

The Impact Cloud Computing Services in It Industry of Malaysia

Yun Zhang

LimKokWing University, Jalan Teknokrat 1/1, Cyberjaya, 63000 Cyberjaya, Selangor, Malaysia

Abstract: This particular study is based on impact of cloud computing in IT industry of Malaysia. Globalisation and industrialisation have enhanced the importance of technological advancements in all business sectors. These can foster business financial growth. On the other hand, pandemic situation has brought different adversities in social conditions of local people. This has increased the importance to implement this technology that has ability to resolve the financial and social conditions as well. This is the reason, developing countries such as Malaysia has adapted this approach. This study has been accomplished with “positivism philosophy, deductive approach and secondary data collection method”. Proper justification with the research objectives has been provided in the last section of this study.

1. Introduction

1.1. Research background

The IT industry needs a stable and vigorous infrastructure to install software and work with new hardware. Sometimes it is not possible to spend this high level of money to adapt new software and licenses. The long deployment cycle of IT industry causes several problems that are partially mitigated through usage of newer technologies. The Malaysian government has taken every possible step to make the country technologically advanced. This is the main reason for the sustainable growth of this IT industry that is comparatively 4.9% in the fiscal year of 2019 (Trade.gov, 2021). This research paper mainly focuses on the technological advancements of IT industry of Malaysia.

1.2. Research rationale

Main issue that has been referred to in this research study

is the insufficient improvement due to absence of latest technology such as Cloud computing that can hamper the growth of Malaysia IT industry. Cloud computing, big data and “Internet of Things” are the main drivers for the industrialisation of IT industry of Malaysia. This IT sector is claimed to be the fastest growing industry in this country. In this context, it is important to adopt latest technology for ushering the growth of this industry.

This particular issue is significant as this industry is a great contributor to the GDP of country. Based on the statistics of Malaysian government, this industry is reported to contribute 20% of total GDP in the fiscal year of 2020 (Trade.gov, 2021). This has made this industry important for getting a robust economical condition after industry 4.0. This country aspires to be a technologically developed country by 2025 and due to this, it is important to give technological guidance to every sector of this country.

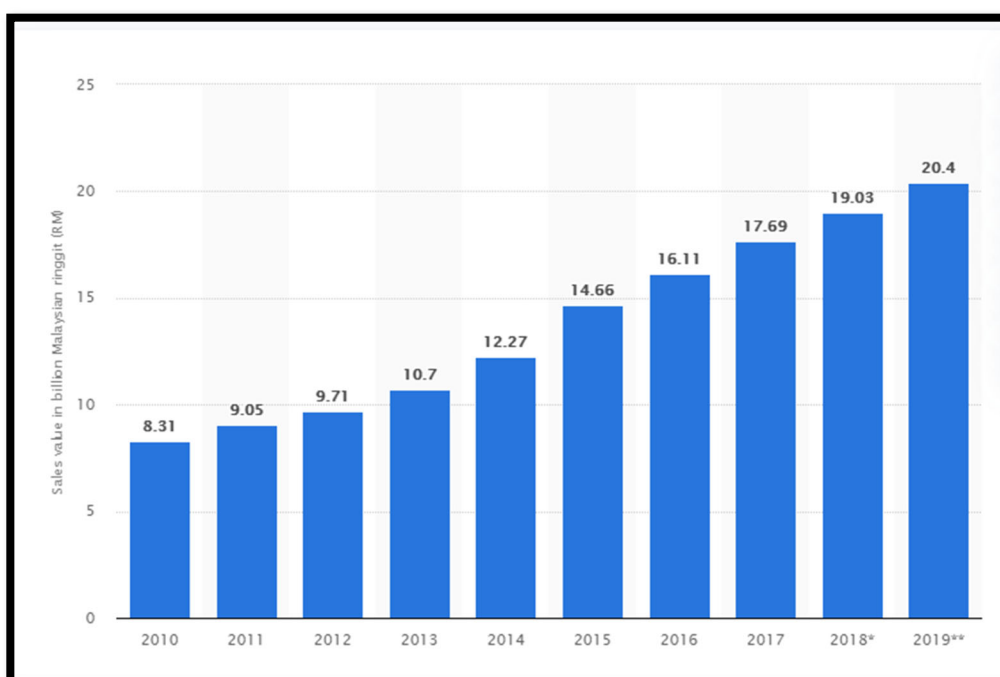


Figure 1. Retail revenue of IT sector of Malaysia
(Source: Statista.com, 2021)

This issue is related to the present condition of Malaysia as technology advancement has proven to give better results that can strengthen the economy of this country. According to a report, 79% of business companies have a belief that cloud computing can usher technological transformation in IT industry. It has been assumed by 81% of Malaysian IT companies that application of cloud computing can help them in transforming into the digital industry in subsequent low budgets (Trade.gov, 2021). In present digital era, it is important to adopt technology for overall growth and bring industrialisation in the Malaysian business sector. This can aid the commencement of digitisation and revolution in the IT sector of Malaysia.

1.3. Research aim and objectives

Main aim of this research paper is to identify the role of latest technology in the advancements of cloud computing systems and overall growth of Malaysia IT industry.

Related objectives of this research paper are mentioned below:

- To assess the role of cloud computing in the growth of IT industry of Malaysia

- To identify the impact of technology in IT industry and economy of Malaysia

- To objectify different challenges in implementation of cloud computing in IT industry of Malaysia

To suggest alternative ways to overcome the barriers of implementing the latest technology in the Malaysian IT industry.

1.4. Significance of this study

This study is significant as the IT industry is the fastest growing sector in Malaysia. Overall growth of IT industry can give them more technological stability in future. Digitisation has affected all sectors and gives them a sustainable development strategy. Based on the statements of Mohammad (2019), it can be stated that “cloud computing” has started a different era in the IT sector by bringing ease in the adoption of latest hardware and installation of software. Virtualisation of this industry can be accessed through cloud computing that generally reduces the cost of hardware and software. This latest technology not only changes the process of IT work but also extends the aspects of this industry. Through application of cloud computing, the company vendors of this industry can offer various email apps, storage, security and backup services to the customers. This research study mainly highlights all the positive outlook of cloud computing that may give more improvement in Malaysian IT industry.

2. Literature Review

2.1. Conceptual framework

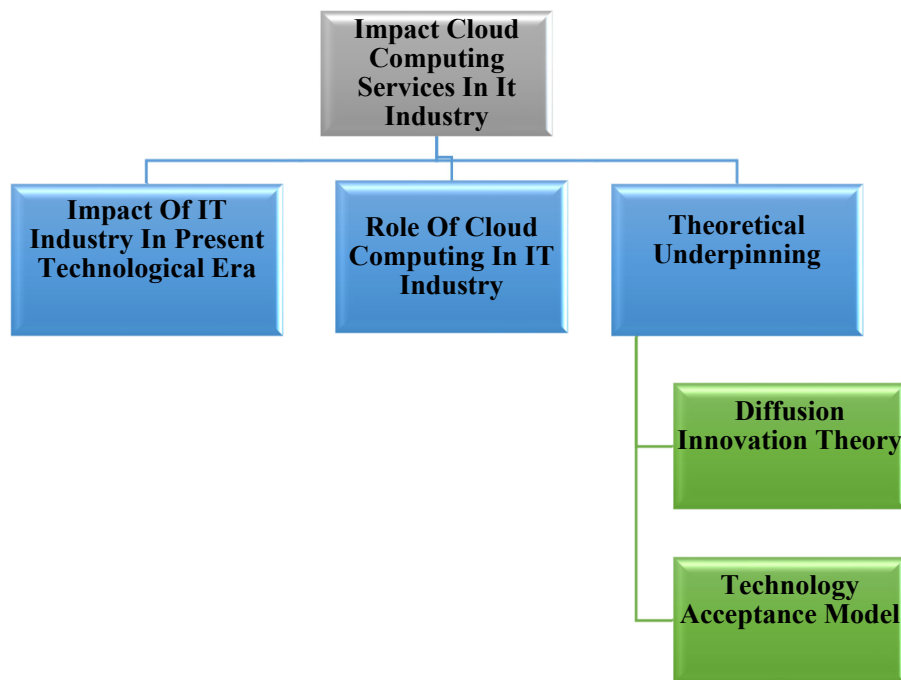


Figure 2. Conceptual framework

2.2. Impact of IT industry in present technological era

Technological innovation has accelerated after initiation of industry 4.0. Technology usage has a great impact on the economy of any country. According to the statements pf , it can be stated that IT sectors can usher in economic growth as well as reduce poverty (Mohammad, 2019). Employment opportunities and social development can be achieved thoroughly by enhancing the growth of the IT sector which may act as a key driver for sustainable development of any country. It has been observed that 10% growth in

technological incorporation can lead to 0.75 % of GDP growth as well as 1.02% of reduced unemployment (Chin, 2019). This sector provides ample job opportunities and reduces the cost of health and essential services for making it affordable for common people.

This industry not only eases the access to different global information but also provides fast communication between companies. This leads to decreased production cost and increased productivity (Li et al. 2020). This also helps the companies to enter into new financial markets and optimise distribution of human capital through digital marketing. Innovation and entrepreneurship is a consequent outcome of

this industry that leads to reduction of financial issues for small and medium business organisations (Park, 2018). Necessary inputs for goods and their services can be

incorporated through this technical support. Increased efficiency can be achieved through these IT sectors that can give more strength to the economy.

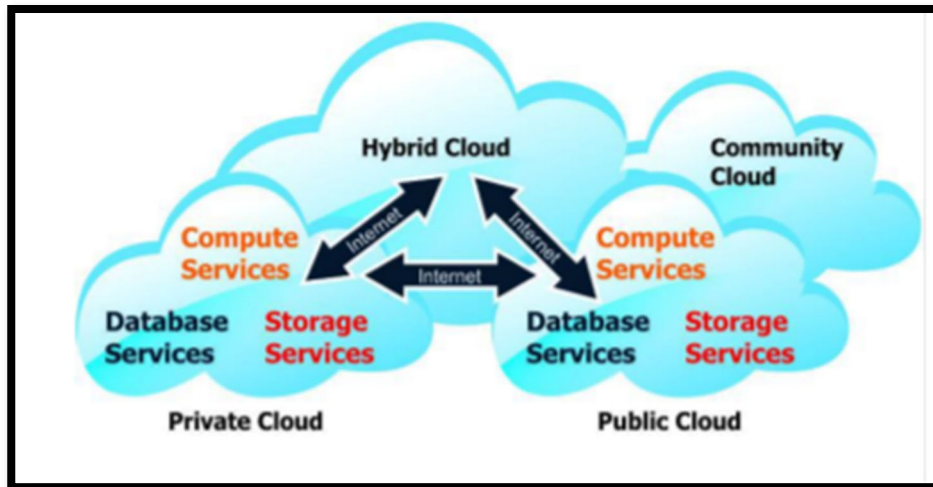


Figure 3. Cloud deployment
(Source: Mohammad, 2019)

2.3. Role of cloud computing in IT industry

The IT environment mainly deals with different hardware, software installation, licenses and servers. This process needs more costs and highly improved infrastructure with a long deployment period. This can be easily replaced with incorporation of new technologies such as cloud computing. These technological improvements can give acceleration to this industry which mainly relates with the utility and services of this sector (Namasudra, 2018). Private cloud storage and SaaS (Software as a Service) innovation not only helps the service provider but also makes it affordable for the customers (Moeuf et al. 2018). Cloud computing can help the IT industry in several ways which are described below:

- It can reduce the “total cost of ownership”
- It assists to implement the advanced technology with enhanced flexibility
- It also accelerates collaborative impact of technology and services
- This can enhance the competency of the sector
- This make the business operations less time consuming and flexible
- This helps to enhance the accessibility of applications
- Investments in this industry has been reduced due to flexible operations of new technologies (Horowitz et al. 2018)
- This also imports more greener approach as the credentials are have lesser impact on the environment

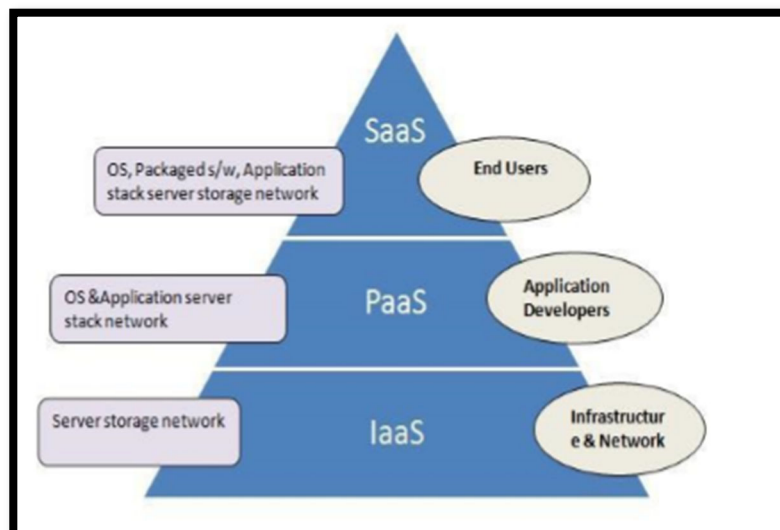


Figure 4. Cloud services
(Source: Mohammad, 2019)

2.4. Theoretical underpinning of this topic

2.4.1. Diffusion innovation theory

This theory suggests the overall process and reason for

technological acceptance in present days. The need for subsequent technological development can be understood for its market demand. This also involves new marketing strategy for new products and their overall acceptance. It focuses on

the identification of early adopters of technology that can help to overall spread of the technologies (García-Avilés, 2020). This theoretical underpinning is relevant for this research

study as this can give a framework about the adoption of cloud computing in the information technology sector of Malaysia.

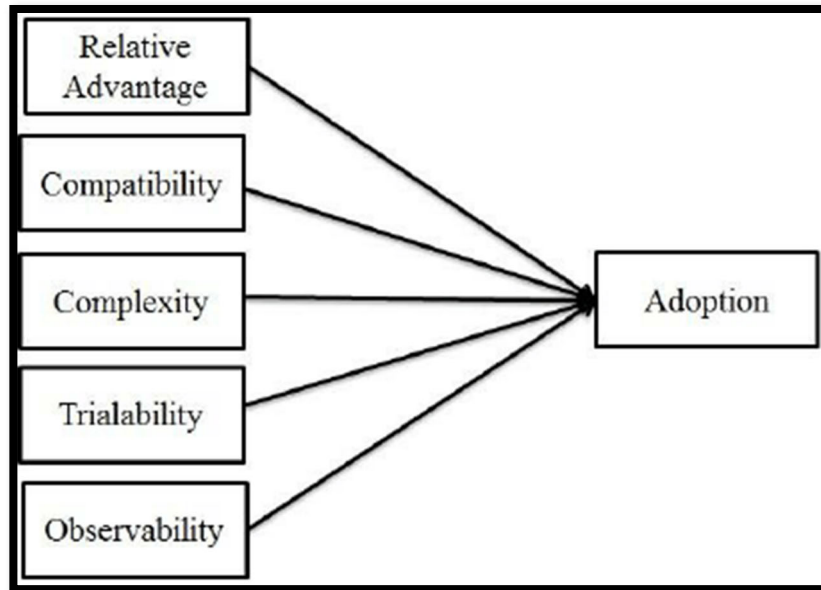


Figure 5. Diffusion innovation theory (Source: García-Avilés, 2020)

2.4.2. Technology acceptance model

According to Granić and Marangunić (2019), it can be illustrated that technological advancements need a strategic model for giving positive results. Implementation of technology is an important thing which must be conducted with a prudent framework. Behavioural patterns of customers

are the main things that should be considered to implement new technological innovations in products and services. “Perceived usefulness and perceived ease of use” are the main two factors that imply huge impact of the customers’ behavioural pattern. This model can give a proper framework for implementation of cloud computing systems in the IT industry of Malaysia.

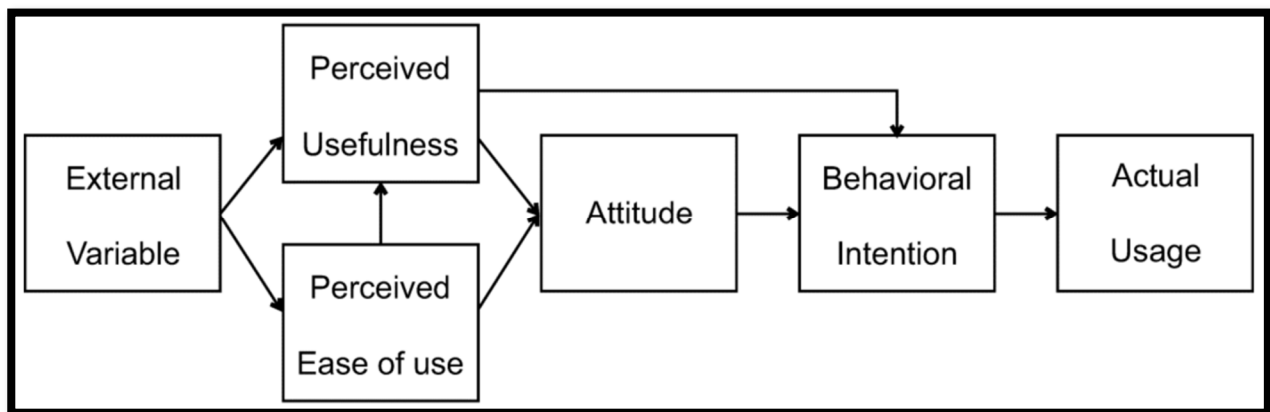


Figure 6. Technology acceptance model (Source: Granić and Marangunić, 2019)

3. Research Methodology

3.1. Research philosophy

Research philosophy helps the researcher to get an overview about the research topic that helps to determine the specific strategy and research methods. This particular study has been conducted with the help of positivism philosophy as the factual knowledge about the IT industry can help to address the role of cloud computing. This philosophy adheres to the observation power of researchers and has no provision of biases by using this research study (Žukauskas et al. 2019). In this regard, this philosophical view has been chosen for

overall development of this research study regarding the Malaysian IT industry.

3.2. Research design

Research design helps to enhance the reliability of the research results. This specific study has been accomplished through “descriptive research design” for analysing the significance of cloud computing in IT industries across Malaysia. This research design mainly highlights the categories and trends of research variables that help to justify the research aim and objectives (Dannels, 2018). In this context, it can be stated that this design can give the scientific

basis of the research study about the IT industry of Malaysia.

3.3. Research approach

Research approach mainly conveys the broad assumptions about the data collection procedure and analysis method. This specific research is carried out through “deductive research approach” to get an overview about the importance of “cloud computing in the Malaysian IT industry”. This research approach mainly explains the correlation between research variables and also helps to measure the concepts of research (Timans et al. 2019). This can give a logical basis of the significance of cloud computing and gives the meaningful outcome of this study.

3.4. Data collection and data analysis method

Proper data collection methods are important as this is related to the reliability of research results. This particular study has been accomplished with “secondary qualitative data collection method”. This is usually a cost effective method and it is less time consuming (Längler et al. 2019). Based on this context, this method has been chosen in which data has

been collected from “Google Scholar and ProQuest” database. Statistical data has been taken from authentic and governmental websites to maintain its reliability. This study has been accomplished with a “thematic data analysis method” to get more information about the necessity of cloud computing in the Malaysian IT industry.

3.5. Research validity and ethical considerations

Research validity and reliability mainly depends upon the chosen methods and collected data. Enhanced reliability suggests reduced research errors that help to use the research study in future (Rezapour Nasrabad, 2018). In this particular study, all the research ethics have been maintained for maintaining the legitimacy of research results. All information has been cited with the actual author and year to avoid its ambiguity. Data that is collected from databases, has not been distorted and used in the proper method as per the guidelines of “Personal data protection act, Malaysia” (Malaysia.gov.my, 2021).

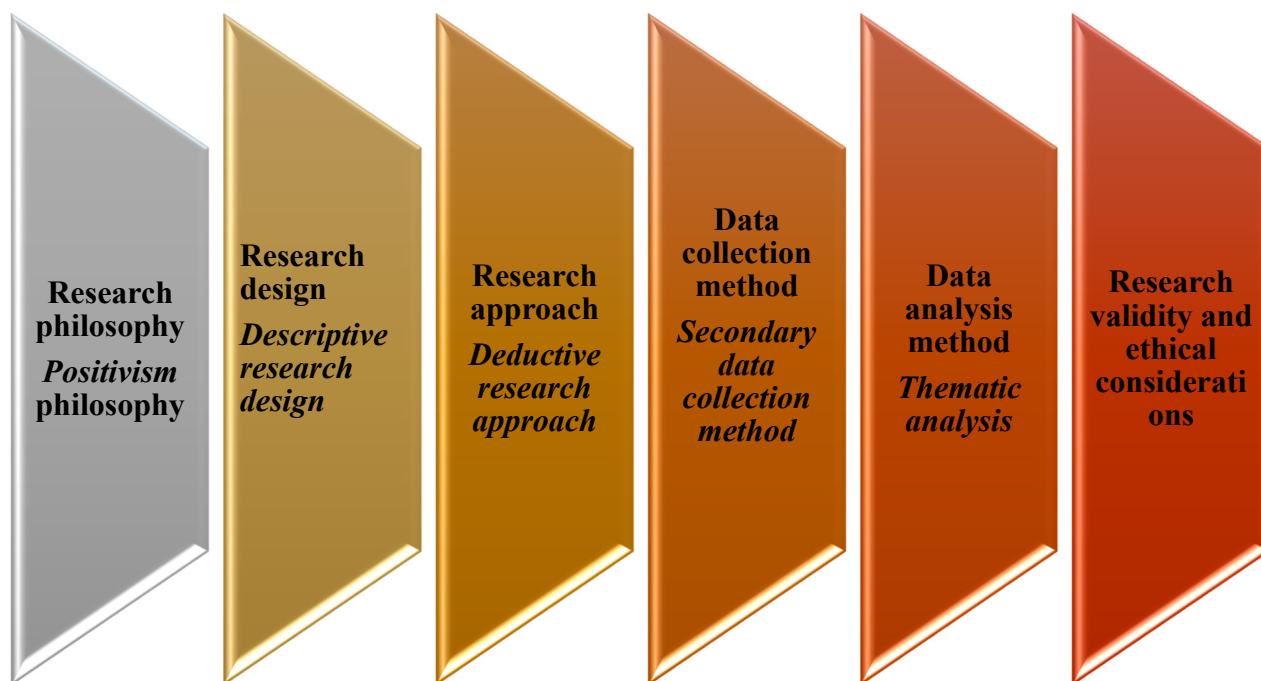


Figure 7. Research Methodology
(Source: Rezapour Nasrabad, 2018)

3.6. Research Timeline

(Refer to Appendix 1)

4. Findings

Theme 1: Technological factors for adoption of cloud computing in Malaysia IT industry

Technological factors mainly highlight the relevant technical strategies for acceptance of these latest innovations. Technical elements that contribute in the acceptance of this technology are as follows:

Performance expectancy

It refers to the beneficial impact of cloud computing in every day’s life. Improvement of work potential is a determining factor for acceptance of this technology. Benefits and overall ease of using technology mainly decide the

affirmation of new innovation (Amron et al. 2019). Business organisations have received profitable return after using this cloud computing that has positively impacted its usage in the Malaysian IT sector.

Effort expectancy

This refers to ease of applying the system. Customer perception and their experience while handling the system are important for implementation of new technology. Cloud computing has enhanced the flexibility for business operations and decreases overall time for operations. More competencies have been achieved after using these innovative technologies and it also reduces the cost of technical items (Asiaei and Rahim, 2019). This has made it affordable for the customers which lead to more strong intention to perceive this technology in the IT sector of Malaysia.

Facilitating conditions

This refers to the appropriateness of cloud computing to be

perceived in the IT industry of Malaysia. Technical resources such as networking, Internet, finance, time and effort are important for adopting new technologies in existing infrastructure. However, cloud computing does not need extra strategic infrastructure rather it reduces the cost of production. These reasons make it more considerable technology to be fitted in the IT sector of Malaysia.

Trust
 It is important to achieve the customer trust that affects their adoption rate of the new technology. It has been observed that Malaysian people have realised the advantages of this technology which compels them to adopt this new technology despite different challenges in implementation of this.

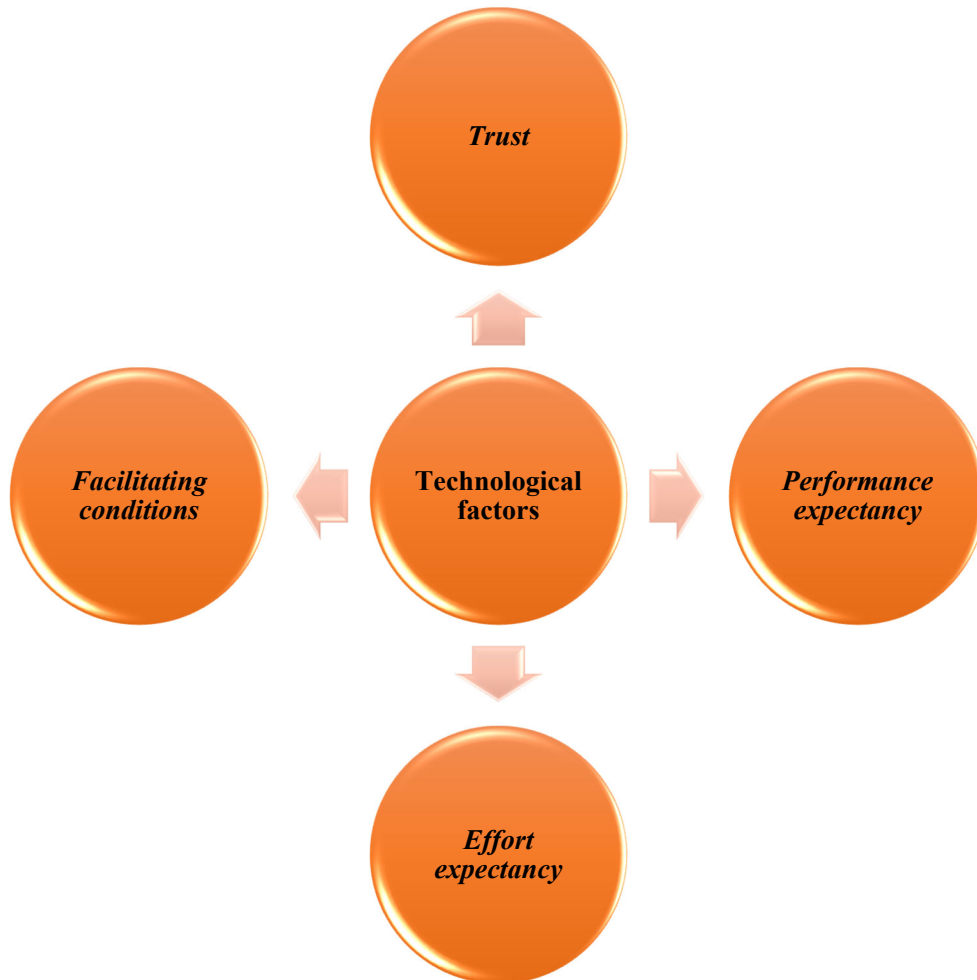


Figure 8. Technological factors for adoption of cloud computing
 (Source: Influenced by Asiaei and Rahim, 2019)

Theme 2: Human factors for adoption of cloud computing in Malaysia IT industry

Different problems such as knowledge and its environmental impacts can be arrived at before implementing a new technology. These issues should be considered before initiating the application of cloud computing in IT sectors and the problems are as follows:

IT Knowledge

IT knowledge is important for using new technologies and it is an important factor for implementing new technologies. Transferring knowledge and innovative power, IT professionals can convey their influence on latest technologies. It helps the organisation to get more operational potentiality. This should be handled with proper strategy before implementation of cloud computing in the IT sector of

Malaysia.

Awareness

Perceived affinity and utility of a new technology can be understood through spreading awareness about the technology. Application services that are based on cloud computing should be made available for the customers so they can get aware about the applications of this technology (Asiaei and Rahim, 2019). Exposure is important to adopt new technology in existing infrastructure of the Malaysian IT sector.

Social influence

Individual perception is important about the usage of cloud computing in their regular works. Continuous support and management can enable them to adopt cloud computing in the information technology and their services.

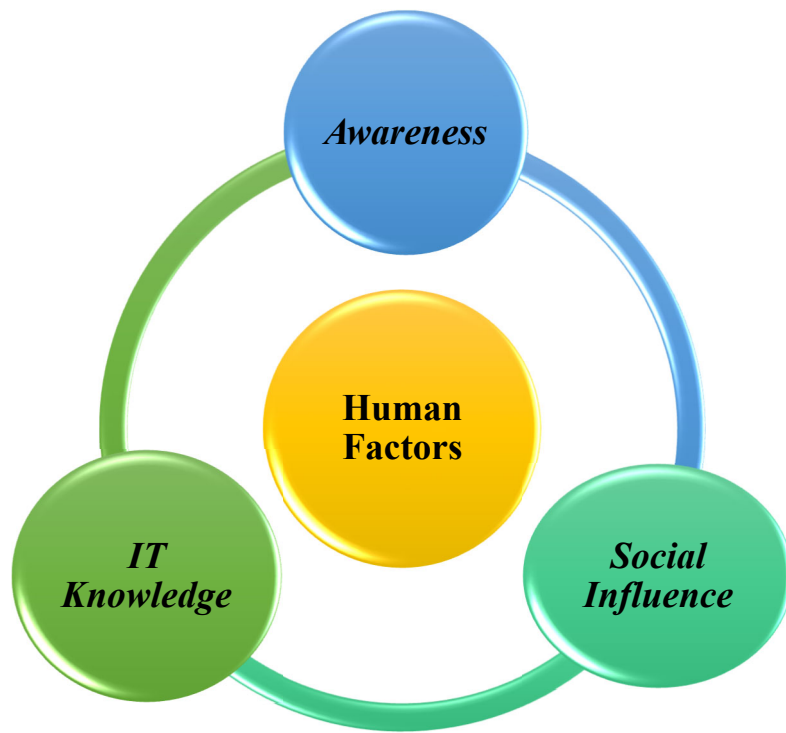


Figure 9. Human factors for adoption of cloud computing
(Source: Influenced by Asiaei and Rahim, 2019)

Theme 3: IT progression in Malaysia

Malaysian government has recruited a special governing body namely “Malaysian Administrative Modernisation and Planning Unit (MAMPU)” for incorporating innovation and technologies in the public sectors. MAMPU is responsible for the technological integration in the IT sector of this country. Based on the “Malaysian Public Sector ICT Strategic Plan”, transparency, cost effectiveness and enhanced productivity of public sectors are the main focus of this innovative plan

(Razzaq and Mohammed, 2020). Governance regarding ICT should be reinforced for this change management within IT sector and their compliance. This not only enhances the IT sectors of Malaysia but also changes their economy into a knowledge-based economy. Cloud computing and other augmented services influence the small medium businesses to nurture their growth as these technologies reduce the overall cost of production.

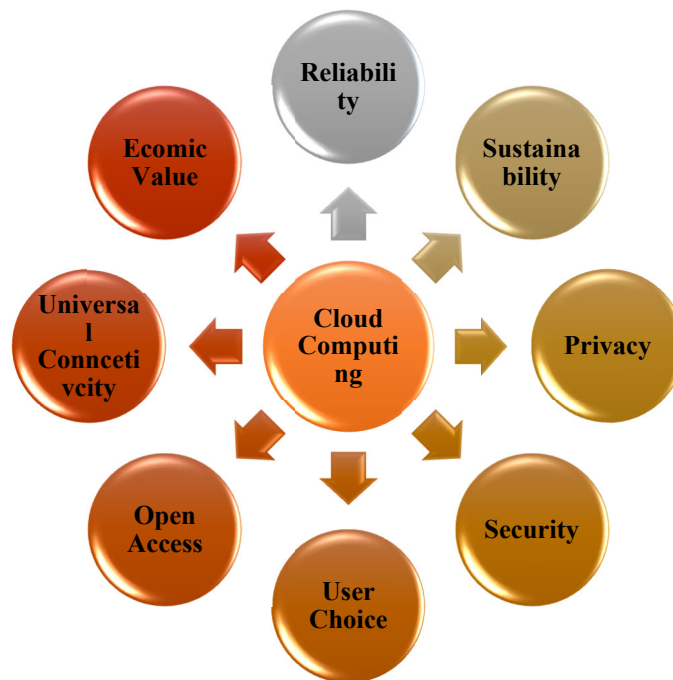


Figure 10. Fundamental elements of cloud computing
(Source: Influenced by Alam et al. 2018)

“Malaysia Cloud initiative (MMCI)” is the important policy that has been introduced for incorporating cloud

computing in IT sectors. Implementation of SaaS, PaaS and IaaS are constantly getting more importance in cloud computing operations (Alam et al. 2018). The Malaysian government has started online facilities which are another cause for more adoption of technological advancements within every public sector. They also take very possible steps to implement infrastructure required for cloud computing and also emphasises deployment of private cloud for overall privacy and security of their data and personal information. All these initiatives have brought ample changes into the IT sector of Malaysia and converted this country into a digital

one.

Theme 4: Cloud computing acceptance in Malaysia

Malaysia has got 9th rank in global “Information and Communication Technology Development Ranking” (Alam et al. 2018). It is important to assess the readiness of any country before implementing new technologies. Based on the report of “Asia Cloud Computing Association (ACCA)”, the readiness for adopting cloud computing can be determined by analysing ten indicators and their respective scores for Malaysia are mentioned in following table:

Table 1. Cloud readiness of Malaysia

Indicators	Score of Malaysia
Data Sovereignty	6.7
Privacy	5.8
Broadband Quality	7.1
International Connectivity	5.8
“Power Grid And Green Policy”	4.9
Protection Of Intellectual Property	6.9
“Government Regulation Environment And Usage”	5.2
“Data Centre Risks”	8.5
Business Sophistication	7.2
“Freedom of Information”	8.2

According to these scores, Malaysia needs more effort to implement a cloud computing system. In this regard, the government has announced data management policies such as the “Personal Data Protection Act” and “Big Data Analytics” for enhancing cloud friendly markets in this country.

5. Discussion

Based on the above finding, it can be stated that cloud computing can give more efficient service, productivity and cost savings. Implementation of this service may be hindered by some barriers. Proper strategic framework can help to overcome these barriers and serve advantages of these technologies. Different government policies have been introduced to make cloud friendly markets in this country that may give better access to the technologies. Systemic architecture is important to implement the cloud computing service in the IT sector of Malaysia.

6. Conclusion

Cloud computation may lead to overall growth of the IT sector in Malaysia. This can have a positive impact on other business sectors by enhancing their product and reducing their productive cost. Proper implementation procedure can give better results from this cloud computing system. In conclusion, it can be stated that cloud computing has an important role in the development of the IT industry of Malaysia that has the potential to provide a more vigorous

economy to this country.

References

- [1] Alam, S.S., Nor, N.G.M., Ali, M.H., Omar, N.A. and Wel, C.A.C., 2018. Relationship between entrepreneur’s traits and cloud computing adoption among malay-owned SMEs in Malaysia.
- [2] Amron, M.T., Ibrahim, R., Bakar, N.A.A. and Chuprat, S., 2019. Acceptance of cloud computing in the Malaysian public sector: a proposed model. *International Journal of Engineering Business Management*, 11, p.1847979019880709.
- [3] Asiaei, A. and Rahim, N.Z.A., 2019. A multifaceted framework for adoption of cloud computing in Malaysian SMEs. *Journal of Science and Technology Policy Management*.
- [4] Chin, W., 2019. Technology, war and the state: past, present and future. *International Affairs*, 95(4), pp.765-783.
- [5] Dannels, S.A., 2018. Research design. In *The reviewer’s guide to quantitative methods in the social sciences* (pp. 402-416). Routledge.
- [6] García-Avilés, J.A., 2020. Diffusion of innovation. *The International Encyclopedia of Media Psychology*, pp.1-8.
- [7] Granić, A. and Marangunić, N., 2019. Technology acceptance model in educational context: A systematic literature review. *British Journal of Educational Technology*, 50(5), pp.2572-2593.
- [8] Horowitz, M.C., Allen, G.C., Kania, E.B. and Scharre, P., 2018. Strategic competition in an era of artificial intelligence. *Center for a New American Security*.

- [9] Längler, M., Brouwer, J. and Gruber, H., 2019. Data collection for mixed method approaches in social network analysis. In *Mixed Methods Social Network Analysis* (pp. 25-37). Routledge.
- [10] Li, Y., Dai, J. and Cui, L., 2020. The impact of digital technologies on economic and environmental performance in the context of industry 4.0: A moderated mediation model. *International Journal of Production Economics*, 229, p.107777.
- [11] Malaysia.gov.my, 2021, Personal Data Protection Act, Available at: <https://www.malaysia.gov.my/portal/content/654> [Accessed on: 31th July 2021]
- [12] Moeuf, A., Pellerin, R., Lamouri, S., Tamayo-Giraldo, S. and Barbaray, R., 2018. The industrial management of SMEs in the era of Industry 4.0. *International Journal of Production Research*, 56(3), pp.1118-1136.
- [13] Mohammad, S.M., 2019. Cloud Computing in IT and How It's Going to Help United States Specifically. *International Journal of Computer Trends and Technology (IJCTT)*–Volume, 67.
- [14] Namasudra, S., 2018. Cloud computing: A new era. *Journal of Fundamental and Applied Sciences*, 10(2).
- [15] Park, S.C., 2018. The Fourth Industrial Revolution and implications for innovative cluster policies. *AI & SOCIETY*, 33(3), pp.433-445.
- [16] Razzaq, A. and Mohammed, A.A., 2020. Cloud ERP in Malaysia: Benefits, challenges, and opportunities. *International Journal*, 9(5).
- [17] Rezapour Nasrabad, R., 2018. Criteria of validity and reliability in qualitative research. *Journal of Qualitative Research in Health Sciences*, 6(4), pp.493-499.
- [18] Timans, R., Wouters, P. and Heilbron, J., 2019. Mixed methods research: what it is and what it could be. *Theory and Society*, 48(2), pp.193-216.
- [19] Trade.gov, 2021, Information & Communications Technology, Available at: <https://www.trade.gov/country-commercial-guides/malaysia-information-communications-technology> [Accessed on: 16th August 2021]
- [20] Žukauskas, P., Vveinhardt, J. and Andriukaitienė, R., 2018. Philosophy and paradigm of scientific research. *Management Culture and Corporate Social Responsibility*, 121.

7. Appendix 1: Research timeline

Tasks	Week 1-2	Week 3-5	Week 6-7	Week 8-10	Week 11-12
Background evaluation, aim and objectives identification, rationale determination					
Literature reviewing, assessing related journals and articles					
Data collection using specific methodologies					
Results and thematic analysis					
Conclusion and formation of final report					