been noted that Taylor’s University is the pioneer university in Malaysia that offers a brand-new programme to ensure students compete and meet the current demands of the accounting employment industry, that is Bachelor in Accounting (Fintech) (Honours). This may impose peer pressure to other local university due to the competition of incorporating blockchain in accounting education in Malaysia.

3.1.3. Normative Pressure and Accounting Education Learning Context

Normative pressure is the strain brought on by professionalisation, whereby persons who share a profession collaborate to establish the appropriate norms of behaviour (DiMaggio & Powell, 1983), in the development of professional networks and continued formal education. Normative pressure is found in the relation of universities with professional bodies and employers (Circa et al., 2021).

It is particularly true in South Africa, where university accounting programmes heavily rely on the accreditation provided by the South African Institute of Chartered Accountants (Venter & De Villiers, 2013). Similarly, the normative pressure is due to the two Romanian professional bodies and ACCA where the accounting study programs need to include subjects nominated the professional bodies’ protocols or the ACCA curricular (Circa et al., 2021). Competencies expectation by employers also leads to the result of increased attractiveness of the study programme.

As mentioned earlier, MIA (2020) frequently stress on the need to incorporate the emerging technology which including blockchain into accounting programmes, hence, it is strongly believed the direction of this professional body could give impact to the accounting education implementation in Malaysia.

3.2. Teaching Methods and Accounting Graduates’ Technological Competency

To offer learning materials to students, all educators must possess the knowledge, skills, and abilities known as "teaching competence," as this is a fundamental competency that determines whether or not the learning process is successful (Santoso & Lestari, 2019). From the prior literature, there are various teaching and learning methods which are being practiced and proposed as well in relation when instructing students in accounting about blockchain.

Based on the research conducted by Kaden, Lingwall and Shonhiwa (2021), students are able to gain a better understanding of the technology through practical activities and code to operate a blockchain’s underlying structure than they would be able to through
theoretical lectures alone. Apart from this, Stratopoulos (2020) uses a scaffolding and storytelling approach to deliver the technical knowledge to accounting students about blockchain in explaining the concept of hashing, transaction and its components.

On the other hand, student-focused teaching methods as a prerequisite of achieving student satisfaction has been concluded as one of the performance indicators to evaluate the quality of teaching results of accounting study programs provided by Romanian universities (Circa et al., 2021). In conjunction with this, it has been proposed that collaborating with HEIs and the sector, the Malaysian government might increase the promotion of SCL teaching techniques strengthened by ICT (Leow et al., 2021). Beyond doubt, teaching method plays important role to ensure the ultimate knowledge would successfully convey to the targeted accounting students.

3.3. Accounting Syllabus and Accounting Graduates’ Technological Competency

To ensure that accounting graduates acquire competences that match the requirements of ACCA, the curriculum of the accredited programs can be embedded to better linked with the requirements of the labour market and the international trends (Circa et al., 2021). In addition to this, Therefore, any accounting curriculum that intends to increase graduates’ employability must incorporate emerging technology, such as blockchain (Qasim & Kharbat, 2020). In their study, they propose integrating artificial intelligence, business data analytics, and blockchain technology into three different levels of courses (introductory, intermediate, and senior) being the “methods” for such redesign.

According to Stern and Reinstein (2021), a specialist “blockchain in accounting” course that focuses on internal control and accounting applications may be offered by accounting institutions with large enrolments. For pupils to fully comprehend blockchain technology, its promise, and most crucially, its limitations, a complete semester is needed. Therefore, the effective approach of inclusion the subject into accounting syllabus either a standalone subject or integration into the existing subject of accounting information system is believed would have impact on the accounting graduates’ technological competency.

3.4. Accounting Lecturers’ Knowledge and Accounting Graduates’ Technological Competency

Lecturers as educators in universities play a crucial role in advancing research, fostering students’ intellectual growth, helping them form viewpoints, and raising the standard of higher education (Anggraeni, 2014). In conjunction with this, the effectiveness or accomplishments of lecturers are influenced by their competency, which in turn affects the effectiveness of institutions and ultimately the calibre of its graduates. In other words, the calibre of lecturers is the determining factor in the quality of higher education (Anggraeni, 2014). In the study of Nadeak and Naibaho (2019), it has been stressed that the lecturers’ competency highly influence the graduates’ quality.

Based on the findings from Novak, Barišić and Žager (2022), it is concluded that in order to handle blockchain education, accounting instructors must overcome the technical nature of the technology. One of the efforts in place under this development include that conferences and resources which have been provided by American Accounting Association to provide accounting educators with information on blockchain technologies so they can pass it along to their students (Felski & Empey, 2020).
Consistently, the research by Tokan et al. (2019) found that the competent lecturers are likely to enhance student learning behaviour and ultimately affect learning achievement. For these reasons, accounting lecturers play a very crucial role in nurturing future graduates' technological competency in this latest trend of digital era.

### 3.5. Accounting Graduates' Technological Competency and Blockchain Adoption

In term of blockchain technology adoption in Malaysia, Iftikhar, Vistro and Mahmood (2021) studied the elements that affect Malaysia’s higher education sector's adoption of blockchain technology. Based on the result, the variation of blockchain adoption as dependent variable is explained by the regression model in 62.7% of cases, means the predictors can account for more than half of the variance in terms of the Malaysian higher education institutions' intentions to implement blockchain technology (Iftikhar, Vistro & Mahmood, 2021). The three key strategic weapons that will affect bankers' behavioural intentions to use blockchain technology are performance expectations, facilitating conditions and social influence.

AL-Ashmori, Dominic and Singh (2022) noted that the implementation of blockchain in Malaysia's software sector is still in its early stages. As they applied TOE framework, it is suggested that organisational environment might influence decisions to embrace blockchain technology by influencing factors like cost, innovativeness, and enabling conditions in the software development business. On the other hand, Mohd Nor, Abdul-Majid and Esrati (2021), investigated how zakah institutions see the use of blockchain technology for zakah management, as well as what society's intentions are. The result demonstrated that Malaysians are ready to adopt blockchain as technology trust, perceived utility, and usage behaviour are all widely accepted.

Thus, CPAs should update their skill sets to include knowledge and comprehension of blockchain technologies, as stated by the AICPA. According to Sage (2019), one of the biggest skill gaps in the field is technological literacy, which is currently the most highly needed skill set for accountants participating in the sector (ACCA 2016). Also reported by Sage (2019), most of the accountants believe that the profession has to grab the pace of technological adoption to stay competitive internationally.

In relation to the study of the relationship between employees' technological competency and IT adoption, the findings by Siew et al. (2020) showed that employees' IT competency has a significant effect on Computer-Assisted Audit Tools and Techniques (CAATTs) adoption. Similarly, Clohessy and Acton (2019) found that eight out of the 20 case study organisations indicated that organisation readiness for IT innovation including blockchain competent employees has increased the likelihood of blockchain adoption. In this consideration, the decision or intention to adopt blockchain in workplace can be considered from the lens of individually behaviour and organisational context.

### 4. Conclusion

To conclude, incorporating blockchain technology into accounting curriculum is getting more important and soon it will be transformed from “a need” to “a must” which in line with the rising requirement of emerging technology job markets. To compete with this change and challenge, accounting professions need to adapt and equip their skills and ability beyond the double-entry bookkeeping. Oosthuizen et al. (2020) suggested that
higher education policymakers acknowledge those uncertainties, limitations, and frustrations in educators’ attempts to meet stakeholder expectations regarding more extensive professional courses and statutory requirements. Therefore, incorporating blockchain technology into business or accounting-related education will become increasingly important in the future (Samaduzzaman, 2020).

In practical, the model from this research could become as a guideline for the researcher, government, management of universities, accounting lecturers, accounting professional bodies, and even information system industry players in focusing on the blockchain technology adoption in a successful curriculum implementation. In theoretical aspect, this study is the initial step to investigate those three elements of pressures under the institutional theory which give impact on the accounting education learning context.

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Conflict of Interest

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