

Blockchain, Cryptocurrency and FinTech Market Growth in Malaysia

Ku Ruhana Ku-Mahamud, School of Computing, Universiti Utara Malaysia, Malaysia. E-mail: ruhana@uum.edu.my*

Nur Azzah Abu Bakar, School of Computing, Universiti Utara Malaysia, Malaysia. E-mail: nurazzah@uum.edu.my

Mazni Omar, School of Computing, Universiti Utara Malaysia, Malaysia. E-mail: mazni@uum.edu.my

Abstract--- Blockchain has emerged as a popular digital technology aimed at ensuring that financial transactions can be secured and trusted. The expansion of FinTech industry has encouraged the use of blockchain technology and cryptocurrencies. A study has been conducted to assess the blockchain, cryptocurrency and FinTech market growth. This paper provides empirical evidence on the factors influencing the market growth in Malaysia and highlights the factors that could spur and hinder its future use. A survey of 304 blockchain users and industry players in Malaysia was conducted and quantitative results revealed that privacy is the most significant barrier to the adoption of blockchain technology and cryptocurrency ecosystem. Other barriers include those related to legality, cost, security, and stability, as well as difficulties in switching to a new technology. Thus, government regulation is needed to provide guidelines for ensuring the sustainability and growth of this technology in the near future. In addition, results demonstrate that the banking sector is going to be the most affected by the FinTech industry. This current trend may assist the decision makers in evaluating the potential usage of this technology, allowing them to make strategic decisions to improve business and services.

Index Terms--- Bitcoin, Digital Technology, Blockchain Technology, FinTech, Cryptocurrency.

I. Introduction

The advances in e-commerce, online banking, and in-apps purchases have driven the increase in volumes of transactions between sellers and buyers. The Internet and the advances in mobile technologies provided a platform for these transactions to be made in more convenient, fast and efficient manner. Blockchain digital technology has evolved to aid in conducting financial transactions, allowing these transactions to be made without the need for intermediaries such as banks and government bodies. Cryptocurrencies such as Bitcoin emerged to replace minted coins, fiat money or other instruments of trust.

Blockchain is referred to as a distributed data structure, database or system [1][2][3], or decentralized network [4][5]. It is the core technology enabling Bitcoin and other digital currencies to operate in decentralized mode. It links the sequence of transactions which are time-stamped, broadcasted to and shared with participating entities within a peer-to-peer network for verification [6]. Once verified, it is added to an unpublished block, i.e. a storage unit for the transaction that contains a reference to the settled and verified chain of blocks. New blocks are added to the blockchain in an append-only manner and cannot be altered anymore[6][7][8]. The integrity of these transactions is ensured through the use of public-key cryptography and its transparent nature [9].

Blockchain has proved its value by managing digital transactions in real time across enterprise boundaries, encouraging collaborative business efforts. The key benefit of blockchain relies on its capability to lower transaction management costs. Besides digital economy, blockchain also has the ability to change all aspects in conducting business, delivering healthcare, shopping, enhancing education and learning, entertainment, and staying connected with a social world. Thus, collaboration among various sectors is imperative to promote knowledge creation and innovation through the use of technology [10].

Worldwide, there is a hype of interest on blockchain technology. More and more companies are exploring opportunities for adapting it, especially in managing financial, medical and legal records. As reported by MarketNewUpdate.com, blockchain business value-add is estimated to grow up to 176 billion USD by 2025. Examples of active companies are Block One Capital Inc., Digatrade Financial Corp., Pareteum Corporation, HIVE Blockchain Technologies Ltd. and Bank of America Corporation. Globe Newswire anticipates the global market for this technology to grow from 708 million USD in 2017 to 60.7 billion USD in 2024. Companies such as IBM and Microsoft

are driving blockchain as their clients are making the transition to cloud services. Accenture has measurable market share in blockchain investment as well.

The blockchain technology is also growing at a rapid pace in Malaysia as the financial technology (FinTech) industry grows. DinarDirham.com reported that currently, nine banks have pooled their resources together to experiment with blockchain, and more and more shops have started to accept payments using bitcoin. In general, this progress is driven by a strong underlying market, improved business to customer models and increased mobile and Internet penetration.

Reviews on blockchain studies have highlighted that security and data privacy as several challenges in integrating blockchain with Internet of Things [11]. A review on the acceptance and future use of blockchain has been conducted by Woodside, Augustine and Giberson (2017) which focused on managerial overview and framework of technology [12]. The aspects that were covered were on how advance is the technology implementation for cryptocurrency and how the technology can be utilised in large scale environment. The review uncovers the potential drivers and drawbacks of blockchain technology and highlights the implication of its managerial use. The authors have highlighted legitimacy of the technology given that security and privacy concerns of its usage.

Literature on sustainability of Bitcoin from the perspectives of environmental impact, social issue and economics have been reviewed by Guingato, Rana, Tarabella and Tricase (2017) to discover the trend of the Bitcoin [13]. Blockchain has been seen as the driver to social change and Bitcoin will probably remain a niche currency in the virtual monetary system.

Haddad and Hornuf (2018) in their study on emergence of the global FinTech market highlighted that until 2015, USA had the largest market followed by United Kingdom, India, Cambodia and China at a considerable distance [14]. They discovered that the most important segment of FinTech market is financing. Thus it comes as no surprise that FinTech markets in developing countries Malaysia are growing at a considerable rate.

Geranio (2016) has identified that the main impact by FinTech in the exchange industry will be in its post trading business [15]. This study has been conducted to see if there will be any potential disruption with the strong attention received by market players and regulators on FinTech.

II. Methodology

The quantitative approach was used in this study to examine the factors influencing the growth of blockchain, cryptocurrency, and Fintech markets and their ecosystem forecast. A questionnaire was used to measure the respondents' opinions and perceptions regarding the blockchain, cryptocurrency, and the FinTech market.

Sampling Design and Sample

Previous researchers have highlighted that a sampling technique, when used in quantitative research, could be categorized into random sampling and non-random sampling [16]. Random sampling is referred to as probability sampling, where every element of the population has an equal and independent chance of being selected for the study [17]. This study has used simple random sampling in selecting the respondents from the blockchain communities in Malaysia so as to ensure generalization of the study's findings. The population of the study are users and industry players of blockchain and cryptocurrency in Malaysia and registered with the eWallet system (<https://bcmy.io>) offered by BC Ventura Sdn. Bhd.

Questionnaire Development

In this study, the researcher developed the instrument by adopting and adapting existing studies that examined the adoption of blockchain, cryptocurrency, and Fintech [18]. The language and arrangement were reconstructed to suit the study objectives. The questionnaire has three (3) main sections focusing on a) respondent's demographic, b) factors influencing the growth of blockchain, cryptocurrency, and FinTech market and, c) blockchain, cryptocurrency, and FinTech market ecosystem forecast.

The first section comprises seven (7) questions that dealt with the background of respondents, including age, nationality, highest education level, department, country, whether they are involved in decision making, and working experience. There are five (5) questions related to factors influencing blockchain, cryptocurrency, and FinTech growth in the second section. These factors included barriers and challenges to blockchain, cryptocurrency, and FinTech adoption and start-up. For questions on factors that influence the success of FinTech, the respondents have

to select the scale ranging from the least to the most important factors. The final section contains 12 questions related to forecasting technology. Among them, the questions aim to find out whether the blockchain technology will have a significant impact on respondents' organization/industry, the duration that the technology will be employed, the sectors most affected by technology, the benefits of the blockchain technology, and the types of risks in the ecosystem. Some of the questions used three (3) points rating system (i.e., 3- Agree, 2- Disagree, and 1- Don't know) and also used a five (5) points scale (5- Extremely likely, 4-Likely, 3-Neutral, 2-Unlikely, and 1-Not at all likely). The scale aided the respondents in selecting their score opinions and preferences.

Pilot Study

The researcher validated the designed questionnaire to test how capable the questionnaire was in measuring what it was designed for through a pilot study. In addition, the pilot study can help to identify potential problems that may occur before the questionnaire is distributed to respondents in the real survey [19]. In addition, the researcher sought feedback and useful suggestions from a blockchain expert to ensure the content validity of the questionnaire before distributing the questionnaire.

In evaluating the reliability of the questionnaire, 33 responses from blockchain communities and users have been collected. The number of responses is sufficient for the questionnaire reliability test as stated by Hinkin in 1998 [20]. The questionnaire was distributed in August 2017 and the responses were received in September 2017. In order to ensure that the questionnaire functioned effectively, the researcher conducted a reliability test using Cronbach's alpha. The alpha value of this pilot study is 0.908, which is considered as good based on Sekaran (2013) which stated that a Cronbach's alpha reliability score of more than 0.8 is considered good [17]. Subsequently, based on the information obtained from the pilot study, improvements in the wording of items were incorporated into the original questionnaire for further clarity before the real survey could be implemented.

Real Study

An online survey approach using Google Forms was used to capture respondents' responses, thereby allowing easier data collection. This approach was chosen because it allows a higher response rate, while the time taken to respond is also faster as it is available online in real time. The enhanced validated questionnaire was implemented online and 2000 respondents from users and industrial players of blockchain communities were contacted via e-mail and given a URL to answer. Respondents for the pilot study were excluded in the real study. Follow-up emails were also carried out to remind the respondents to provide responses. Data were obtained from 304 respondents, giving a 15.2% response rate. Respondents are from various companies and there is a possibility of more than one respondent representing the same company. The survey was conducted over one month from December 2017 until January 2018.

Data Analysis & Interpretation

Data gathered from the respondents were analyzed using descriptive statistics to locate the factors and forecasts of the blockchain, cryptocurrency and FinTech market growth. In addition, the researcher also explored the potential applications of the technology. By having this knowledge, technology players can make strategic decisions to find out future trends and develop this technology even further.

III. Result and Discussion

Analysis of the results on the study of factors influencing the development of blockchain and FinTech are presented in three (3) sections: A) the respondent profile, B) factors influencing the growth of blockchain, cryptocurrency and FinTech, and C) market forecast of the blockchain, cryptocurrency and FinTech.

Respondent Profile

A total of 120 (39.5%) industry players and 184 (60.5%) end users from the blockchain community made up the 304 respondents in the survey where the majority (98%) is Malaysian. Blockchain end users are found in the lower age category as compared to the industry players. The end users are more prominent in the age category of 35-44 and above. In terms of academic qualification, only 1% of them hold a Doctoral degree while the majority hold a Diploma (44%) as shown in Figure 1. Respondents with Bachelor and Masters degrees contributed about 26% and 6% respectively to the total respondents. The academic qualifications of the remaining respondents are less than Diploma level. The same trend of academic qualification applies to both industry players and end users. It seems

that education background does not play an important role in determining the involvement of respondents in blockchain and FinTech because blockchain is an open source platform that can be participated, explored and used by anyone.

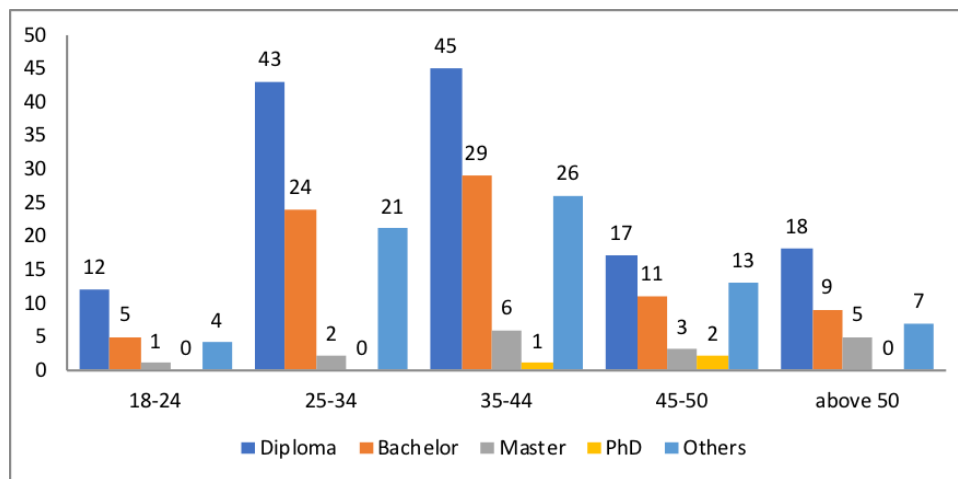


Figure 1: Academic qualification by age

The highest number (28%) of respondents came from the sales/marketing department as depicted in Figure 2. The remaining respondents work in various departments within the organizations/companies including administration/human Resources (15%), IT (7%), finance (5%) and various other departments (45%). Thus, having knowledge in IT and finance is not crucial for those who want to participate in blockchain and FinTech. Again, the trend is the same for both end users and industry players.

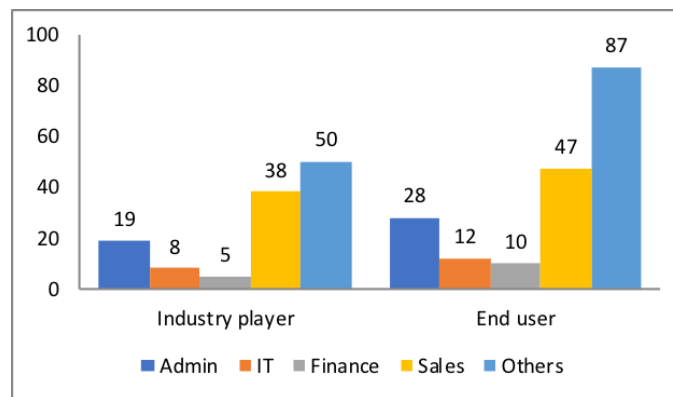


Figure 2: Department within organization by role in blockchain community

The majority (97%) of the respondents work in companies/organisations which are based in Malaysia where 43% of the respondents are involved in their company’s decision-making. Slightly more than half (56%) have more than 10 years’ working experience.

Approximately one third of the industry players are employed in small size companies with a workforce of less than 50. The majority are employed in medium size companies while a small percentage (16%) work in large companies (workforce of more than 500 staff members).

Factors Influencing Market Growth

The Central Bank of Malaysia has not issued any guidelines on either blockchain or cryptocurrency. However, only about half of the respondents knew the correct situation while one third thought that guidelines had been issued and the rest were uncertain. About two thirds of the respondents stated that concern on privacy was the most significant barrier to the adoption of blockchain or cryptocurrency. Other barriers stated by one third of the respondents are unclear economic benefit, lack of expertise and compelling strategy and market is not ready for the technology.

About 60.3% of the industry players stated that insufficient knowledge and understanding is the most significant challenge for blockchain or cryptocurrency start-up. Other significant reasons provided by the remaining industry players included lack of long term commitment (15.7%) and lack of proprietary technology (9.7%).

Our analysis discovered that more than half of the respondents (57%) stated that Government regulation is the obstacle for banks in Malaysia to adopt blockchain technology. The second most prominent reason for not adopting the technology is because of the difficulty in switching to a new technology. This was stated by about 18% of the respondents. 12% of the respondents stated that security is their main reason for not adopting blockchain technology. Cost and technology constraints are also reasons stated by the remaining respondents.

In the analysis of factors that influence the success of FinTech (blockchain technology and cryptocurrency), the majority of the respondents stated that credibility (51.6%), transparency (54.6%), cost (39.1%), ease of adoption (37.8%), security (59.9%) and stability (49%) are the most important factors. Visualization on the responses can be seen in Figure 3.

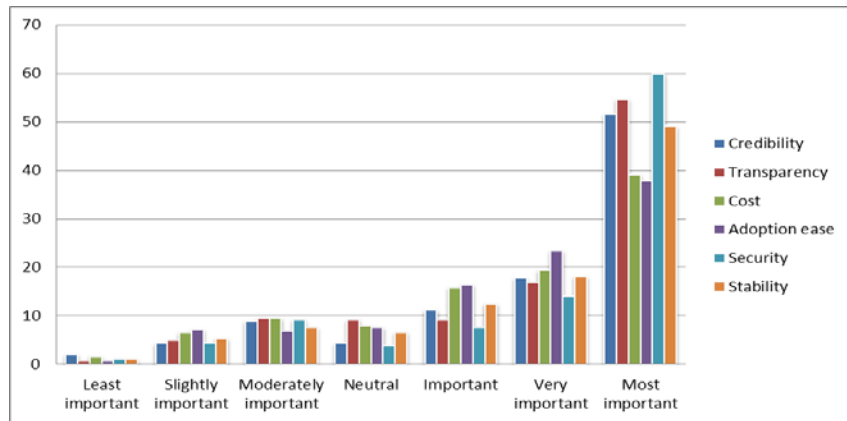


Figure 3: Factors for blockchain and cryptocurrency to succeed

Market Forecast

Forecast on blockchain, cryptocurrency and the FinTech market revealed that the majority of the respondents (78.6%) believed the banking sector is going to be the most affected by FinTech, followed by asset management (14.1%), securities (3.6%), insurance (2.6%) and others (1%). FinTech will also positively affect the public, as agreed by 93.8% of the respondents. Moreover, FinTech is expected to replace engagement with human advisors for all investors, be it the institutional investors, ultra-high net worth investors, mass-affluent investors and high net worth investors. Respondents’ belief of this impact is almost similar for all types of investors, as shown in Figure 4.

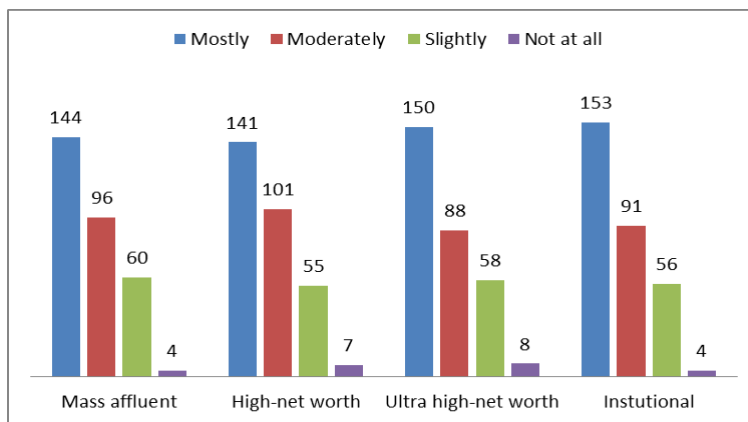


Figure 4: Impact of FinTech replacing human advisors for investors

The emergence of Fintech may lead to several risks in its ecosystem with 46.1 % of respondents predicted that privacy and data protection concerns could be the biggest risk introduced from FinTech. This is followed by flaws in the automated financial advice algorithm (28.9%), miss-selling of financial advice (23.4%) and others (1.6%).

Blockchain is considered to have the greatest impact on the financial services industry for both one year and five years from now. More than 80% of respondents agreed that blockchain is a potential future risk or opportunity in the medium-to-long-term duration on financial services. Market place/peer-to-peer lending and crowdfunding are also demonstrated to have impact on the financial services industry for one and five years. The trend is almost the same for both periods as depicted in Figure 5.

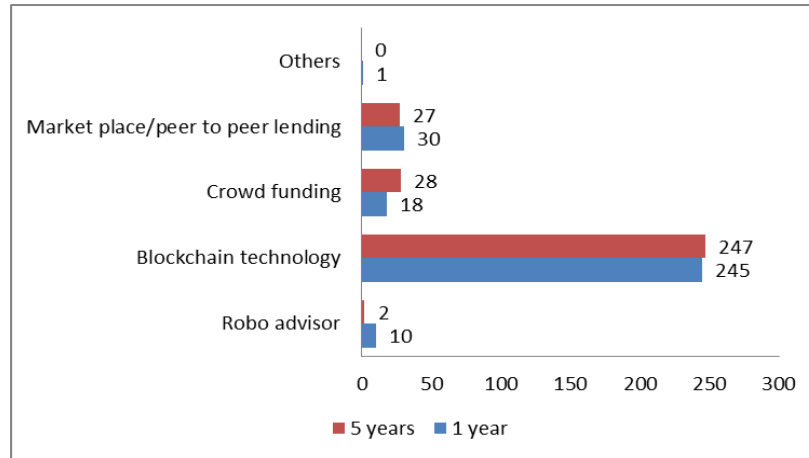


Figure 5: Impact of FinTech on technology 1 year and 5 years from now

Further, concerning the impact of blockchain technology, nearly three quarters of industrial respondents (71.7%) projected that it is likely (extremely or likely) that the blockchain technology will significantly impact their organization, regardless of the size of the workforce in a company. The remaining respondents (28.3%) were uncertain or considered it not likely at all that the blockchain will impact their organization/industry as depicted in Figure 6.

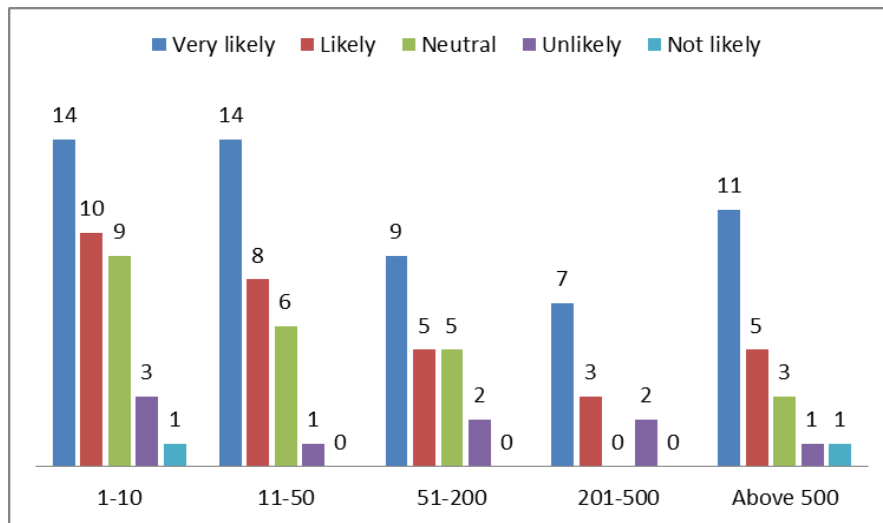


Figure 6: Impact of blockchain technology by size of workforce

Regardless of the respondents' organizations, nearly half (48.33%) forecasted that blockchain will be deployed in their organizations in one to two years' time. This shows that blockchain technology will begin to be incorporated into organizations or industry services. Figure 7 further indicates that 24.94% of the respondents stated that blockchain technology will be deployed in two to five years, 9.16% in five to 10 years and only 17.47% stated that the blockchain technology will never be deployed.

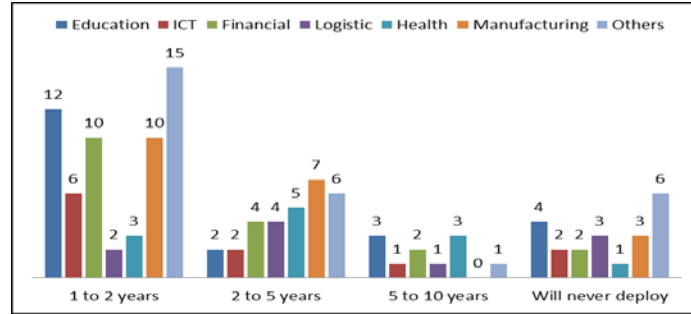


Figure 7: Blockchain technology deployed by Industry

It can be seen that the same trend of blockchain potential is level across the size of workforce of respondents' organizations as shown in Figure 8. More than half of the respondents (63.3%) believed that further dissemination of the blockchain in their organization a high potential to occur. The rest of respondents answers are varied from moderately potential (23.4%) to low potential (11.7%) dissemination of blockchain in their organization. Only 1.6% of the respondents do not see any potential of blockchain application in their organization sector.

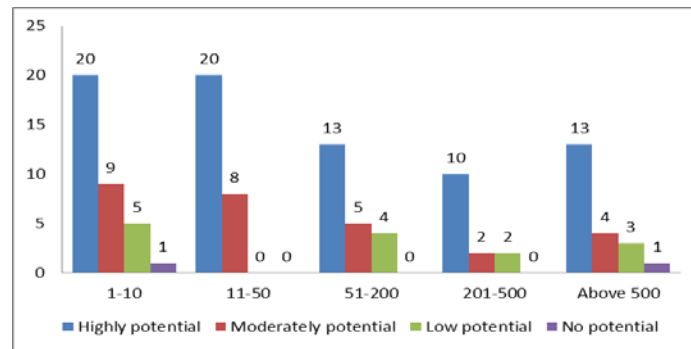


Figure 8: Potential level of blockchain technology by size of workforce

In terms of blockchain's potential to revolutionize all aspects of the industry, Figure 9 shows the majority of the respondents (94.2%) agreed. Sell more products, encourage greater transparency in reporting/accounting, reduce licensing cost and able to identify good employee are the top four areas thought to be the most potential of blockchain technology application. This potential is revealed when more companies integrate blockchain technology to rebrand and market their product and, eventually, obtain higher profit in their business.

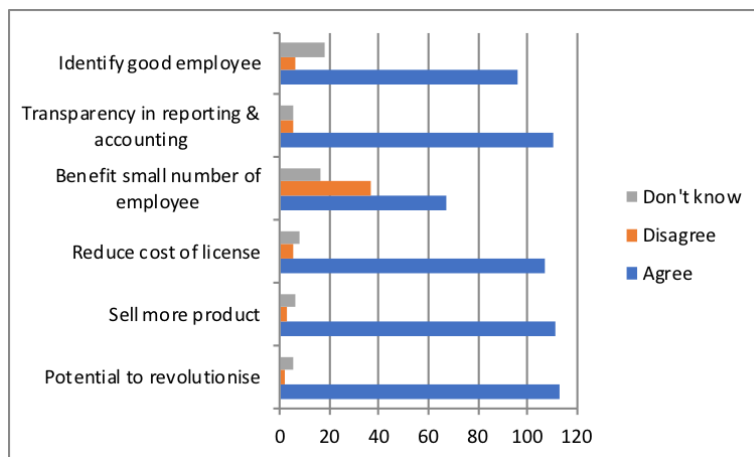


Figure 9: Blockchain technology to revolutionise industry

More than half of the respondents believed that blockchain technology might be used to benefit their organizations through indirect means while 29.2% believed through middleman and 11.7% believed through direct intervention.

Finally, in order to connect everyone in the blockchain/cryptocurrency ecosystem, the majority of respondents thought that having blockchain or cryptocurrency events such as seminars or conferences is very important. Only 1% stated that events are not important.

IV. Conclusion

The growth of the technologies could be hindered by government regulation. To date, the Central Bank of Malaysia has not issued any guidelines on blockchain or cryptocurrency, leading the community, especially financial institutions, to face various challenges in adopting the technologies. Challenges and barriers include those related to privacy and legality, cost, security, stability as well as difficulties in switching to a new technology. Despite these, the technologies are expected to continue growing in the near future. Thus, the challenges and barriers mentioned must be addressed by the Government or regulatory bodies or companies if they want to ensure the success of blockchain and cryptocurrency technologies given that Internet is a common place technology impacting daily life.

Acknowledgement

This research was supported by BC Ventura Sdn. Bhd. (Grant number: S/O code: 13792).

References

- [1] Lewenberg, Y. Sompolinsky, Y. and Zohar, A. Inclusive Block Chain Protocols. *Lecture Notes Computer Sciences (including Subser. Lect. Notes Artif. Intell. Lect. Notes Bioinformatics)*, 2015, 528–557.
- [2] Garay, J., Kiayias, A. and Leonardos, N. The Bitcoin Backbone Protocol: Analysis and Applications. *In: Advances in Cryptology – EUROCRYPT*, 2015, 281–310.
- [3] Tschorsch, F.B. and Berson, A. Beyond : A Technical Survey on Decentralized Digital Currencies. *IEEE Communication Surveys and Tutorials* **18** (3) (2016) 2084–2123.
- [4] Kosba, A. Miller, A., Shi, E., Wen, Z. and Papamanthou, C. Hawk : The Blockchain Model of Cryptography and Privacy-Preserving Smart Contracts, *In IEEE Symposium on Security and Privacy (SP)*, 2016, 839-858.
- [5] Bonneau, J., Miller, A., Clark, J., Narayanan, A., Kroll, J. A. and Felten, E. W. SoK: Research Perspectives and Challenges for Bitcoin and Cryptocurrencies. *In IEEE Symposium on Security and Privacy*, 2015, 104-121.
- [6] Sharples, M. and Domingue, J. The Blockchain and Kudos: A Distributed System for Educational Record, Reputation and Reward. *In Adaptive and Adaptable Learning*, 2016, 490–496.
- [7] Roman, B., Jacob, S. C., Nikolaj, L. and Simon, M. Blockchain – The Gateway To Trust- Free Cryptographic Transactions. *In 24th European Conference on Information System*, 2016, 1–14.
- [8] Kraft, D. Difficulty control for blockchain-based consensus systems. *Peer-to-Peer Networking and Applications* **9** (2) (2016) 397–413.
- [9] Delmolino, K., Arnett, M., Kosba, A., Miller, A. and Shi, E. Step by Step Towards Creating a Safe Smart Contract : Lessons and Insights from a Cryptocurrency Lab. *In International Conference on Financial Cryptography and Data Security*, 2016, 79–94.
- [10] Stejskal, J., Hajek, P., and Prokop, V. Collaboration and innovation models in information and communication creative industries – the case of Germany, *Journal of Information and Communication Technology*, vol. 17, no. 2, 2018, pp. 191–208
- [11] Reyna, A. Martín, C. Chen, J. Soler, E. and Díaz, M. On blockchain and its integration with IoT. *Challenges and opportunities, Future Generation Computer System* **88** (2018) 173–190.
- [12] Woodside, J. M., Giberson, F. K. A. Jr, W. and Woodside, J. M. Blockchain Technology Adoption Status and Strategies. *Journal of International Technology and Information Management* **26** (2) (2017) 65–93.
- [13] Giungato, P., Rana, R., Angela, T. and Caterina, T. Current trends in sustainability of bitcoins and related blockchain technology. *Sustainability* **9** (12) (2017) 1-11.

- [14] Haddad, C. and Hornuf, L. The emergence of the global fintech market: economic and technological determinants. *Small Business Economics*, 2018, 1-25.
- [15] Geranio, M. Fintech in the exchange industry : Potential for disruption?. *Masaryk University Journal of Law and Technology* **11** (2) (2016) 245–266.
- [16] Creswell, J.W. Research design: Qualitative, quantitative, and mixed methods approaches. *Sage Publications*, 2013.
- [17] Sekaran, U. and Bougie, R. *Research methods for business: A skill building approach (6th Ed.)*. Wiley. London, 2013.
- [18] Christoph, B., Andreas, K., Philipp, R. and Jens, W. Blockchain in the energy transition. *A survey among decision-makers in the German energy industry*, 2017.
- [19] Pallant, J. *SPSS survival manual: A step by step guide to data analysis using SPSS (4th Ed.)*. Buckingham: Open University Press, 2010.
- [20] Hinkin, T.R. A Brief Tutorial on the Development of Measures for Use in Survey Questionnaires. *Organizational Research Methods*, 1998, 104–121.