

Emerging Technology Opportunities and Challenges towards Organization and National Development

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Abstract: *Emerging technologies are playing a significant role in driving organization and national development. As these technologies continue to evolve, the opportunities and challenges associated with them rises. Current study aiming to identify the emerging technology opportunities and challenges towards organization and national development in the context of Malaysia. To achieve the objective, current study has deployed secondary qualitative analysis method with literature review approach. Based on the analysis, study finds that, AI, Blockchain and IoT are the most emerging technology that has significant contribution toward the organizational and national development. Study further, identified potential challenges and the showcase the potential process to avail opportunities of emerging technologies. Artificial Intelligence (AI) can help companies to automate their operations, reducing errors and increasing profitability. Automation can also enhance the quality of products, as machines are less prone to human error. Blockchain technology can provide a secure and efficient way to conduct transactions, making it possible for businesses to reach new markets and expand their customer base. Technologies like solar energy and wind turbines can help reduce the country's dependence on fossil fuels, which is important for the long-term sustainability of the environment. Another significant challenge is the lack of infrastructure to support the implementation of emerging technologies. Additionally, the lack of regulations for emerging technologies poses a challenge for organizations and the government, especially in areas such as data privacy and security. The government and organizations must work together to ensure that the public is informed about the benefits and challenges of these technologies. Therefore, these technologies can promote sustainable development and provide new business opportunities. In conclusion, the challenges that need to be addressed to fully leverage the benefits of emerging technologies, including the lack of skilled workers, infrastructure, and regulations in Malaysia would be discussed.*

Keywords: Artificial Intelligence, Malaysia, Internet of Thing, Blockchain, Secondary qualitative analysis

1. Introduction

World Bank (2021) discusses the potential impact of the digital economy on Malaysia's economic growth and development. The authors argue that the digital economy could become a key driver of economic growth and development, and that Malaysia has a significant opportunity to leverage its strengths and capitalize on emerging opportunities in the digital economy.

The research highlights the key drivers of Malaysia's digital economy, including the country's strong technology infrastructure, a large and growing population of digital users, and a supportive policy environment. The authors note that Malaysia has made significant progress in developing a comprehensive digital strategy, which includes initiatives to expand broadband access, foster innovation, and develop digital skills (Hanna, 2020).

The authors also discuss the potential impact of the digital economy on Malaysia's economic growth and development. They argue that the digital economy could lead to increased productivity, job creation, and new business opportunities, particularly in sectors such as e-commerce, fintech, and digital services. In addition, the digital economy could help to address some of Malaysia's key development challenges, such as improving access to healthcare, education, and financial services (Begum et al., 2020). However, the authors also note that there are significant challenges to be addressed in order to fully realize the potential of the digital economy in Malaysia. These challenges include addressing the digital divide, ensuring data privacy and security, developing digital skills, and promoting innovation and entrepreneurship (Esteban-Navarro et al., 2020).

Department of Commerce (2021) provides an overview of the information and communications technology (ICT) sector in Malaysia. According to the article, the ICT sector is a key driver of economic growth in Malaysia, contributing 22.6% to the country's GDP in 2021. The article notes that Malaysia has a strong ICT infrastructure, a large and growing population of digital users, and a supportive policy environment for ICT development. The article also highlights the potential for continued growth in the ICT sector, particularly in areas such as e-commerce, fintech, and digital services, which could position Malaysia as a leading player in the future global economy.

Tan (2019) discusses the role of technology in shaping Malaysia's economy. According to the author, Malaysia has been working to position itself as a leading player in the digital economy, leveraging its strengths in areas such as technology infrastructure and talent.

The author notes that Malaysia has made significant progress in developing a comprehensive digital strategy, which includes initiatives to expand broadband access, promote innovation, and develop digital skills. The author also highlights the potential of emerging technologies, such as artificial intelligence (AI) and the Internet of Things (IoT), to transform industries and drive economic growth in Malaysia (Low et al., 2020).

Overall, the Malaysia has a significant opportunity to leverage its strengths and capitalize on emerging opportunities in the digital economy. However, they caution that realizing the full potential of the digital economy will require a sustained effort to address the challenges and build the necessary infrastructure, skills, and policies. However, realizing this potential will require a sustained effort to address the challenges and build the necessary infrastructure, skills, and policies to support the growth of the digital economy (Low et al., 2020).

Malaysia has been actively leveraging technology to drive economic growth and development, with a focus on expanding broadband access, promoting innovation, and developing digital skills. However, there are still significant challenges to be addressed, including addressing the digital divide and promoting entrepreneurship and innovation. By continuing to build the necessary infrastructure, talent, and policies to support the growth of the digital economy, Malaysia has the potential to become a leading player in the global digital economy. Thus,

current research aiming to identify the potential challenges and opportunities of emerging technology towards the development of organizational and national development in Malaysia.

2. Literature Review

Emerging technologies are transforming various industries and economies around the world. Malaysia is no exception, as the country has been actively promoting the adoption and development of emerging technologies to drive economic growth and enhance competitiveness. This literature review aims to provide an overview of recent research on emerging technologies in the context of Malaysia, focusing on the period from 2018 to 2022. Based on the literature, AI, block chain technology and Internet of Thing considered as the major contributor for the Malaysian organizational and national development.

At first, Artificial intelligence (AI) is one of the most prominent emerging technologies, with significant potential to transform various industries in Malaysia. A study by Ahmad and Rahman (2020) explored the potential of AI in the Malaysian banking sector, highlighting the benefits of AI in improving efficiency, reducing costs, and enhancing customer experience. Similarly, another study by Aziz et al., (2020) investigated the potential of AI in the healthcare sector, suggesting that AI could help address issues such as limited resources, access, and quality of care in Malaysia. However, the study also highlighted the need for robust regulatory frameworks and ethical considerations to ensure the responsible and equitable use of AI in healthcare.

Secondly, The Internet of Things (IoT) is another emerging technology with significant potential in Malaysia. A study by Ali et al., (2019) explored the potential of IoT in the Malaysian transportation sector, suggesting that IoT could help address issues such as traffic congestion, safety, and environmental sustainability. However, the study also highlighted the need for collaborative efforts among stakeholders, including the government, private sector, and academia, to fully realize the potential of IoT in Malaysia.

Finally, Blockchain technology is another emerging technology with potential in Malaysia, particularly in the financial sector. A study by Kadir et al., (2020) explored the potential of blockchain technology in the Malaysian Islamic banking sector, highlighting the benefits of blockchain in enhancing transparency, security, and efficiency in transactions. However, the study also highlighted the need for regulatory frameworks and collaborative efforts among stakeholders to fully realize the potential of blockchain technology in the Malaysian financial sector.

It can be said that, emerging technologies such as AI, IoT, and blockchain have significant potential to transform various industries in Malaysia, including banking, healthcare, transportation, and finance. However, the adoption and development of these technologies require robust regulatory frameworks, collaborative efforts among stakeholders, and ethical considerations to ensure responsible and equitable use. Future research should continue to explore the potential and challenges of emerging technologies in the context of Malaysia, and identify ways to fully realize their benefits while mitigating potential risks.

2.1 Opportunities

AI, Blockchain and IoT have significant potential to drive economic growth and enhance competitiveness in Malaysia. Artificial intelligence (AI) has significant potential to transform various industries in Malaysia and drive economic growth. A study by Tan et al., (2019)

investigated the potential of AI in the Malaysian manufacturing sector, highlighting the benefits of AI in improving productivity, quality, and innovation. Another study by Yusoff et al., (2020) explored the potential of AI in the Malaysian agriculture sector, suggesting that AI could help address issues such as food security, resource optimization, and environmental sustainability.

According to Sathish et al., (2019) investigated the potential of IoT in the Malaysian logistics sector, suggesting that IoT could help address issues such as efficiency, cost reduction, and environmental sustainability. Another study by Ng et al., (2020) explored the potential of IoT in the Malaysian tourism sector, highlighting the benefits of IoT in enhancing customer experience, operational efficiency, and revenue generation.

Blockchain Technology Blockchain technology has significant potential to enhance the efficiency and transparency of various industries in Malaysia, particularly the financial sector. A study by Cheong et al., (2020) explored the potential of blockchain technology in the Malaysian financial sector, highlighting the benefits of blockchain in enhancing transparency, security, and efficiency in transactions. Another study by Nurshuhada et al., (2018) investigated the potential of blockchain technology in the Malaysian halal industry, suggesting that blockchain could help address issues such as halal traceability, verification, and certification.

Conclusion In conclusion, emerging technologies such as AI, IoT, and blockchain have significant potential to drive economic growth, enhance competitiveness, and address various social and environmental issues in Malaysia. However, the adoption and development of these technologies require robust regulatory frameworks, collaborative efforts among stakeholders, and ethical considerations to ensure responsible and equitable use. Future research should continue to explore the opportunities of emerging technologies for the development of Malaysia and identify ways to fully realize their benefits while mitigating potential risks.

While AI, IoT, and blockchain have been identified as key emerging technologies with significant potential for the development of Malaysia, there are also other areas that have been identified as potential research areas. These include:

Cybersecurity: With the increasing use of digital technologies, there is a need for robust cybersecurity measures to protect against cyber threats. A study by Yusoff et al., (2019) highlighted the importance of cybersecurity in the Malaysian context and suggested that there is a need for more research in this area.

Smart Cities: The concept of smart cities has gained significant attention in recent years, and there is potential for the application of emerging technologies such as IoT and AI in the development of smart cities in Malaysia. A study by Tahir et al., (2019) investigated the potential of smart cities in Malaysia, highlighting the benefits of smart cities in enhancing sustainability, livability, and economic growth.

Robotics and Automation: Robotics and automation have significant potential to transform various industries in Malaysia, particularly the manufacturing sector. A study by Goh et al., (2021) explored the potential of robotics and automation in the Malaysian manufacturing sector, suggesting that these technologies could help address issues such as productivity, quality, and cost reduction.

Green Technologies: With the increasing focus on sustainability, there is potential for the application of green technologies in various industries in Malaysia. A study by Ho et al., (2020) investigated the potential of green technologies in the Malaysian construction sector, highlighting the benefits of these technologies in enhancing sustainability, efficiency, and cost reduction.

Conclusion In conclusion, emerging technologies have significant potential to drive economic growth, enhance competitiveness, and address various social and environmental issues in Malaysia. While AI, IoT, and blockchain have been identified as key emerging technologies, there are also other areas such as cybersecurity, smart cities, robotics and automation, and green technologies that have been identified as potential research areas. Future research should continue to explore these areas and identify ways to fully realize the benefits of emerging technologies while mitigating potential risks.

2.2 Challenges

While emerging technologies such as AI, IoT, and blockchain have significant potential for the development of Malaysia, they also present several challenges that need to be addressed to fully realize their benefits. This section will highlight some of the key challenges that organizations and the government face when adopting emerging technologies in the Malaysian context.

Limited Awareness and Expertise: One of the significant challenges in the adoption of emerging technologies in Malaysia is limited awareness and expertise. According to a study by Mohamad et al. (2021), organizations face challenges in understanding the potential of emerging technologies and identifying the right technologies to adopt. Similarly, the government faces challenges in developing policies and regulations to support the adoption of emerging technologies. Addressing this challenge will require investments in education and training to build awareness and expertise in emerging technologies.

Data Security and Privacy: Data security and privacy are crucial challenges that organizations and the government face when adopting emerging technologies. A study by Chin et al. (2020) highlighted the need for robust data security measures to protect against cyber threats, particularly in the context of IoT and AI. Similarly, the government needs to develop policies and regulations to ensure data privacy and protection while leveraging emerging technologies for national development.

Infrastructure and Connectivity: Another significant challenge is infrastructure and connectivity. According to a study by Zainudin et al. (2020), inadequate infrastructure and connectivity limit the adoption of emerging technologies in Malaysia, particularly in rural areas. Addressing this challenge will require investments in infrastructure and connectivity, particularly in rural areas, to ensure equitable access to emerging technologies.

Cost and Return on Investment: Cost and return on investment are crucial challenges that organizations face when adopting emerging technologies. According to a study by Wong et al. (2020), the high cost of emerging technologies, coupled with the uncertainty of return on investment, presents significant challenges to organizations, particularly small and medium-sized enterprises (SMEs). Addressing this challenge will require developing policies and programs to support SMEs in the adoption of emerging technologies.

Legal and Regulatory Framework: Legal and regulatory frameworks are crucial challenges that the government faces in the adoption of emerging technologies. According to a study by Awang et al. (2021), the lack of clear legal and regulatory frameworks for emerging technologies presents significant challenges in ensuring accountability and transparency, particularly in the context of AI and blockchain. Addressing this challenge will require developing clear legal and regulatory frameworks to ensure accountability and transparency while leveraging emerging technologies for national development.

3. Method

This study used a secondary qualitative research method to conduct a review of literature focusing on the opportunities and challenges presented by emerging technologies towards organization and national development in Malaysia. Secondary qualitative research is a type of research that involves analyzing existing literature, documents, and data to answer research questions and generate new insights (Bazeley & Jackson, 2013).

The literature search was conducted using various electronic databases, including Google Scholar, Scopus, and Web of Science. The search terms used were "emerging technologies", "Malaysia", "digital transformation", "national development", "innovation", "entrepreneurship", and "challenges". The inclusion criteria for the articles were that they must have been published between 2018 and 2022, and written in English.

After conducting the search, the 21 articles have been selected after screened based on their relevance to the research questions. The screening process involved reviewing the title, abstract, and full text of the articles. The inclusion and exclusion criteria were applied during the screening process. Articles that did not meet the inclusion criteria were excluded from the study.

a) Inclusion Criteria:

Articles that were published between the years 2018 and 2022.

Articles that were written in English.

Articles that focus on emerging technologies in Malaysia.

Articles that discuss the opportunities and challenges presented by emerging technologies towards organization and national development.

b) Exclusion Criteria:

Articles that were published before the year 2018 or after the year 2022.

Articles that were written in languages other than English.

Articles that do not focus on emerging technologies in Malaysia.

Articles that do not discuss the opportunities and challenges presented by emerging technologies towards organization and national development.

The data collected from the selected articles were analyzed using a thematic analysis approach. Thematic analysis is a qualitative data analysis technique that involves identifying patterns and themes in the data (Braun & Clarke, 2006). The identified themes were used to address the research questions and develop insights into the opportunities and challenges presented by emerging technologies towards organization and national development in Malaysia.

In summary, this study used a secondary qualitative research method to conduct a review of literature focusing on the opportunities and challenges presented by emerging technologies

towards organization and national development in Malaysia. The literature search was conducted using various electronic databases, and the data were analyzed using a thematic analysis approach. The study included articles published between 2018 and 2022 and written in English.

4. Finding and Discussion

Based on the literature review, it can be concluded that AI, Blockchain, and IoT have the potential to drive economic growth and development in Malaysia. The country has been actively leveraging technology to drive economic growth and development, with a focus on expanding broadband access, promoting innovation, and developing digital skills. The ICT sector has contributed significantly to Malaysia's GDP, and emerging technologies such as AI and the IoT hold significant promise for transforming industries and driving economic growth.

However, there are also significant challenges to be addressed in order to fully realize the potential of technology for Malaysia's economic development. These challenges include addressing the digital divide, promoting entrepreneurship and innovation, and developing the necessary infrastructure and talent to support the growth of the digital economy. The lack of digital literacy among the older generation is also a major challenge that needs to be addressed to fully realize the potential of emerging technologies for national development.

Overall, it can be concluded that the opportunities and challenges presented by emerging technologies in the context of Malaysia are closely linked to the country's economic and social development goals. By addressing the challenges and building the necessary infrastructure, talent, and policies to support the growth of the digital economy, Malaysia has the potential to become a leading player in the global digital economy. Based on the above discussion, Malaysia can achieve the technological advancement by implementing the following strategies:

Develop a comprehensive digital strategy: Malaysia needs to develop a comprehensive digital strategy that outlines its priorities for digital development, identifies key areas for investment, and provides a roadmap for implementing digital initiatives. The strategy should also address the challenges of digital adoption, including the need for digital literacy and the development of digital infrastructure.

Encourage innovation and entrepreneurship: The government should encourage innovation and entrepreneurship by providing funding and support for startups, facilitating collaboration between universities and industry, and promoting a culture of innovation.

Develop digital infrastructure: Malaysia needs to invest in digital infrastructure to support the growth of the digital economy. This includes expanding broadband access, developing data centers and cloud infrastructure, and promoting the adoption of new technologies such as 5G.

Promote digital literacy: The government should focus on promoting digital literacy among the general population, including older generations, to ensure that everyone is able to take advantage of the opportunities presented by emerging technologies.

Enhance cybersecurity: Malaysia needs to enhance its cybersecurity measures to protect against cyber threats and ensure the safe and secure use of digital technologies. This includes implementing cybersecurity regulations and standards, developing incident response plans, and providing cybersecurity training for employees and the general public.

Therefore, by implementing these strategies, Malaysia can overcome the technological threats and fully leverage the opportunities presented by emerging technologies for national development.

5. Conclusion

In conclusion, while emerging technologies present significant opportunities for the development of Malaysia, they also present several challenges that need to be addressed to fully realize their benefits. These challenges include limited awareness and expertise, data security and privacy, infrastructure and connectivity, cost and return on investment, and legal and regulatory frameworks. Addressing these challenges will require investments in education and training, developing robust data security and privacy measures, investments in infrastructure and connectivity, developing policies and programs to support SMEs, and developing clear legal and regulatory frameworks. Future research should continue to explore these challenges and identify ways to mitigate them while fully realizing the potential of emerging technologies for national development.

The studies reviewed highlight that the adoption of emerging technologies in Malaysia faces several challenges that need to be addressed for their full potential to be realized. While the challenges identified are diverse, a common theme is the need for investments in infrastructure, education and training, and the development of clear policies and regulations.

One of the main challenges highlighted is limited awareness and expertise, with organizations and the government struggling to identify the right technologies to adopt and develop policies and regulations to support their adoption. Addressing this challenge will require investments in education and training to build awareness and expertise in emerging technologies.

Another significant challenge highlighted is data security and privacy, with organizations and the government needing to develop robust data security measures and policies to ensure data privacy and protection while leveraging emerging technologies for national development.

Infrastructure and connectivity are also critical challenges, particularly in rural areas, with investments in infrastructure and connectivity needed to ensure equitable access to emerging technologies.

Cost and return on investment present significant challenges to organizations, particularly SMEs, with developing policies and programs to support SMEs in the adoption of emerging technologies necessary to address this challenge.

Finally, the lack of clear legal and regulatory frameworks for emerging technologies presents significant challenges in ensuring accountability and transparency, particularly in the context of AI and blockchain. Developing clear legal and regulatory frameworks will be necessary to address this challenge.

Overall, addressing these challenges will require collaboration between organizations, the government, and other stakeholders to develop clear policies and programs to support the adoption of emerging technologies in Malaysia. Future research should continue to explore these challenges and identify ways to mitigate them while fully realizing the potential of emerging technologies for national development.

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