Unlocking Malaysia's Transformation to a Digital Future: The Potentials of the Economic Performance

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ABSTRACT

The purpose of this study is an analysis of digital transformation factors that shape the economic development of the digital economy. Based on interviews, the study contributes to this understanding by identifying the main paths that would shape a future scenario in which Industry 4.0 will lead. study describes the problems for the development of the digital economy. This study investigates drivers and barriers to digital economy. Based on the analysis, it is understood that the swift digitalisation undoubtedly contributes to improved economic performance as well as the environmental and societal implications. Participants elaborated the barriers to digital economy, including skills needed and availability of quality internet infrastructures. This will be a pragmatic reference in the making of government policies for economic growth through digital economy while taking into consideration the ageing society. It was concluded that a more active political and societal influencing of the digitalisation processes is necessary to make digitalisation effect for environmental sustainability. This study contributes to the digital economy development literature by providing information on both the positive and negative externalities of the digitalisation.

Keywords: *Digital Economy, Digital Transformation, Digitalisation, Economic Growth, Industry 4.0 (I4.0), Innovation, Societal Impact, Sustainable Development.*

1. INTRODUCTION

The outbreak of COVID-19 pandemic since 2019 has brought drastic disruptions worldwide. To mitigate the spread of the virus, governments enforced societal and economic restrictions that had restricted the mobility and physical interactions of the people. Consequently, the use of digital technology has changed many business frontiers and can support digitalisation more quickly.

Digital technologies have significantly increased the information and lessened the cost of information. Firms are operating in the time of the Industry 4.0 (I4.0) or 4th industrial revolution (4IR), which is a new era in which the industry is becoming increasingly "intelligent" through exhaustive data exchange, predictive analytics and the usage of internet technology (Porter & Heppelmann, 2015; Lenka et al., 2017). Digitalisation creates new business opportunities and business models, alter the functions of industry players and displace prevailing businesses (Bouwman et al., 2019; Tihinen et al., 2016). The transformations at the firms can be extensive and influence workload, work content, working hours or places.

In 2010, there was about 20% of the global population using smartphones. This numbers showed that the mobile devices have becomes important digital tools leads to the emergence of the digital economy. For example, China is the world's second largest economy. China's broad and diverse digital ecosystem reinforces its digitisation strategy and is having a great impact.

According to Malaysian Digital Economy Corporation (2020), at least five areas of digitalisation that help firms, which are procurement and inventory, accounting and taxes, digital marketing, e-commerce, and electronic point of sale and contactless payment systems.
Despite being the mainstay of Malaysia's economy, SMEs achieve comparatively poorly in digitalisation (Tong and Gong, 2020b). Nordin and Suman (2019) suggest that there are

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challenges in Malaysia include infrastructure and legislation related to the mobile economy. On the other hand, Cisco Systems (2018) had developed a 10-year modelling scenario, estimating that Malaysia would achieve moderately advanced automation of low-value, routine and hazardous work, however, labour market protection slows the more extensive automation, while Internet of Things (IoT) progress is relatively budding, and lacking a deep developer ecosystem.

This paper aims to contribute to this gap by answering the following research questions: (1) What are the drivers and barriers that firms are faced in offering value-added products and services to their customers in the context of Industry 4.0? (2) What are the future economic perspectives of digital transformation in the context of Industry 4.0?

The main objective of this study is to determine the directions economically while considering environmentally and socially in the Malaysian development processes of the digital economy. Specifically, this study aims to (1) investigate the drivers and challenges of modifying businesses into digital platforms, and (2) evaluate their implications to future economic development for government policies for economic recovery post pandemic.

The findings will also link between the hitherto contradictory discussion regarding the question of whether digitalisation is an opportunity or a threat for workplace codetermination and sustainable development. This paper contributes, first, to the literature about digital economy development. Second, it aims to make an academic contribution by offering a set of frameworks that could be leveraged among firms.

1.1 Empirical Developments of Digitalisation and Economic Growth

The attention of the Government of Malaysia to digitalisation as a worldwide trend. In the Malaysia Digital Economy Blueprint (MyDigital), Malaysia aims to achieve the following targets (Prime Minister's Department, 2021, p.11) including 22.6% of digital economy to Malaysia's Gross Domestics Products (GDP) by 2025 and 30% uplift in productivity across all sectors by 2030.

According to World Bank (2018, p.114), Malaysia needs to implement digital economy policy reformation so that to create a dynamic digital economy ecosystem. Furthermore, Tong and Gong (2020a) suggests digitalisation policy considering reduction in the costs of digitalisation, development of worker skills, digitally relevant regulations, and the role of digital governance.
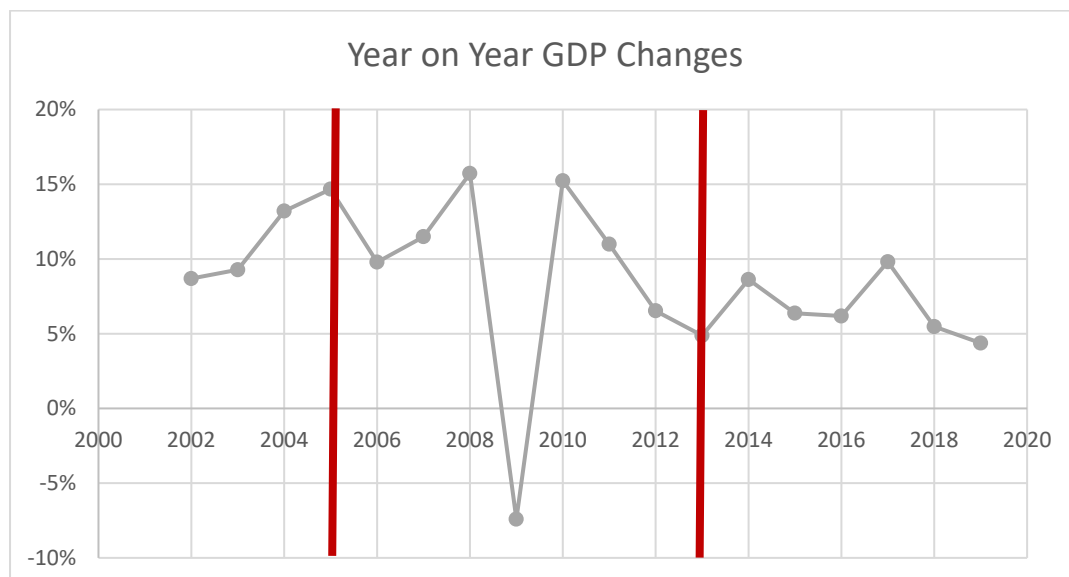

Figure 1. Year on Year GDP Changes

Figure 1 shows a graphical analysis the GDP movement trend with three prominent cycles: 2001-2005, 2006-2012 and 2013-2019. For the first cycle, it starts to rise rapidly from 2001 to 2005 and then drops in 2006 to 2013. The dip in the Global Financial Crisis 2009 and European Sovereign Debt Crisis 2012 affected Malaysia, an open economy. However, for the third cycle, it started to grow moderately in 2013 reaching a pick in 2017 and then started to glide down to about 4% in 2019. This third cycle does not show sharp movement. This graphical analysis suggests that we are in a prolonged middle-income trap.
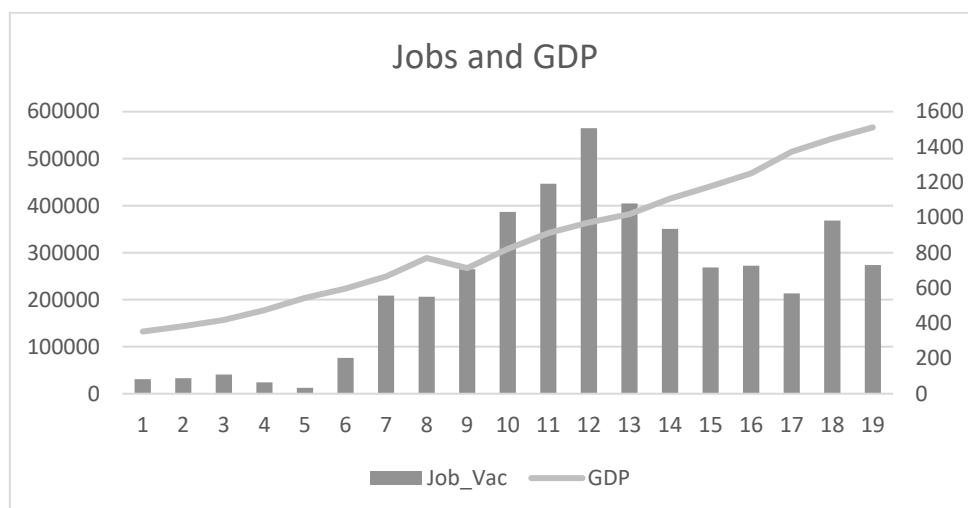

Figure 2. Job Vacancies and GDP, 2001 - 2019

Figure 2 shows the variation of jobs and GDP. Between 2001 and 2003, job vacancies parallel with GDP which is the norm with higher economic growth, more jobs created.

However, despite the drop in jobs for the period 2004 to 2005, GDP still spiral upward. The technology trends then were such as Bluetooth, megapixel phones, iPod, and video blogs. Subsequently jobs go up in 2006 to 2012 but it drops again in since 2013. The Third Industrial Master Plan (IMP3) (2006 – 2020) and National Innovation Model (2007) were introduced. Until 2012, jobs move up rather exponentially. Started with New Economic Model (NEM) (2011-2020), the Government introduced Government Transformation Program (GTP) and Economic Transformation Plan (ETP) in 2010. The ETP identified 12 National Key Economic Areas (NKEAs) and NEM 8 Strategic Reform Initiatives (SRIs). The 12 NKEAs are Tourism; Business Services; Oil, Gas and Energy; Electrical and Electronics; Education; Healthcare; Communications Content and Infrastructure; Palm Oil; Agriculture; Greater Kuala Lumpur/Klang Valley; Financial Services; and Wholesale and Retail.

The Digital Malaysia Roadmap Phase 1 (2012-2020) identified new growth in 5 sub-sectors: ICT services, e-commerce, ICT manufacturing, ICT trade, content and media. The technology trends then were such as Facebook, iPhone 5, Samsung Galaxy, iPad2, and android. More holistically, the trends were represented by inventions of mobile centric applications, social and contextual user experience, applications stores, Internet of everything, next generation analytics, big data, in memory computing, and cloud computing. National Science, Technology and Innovation Policy 2 (2013-2020) was implemented since 2013. This is also the year I4.0 or the 4IR becomes the important driver of the digital revolution.

The two graphs suggest that jobs moving up faster than GDP in 2009 to 2012. Apparently, jobs are not sensitive to the fluctuation of GDP. Jobs may not move up in tandem with the rise of GDP. However, this could be a long-term phenomenon as once the digital economy picks up GDP level will move up. The Malaysian government introduced Green Technology Master Plan (2017-2030)

and National e-commerce Strategic Roadmap along the Digital Free Trade Zone in 2017. The hot technologies introduced into the markets include IoT, Machine Learning, Robotics, AI, Cyber Security and VR & AR.

In 2018, the National Policy on I4.0 and Digital Economy were introduced as a new driver of development, where the Digital economy includes the technologies of big data analytics, IoT, Cloud Computing and artificial intelligence (AI). The technology trends then were such as Intelligent Apps and Analytics, Intelligent things, Digital twin, Cloud, Conversational platforms, Immersive Experience (VR, AR), blockchain, event driven, continuous adaptive risk and trust. The technology trends in 2019 include Digital media, Broadband IT, Cloud computing and data centres, Fin IT, Health IT and IT Services. The gag economy or sharing economy was in formation that many companies go assets light and engage freelance workers on-demand.

2. LITERATURE REVIEW

In the past decades, many scholars are debating on the terms – digitisation, digitalisation and digital transformation. The terms: "digitisation" and "digital transformation" have been popularised by the media and scholars (Jacobson, 2021; Brennen and Kreiss, 2016). Digitisation refers to the conversion of something into a digital format, and usually refers to encoding of documents and data. While digitalisation refers to conversion of business processes using digital technologies to create a new profit and value-producing opportunities (Jacobson, 2021; NextService, 2020; Gupta, 2020; Gray and Rumpe, 2015). Parviainen et al. (2017) revealed that digitalisation is changing the business and society especially in industrial revolution and business model innovation.

According to Jacobson (2021) and Gupta (2020), digital transformation is a business transformation enabled by digitalisation. Digitisation is evolved with the digital transformation by incorporates digital technologies to the business landscape, transitioning from the traditional analogue to digital. The term digital disruption is always used to describe the radical changes triggered by innovation digital business models (Innolytics, 2022). Digital transformation in business can be categorised as process level; organisation level; business domain level; and society level (Schwab, 2015; Henriette, Mondher and Boughzala, 2015; Markovitch and Willmott, 2014; Sabbagh et al., 2012).

In past few years, advances in information systems have facilitated the acquisition of digitalisation. By leveraging the internet, technology innovation is expected to improve the quality of lives. The rapid development of technology is having high impact in modifying economy consumption method (Basselier, Langenus, and Walravens, 2018).

According to Petrenko et al. (2017), Russia ranks 45th in ICT development Index in 2018, and 41st in the Networked Readiness Index. The results of Afonasova, Panfilova, Galichkina, Ślusarczyk (2019) show that Russia is still lags behind the EU countries in the growth rate of the high-technology exports; but digital technology is proved to accelerate the economy growth in the advance economy countries and have a significant impact on socio-economic process. The transformation process promotes sustainable business performance and drives the economic growth (Bauer and Erixon, 2016; Graham, 2017, Karnitis and Karnitis, 2017; and Afonasova et al., 2019).

The objective of the Digital Economy Blueprint is to reduce the physical activities such as traditional payment method; to accelerate Malaysia as a technologically advanced economy by 2030. Malaysia Economic Planning Unit believes that digital transformation able to drive the economic growth in the era of the Fourth Industrial Revolution (4IR) (MyDigital, 2020).

Digitalisation of the small and medium enterprises (SMEs) in Malaysia are required to facing the rapid growth of the internet. Yeoh, Teoh and Ramayah (2019) show that digitalisation can help the service provider to save cost, increase productivity and efficiency. More than 50% of the SMEs in Malaysia cannot survive within the first five years of operation (Ahmand and Seet, 2009; Kho et al., 2020). Kho et al. (2020) found that SMEs already facing the challenges of rapid growth digital services before the pandemic, and the situation is worsened during the pandemic. Countries' lockdown brings greatest economy impact to the citizen and the manufacturers. At least 150,000 SMEs have shut down since the pandemic outbreak in Malaysia. Chew (2021) revealed in a South China Morning Post article that national lockdown in Malaysia in 2020 resulting in 1.2 million job losses and half of SMEs closed. SMEs must re-calibrate and re-design the business model to incorporate digitalisation (Papadopoulos et al., 2020). According to Guo et al. (2020), digitalisation is positively associated with the SMEs' performance. Digitalisation activities also play an important role in assisting the organisation in crisis (Vial, 2019; Guo et al., 2020).

3. METHODOLOGY

An online semi-structured interview through Zoom is used for this study. Experienced academics and industry practitioners were recruited as respondents who have experience connected to the fourth industrial revolution. The intended interviewees were drawn from the various Malaysian states. The study team developed procedures for the interview sessions, and those protocols were followed throughout the interviews. The manuscript has received ethics approval from the university scientific and ethics review committee with the approval number No. U/SERC/40/2022.

3.1 Participants' recruitment procedure
The selection of respondents was done using the purposive sampling. The survey took respondents' prior understanding of the fourth industrial revolution and Malaysia's digital economy into consideration. Snowball sampling was used to expand the number of participants, ensuring that the sample was representative of the organised subgroups (Naderifar et al. 2017). Respondents selected for the study were first told about the study's goal and then provided information on how the interviews. Respondents were informed that their personal information will be kept private via the data protection processes.

3.2 Data collection
The online interviews were done in a timely manner, allowing each participant to respond to the questions they were asked. The interviews took place using online platforms Zoom and emails. Interviews were held for a maximum of 60 minutes and a minimum of 30 minutes each session. The average length of each interview was 30 to 46 minutes. The privacy of the participants' information is protected by using a password-protected recorder. Thus, all the data is promptly destroyed from the recording device when the data is sent to an encrypted computer. All interviews that were conducted in other language rather than English (Malay, Chinese, and Tamil) were transcribed and translated into the English language. The interviews' English translation was analysed thematically and descriptively using the inductive analysis approach (Vaismoradi et al. 2016). The data derived from the respondents were categorised as "themes" and "categories". The transcripts were coded by two separate research members of the study team to verify that the results were consistent and accurate. Dissimilarities or difficulties discovered were addressed extensively among researchers until they could be rectified.

4. ANALYSIS

Using the inductive method of analysis, all responses from the interviews were analysed thematically (Vaismoradi & Snelgrove 2019). The data from the 11 experienced academics and industry practitioners showed that 64% of the interviewees were between the ages of 30 and 45.

18% were between 45 and 50 years old, and 18% of the interviewees were aged between 50 and 55. Moreover, 73% were male, and 27% were female. In terms of profession and experience, 27% of the interviewees are industry practitioners who work as director of Japan listed companies, owner of tour agency and property agent. Meanwhile, 73% of them work as academicians (including professors, lecturers and researcher) for universities, at the same time being consultants for industrial businesses. Based on their profession and experiences, all participants exhibited sufficient knowledge and exposure in relation to digitalisation process through both research and industrial activities in the digital economy. During the interview sessions, all participants were asked the same questions. Each participant answered all questions presented to them by the interviewer. All responses shared by the participants were effectively recorded for further analysis. The responses were coded into categories of 'themes' and then categorised into three thematic sections: 1) the impact of digitalisation on economic performance 2) the impact of pandemic on digital economy and 3) barriers to digital economy performance.

Based on the objective of this study; the analysis reveal that majority of the participants reiterated that there is a strong positive influence of digitalisation on economic performance. Responses from all participants indicate that digitalisation have both direct and indirect impacts on economic performance and growth. The effect highlighting key drivers of the economy through digitalisation which include increase employment, industrial productivity, transaction efficiency, and product and service innovations, as the substantial advantages that has boosted the economic performance (see Figure 3). From all indications, 82% of the participants reiterated that since the start of the pandemic the impact of pandemic has direct positive and negative effect on the digital economy. 64% reiterated that key drivers including rapid digital adoption, high Internet penetration, and expansion of e-commerce directly highlight the positive effects of the pandemic on the digital economy. On the other hand, 45% of the participants emphasised that Cyber-attacks, digital fraud and digital divide are the main challenges to the digital economy. Hence, such barriers reflect negative effects on the overall digital economy performance.
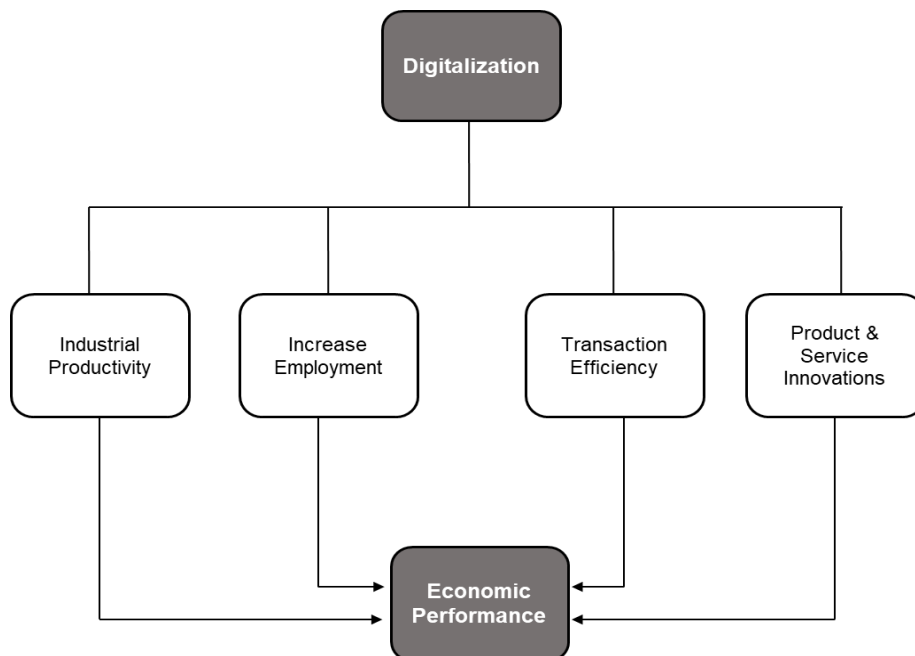

Figure 3: Drivers of Economic Performance
Source: Author's own observation

4.1 The Impact of Digitalisation on Economic Performance
From the analysis in Table 1, 55% of the participants believe that the integration and application of digital tools in companies to promote digitalisation effectively stimulates a fast production

capacity due to the influence of automated machines (see Table 1). It is obvious that the use of machines in production positively affects the productivity of the company. Interviewee postulates; *"….As a result of digitalisation, business processes can be automated, increasing productivity by reducing transaction costs and other operational inefficiencies…." {I8, Male}* (T2, Q1). Jeske et al. (2021) found similar results on the productivity growth of companies due to the influence of digitalisation. On the other hand, the results show that the development of expectations of productivity gains due to digitalisation has an upward trend. In other words, if the digitalisation process of enterprises continues to develop, the productivity gain will increase by 36% on average by 2027 (Huawei Technologies, 2018). Based on the results, 36% of the participants affirmed that the use of digital tools and other technological innovations have created online business opportunities that promote job creation (see Table 1). Interviewees' submissions; *"….In fact, new business opportunities are also being created as a result of digitalisation, which has an influence on employment and entrepreneurship."{I8, Male}. "It is clearly shows that digitization accelerates economic growth and facilitates job creation e.g. Grab e-hailing…." {I4, Female}* (T2, Q1). Despite the different methodology used in the quantitative research, the result of Popelo et al. (2021) is confirmed, emphasizing that increased investment in digitalisation is associated with increased employment of highly skilled workers.

Table 1: Entrants Feedbacks

Theme 1: The Impact of Digitalisation on Economic Performance

Participant Submissions	Interview Question	No. of Interviewee	%	Drivers
• "Yes. Digitalisation in a workplace leads to efficiency as tasks undertaken done effectively and resulted to increase in productivity. That is with the same previous output but done with lesser inputs. Or with same pervious inputs but generating greater outputs." {I7, Male}. • "….As a result of digitalisation, business processes can be automated, increasing productivity by reducing transaction costs and other operational inefficiencies…." {I8, Male}.	Q1	6	**55**	• **Industrial Productivity**
• "….In fact, new business opportunities are also being created as a result of digitalisation, which has an influence on employment and entrepreneurship."{I8, Male}. • It is clearly shows that digitization accelerates economic growth and facilitates job creation e.g. Grab e-hailing…." {I4, Female}.	Q1	4	**36**	• **Increase Employment**
• "…..Transactions can be completed in a shorter period of time and geographical distances will not be a problem to conduct transactions."{I1, Female}. • "Yes, it will made all the transactions become easier, faster and safe…." {I2, Female}. • "Yes. Digitization accelerates economic growth and increase the employment. Besides, it allows for the more efficient production of goods and services." {I6, Male}.	Q1	8	**73**	• **Transaction Efficiency**
• "….Other than that, it also can increase the quantity and quality of products being produced."{I2, Female}.	Q3	5	**45**	• **Product & Service Innovations**

- Yes, as far as I can tell, digitalisation has the potential to influence economic performance in three ways: first, by increasing GDP per capita, second, by creating new jobs, and third, by stimulating innovation….." {I8, Male}.
- "….With that, this may influence a country's economic performance by bringing new products, methods, and production processes to the market and by boosting productivity and competition more broadly." (I6, Male}.

Note: I; (Interview), P; (People), Q; (Question), F; (Female) and M; (Male), % (Percentage).
Source: Own Adjustment.

Interestingly, 73% of respondents reiterated that the process of digitalisation has significantly reduced the time, energy and cost of production (see Table 1). That is, business is conducted more efficiently and without physical contact. Interviewee postulates; *"…..Transactions can be completed in a shorter period of time and geographical distances will not be a problem to conduct transactions."{I1, Female}. "Yes, it will make all the transactions become easier, faster and safe…."* *{I2, Female}* (T2, Q1). According to Neubert (2018), the application of the latest technologies in managing the efficiency of sales production has increased tremendously due to digitalisation. With the help of advanced technologies, including AI and machine equipment, the production capacity of enterprises has increased. Again, the analysis shows that 45% of participants believe that the process of digitalisation has significantly impacted the ability of companies to develop new or improved products and services through innovation (see Table 1). The use of technology makes it easier and more necessary to implement new ideas and strategies. Interviewees' submissions; *"….With that, this may influence a country's economic performance by bringing new products, methods, and production processes to the market and by boosting productivity and competition more broadly." (I6, Male}* (T2, Q3). Although Schreckling and Steiger (2017) also emphasise the significant impact of digitalisation on innovation capabilities. The results show that the latest technologies has enabled more companies to innovate in the global market (Yoo, 2010; Lerch & Gotsch, 2015).

4.2 The Impact of COVID-19 on Digital Economy

The analysis shows that 55% of participants believe that the impact of the pandemic has influenced the rapid adoption of digital technologies (see Table 2). Due to the impact of lockdown and social distance protocol, the use of smart technologies increased dramatically during pandemic. Interviewee postulates; *"Use of social media (in business) requires less investment, and not requires customers come to physical outlet….." {I5, Male}* (T3, Q3). Similar findings (Brem et al., 2021; Golinelli et al., 2020; Zeng et al., 2020) have shown that since the onset of the pandemic, there has been a large increase in the adoption of technology worldwide, especially in organisations. Organisation services have been converted to online, allow customers to access health services from their homes (Golinelli et al., 2020).

Table 2: Entrants Feedbacks

Theme 2: The Impact of Covid19 on Digital Economy				
Participant Comments	**Interview Question**	**No. of Interviewee**	**%**	**Drivers**
• "Use of social media (in business) requires less investment, and not requires customers come to physical outlet. Tour companies have to sell their tour products / services using e-commerce platform such as Shopee." {I5, Male}.	Q3	6	**55**	• **Rapid Digital Adoption**

• "......Though, large factories may be provided with 5G telecommunication infrastructure....." {I5, Male}. • "The digital economy's basis is digital infrastructure, which provides the interconnectivity...." {I10, Male}.	Q5	4	**36**	• **High Internet Penetration**
• ".....The gig economy has jumped leaps and bound and e-commerce experience of sellers and buyers has enhanced due the pandemic...." {I7, Male}. • "COVID-19 has resulted in an increase in e-commerce and increased digital transformation during a period of falling economic growth." {I10, Male}. • "Digital economy has acted as a catalyst for e-learning, telework (WFH) (for supplier to customer connection), e-commerce, e-health, e-payments, e-hailing and others during the pandemic...." {I4, Male}.	Q3	9	**82**	• **Expansion of E-commerce**

Note: I; (Interview), P; (People), Q; (Question), F; (Female) and M; (Male), % (Percentage).
Source: Own Adjustment.

As shown in Table 2, 36% of all participants indicated that the pandemic has led to rapid use of Internet broadband by individuals and businesses (see Table 2). Since the pandemic outbreak, more than 90% of all business transactions have been conducted online without physical contact. As a result, businesses are ensuring a stable Internet connection at all times to keep business flowing. Interviewees' submissions; *"....Though, large factories may be provided with 5G telecommunication infrastructure....."* *{I5, Male}, "The digital economy's basis is digital infrastructure, which provides the interconnectivity...." {I10, Male}* (T3, Q5). This finding is consistent with recent studies (Loh et al., 2021; Brem et al., 2021), which conclude that the effects of lockdown necessitate the need to expand Internet coverage having more than 90% of business transactions conducted digitally.

The results show that 82% of respondents reiterated that the impact of pandemic has forced companies to establish online business platforms, which has directly increased the expansion of e-commerce activities (see Table 2). This process has significantly accelerated digital transformation in key business sectors. Interviewee postulates: *"COVID-19 has resulted in an increase in e-commerce and increased digital transformation during a period of falling economic growth." {I10, Male}, ".....The gig economy has jumped leaps and bound and e-commerce experience of sellers and buyers has enhanced due the pandemic...." {I7, Male}* (T3, Q3). Shahzad et al. (2020) highlight that about 90% or more industrial businesses shifted their activities to e-commerce. All online business activities recorded an unpresented increase of services especially for retail and food companies. Specifically, the pandemic has also accelerated virtual learning and meeting. Interviewee opines; *"Digital economy has acted as a catalyst for e-learning, telework (WfH) during the pandemic...." {I4, Male}.* According to Hosen et al. (2022), laptops and desktop computers are usually used for online classes, but most respondents reported experiencing mental health-related stress, anxiety, and depression problems due to the pandemic. On the other hand, Rachmawati et al. (2021) suggest that the Work from Home (WfH) concept is well recommended for large urban centres because it can decrease population mobilisation, reduce congestion and movement costs, and improved efficiency of working time.

4.3 Barriers to Digital Economy Performance
Although the impact of pandemic has improved the performance of the digital economy, the challenges should not be overlooked. The results of this study show that 36% of all participants identified cybercrime as the biggest challenge to digital economy activities in the pandemic era (see Table 3). Interviewee postulates; *"One of the fear is by looking at cyber-attacks and data leaks,*

many companies have simply added more security precautions to protect their data, thereby limiting their digital transformation and collaboration capability…..” {I10, Male} (T4, Q4). These findings are consistent with the findings of Tharshini et al. (2021), who conclude that cybercriminals are consistently seeking to diversify their methods for cyberattacks by adapting to the enforcement of the Movement Control Order (MCO). Part of their criminal strategies is to target victims' data to send them malicious sales offers (Khan et al., 2020).

Table 3: Entrants Feedbacks

Theme 3: Barriers to digital economy performance					
Participant Comments	**Interview Question**	**No. of Interviewee**	**%**	**Barriers**	
• "Protecting the security and privacy of data from unscrupulous activities are the main challenges during the Covid-19 pandemic" {I1, Female}.	Q2	4	**36**	•	**Cyber-attacks**
• "One of the fear is by looking at cyber-attacks and data leaks, many companies have simply added more security precautions to protect their data, thereby limiting their digital transformation and collaboration capability, and limiting business operations."{I10, Male}.	Q4				
• "Many opportunist criminals taking advantage of unsuspecting victims who are new to digital economy." {I1, Female}	Q2	3	27	•	**Digital Fraud**
• "…..Use of digitalisation is a challenge for the elderly, such as difficulty in using online banking. Another scenario is the elderly uses cash compared with the young who are digital native….." {I3, Female}.	Q2	3	27	•	**Digital Divide**

Note: I; (Interview), P; (People), Q; (Question), F; (Female) and M; (Male), % (Percentage).
Source: Own Adjustment.

Again, 27% of responses highlight "Internet fraud" as the recurring phenomenon that hinders digital transactions (see Table 3). This raises concerns about increasing insecurity for all online businesses. Interviewee postulates: *"Many opportunist criminals taking advantage of unsuspecting victims who are new to digital economy." {I1, Female}* (T4, Q2). A study conducted by Tan et al. (2020) found that criminals have shifted their strategy to conduct their criminal activities online due to the pandemic. Since the beginning of the pandemic, cases of cybercrime, including fraud, corruption, theft, and tax evasion, have increased significantly, posing a major challenge to companies, especially financial institutions, to improve their cybersecurity systems.

Based on the result, 27% of respondents affirmed that the impact of the pandemic reveals the problem of the "digital divide" in the digital economy (see Table 3). That is, there is a big gap between the people who have access to smart technologies and the Internet and those who do not. Interviewee postulates; *"…..Use of digitalisation is a challenge for the elderly, such as difficulty in using online banking. Another scenario is the elderly uses cash compared with the young who are digital native….." {I3, Female}* (T4, Q2). According to a similar finding by Umar (2021), the lack of adequate technological infrastructure is the cause of the digital divide.
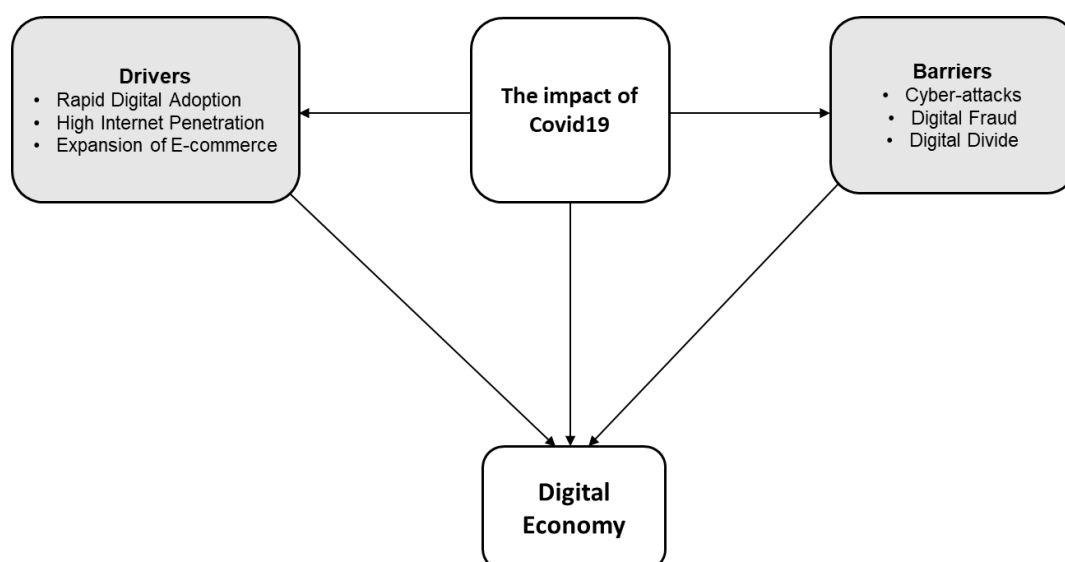
Figure 4: Effects of Covid19 pandemic on Digital Economy
Source: Author's own observation

5. DISCUSSIONS

The results of this study identify "high industrial productivity" as a precursor to digitalisation. Jeske et al. (2020) further suggest that advances in technology have increased productivity and that digitalisation expands innovation capabilities (Jeske et al., 2020; Horvat et al., 2019; Kharlamov, & Parry, 2021; Berlak et al., 2021). However, Kharlamov and Parry (2021) argue that the impact of digitalisation is not limited to production level, but also profits. The discussions also highlight that when demand is high, digitalisation helps to increase mass production. Thus, when demand is satisfied, the profitability of companies increases. From the results, it can be inferred that digitisation creates employment opportunities through entrepreneurship and employment (Gasparovich et al. 2020). Balsmeier and Woerter (2019) found that digitalisation increases employment of high-skilled workers and decreases employment for low-skilled workers. According to other findings, digitisation primarily affects the employment prospects and working conditions of workers at middle and higher hierarchical levels. The contribution subsequently increases economic output through high productivity (Cijan et al., 2019; Gasparovich et al., 2020).

Based on the findings of this study, transaction efficiency reflects a positive impact on economic performance. The findings (Popelo et al., 2021; Meskhi et al., 2020; Vuori et al., 2019) confirm that digitalisation has created more opportunities by identifying new methods and capabilities. Urbach et al. (2019) argue that the use of technology has improved business performance and increased competition among companies. In terms of innovation, Meskhi et al. (2020) emphasised that it is highly dependent on the integration of technology. Conversely, Almeida et al. (2020) stated that with the impact of digitalisation, a new type of digitised product-service system can be offered to consumers.

The results also show that technology adoption is rapid due to the impact of pandemic. Thus, application of AI and Big Data better understands diseases and determine the best treatments, according to Golinelli et al. (2020). Zeng et al. (2020) noted that the use of computers, smartphones, and devices has positively influenced social media to reach consumers. The use of robots, Big Data, AI, etc., also influences the business performance with high production levels. Also, the evidence on high internet penetration shows that companies have focused their efforts on building a robust internet infrastructure to improve cost efficiency and increase production, according to Shahzad et al. (2020). Loh et al. (2021) found that large firms have developed

tremendous Internet access capabilities and have sufficient skills to digitally innovate. In addition to the positive impact of pandemic on the level of Internet penetration, the study by Fernandes et al. (2020) found that Internet addiction and alcohol abuse are widespread among the youth. The findings also suggest that young adults are vulnerable to internet addiction (Tang et al., 2017; Tian et al., 2021).

Hasanat et al. (2020) states that the increase in e-commerce is due to the adoption of technologies that promote the digitalisation. For example, among the many other digitalisation processes enabling the expansion of e-commerce are: 1) new design of healthcare devices enabling easier 3D printing, 2) 3D technology in the automotive, robotics, and manufacturing, 3) remote diagnosis, treatment, and telemedicine. 4) digital solutions to healthcare problems, 5) virtual fitness and gym programmes (Muhamad et al. 2021). Salem and Nor (2020) argue that while companies have developed strategies to survive through e-commerce, there is still uncertainty as cybercrime increases. According to Tan et al. (2020), more than RM1 million has been lost to cybercrimes such as fraud, corruption, robbery, tax evasion, and other illegal financial activities since the outbreak of pandemic. Jamil et al. (2021) discuss that most cybercrime victims are mostly first-time performing online financial transactions.

Discussions on of this study show that companies have implemented a Know Your Customer system to control cybercrime (see Figure 4). Therefore, financial transaction security should be strengthened and consolidated when adopting advanced digital systems (Singh et al. 2021; Tan et al. 2020). Previous studies (Khan et al., 2020; Singh et al. 2021; Tan et al. 2020) have found that cyberattacks take the form of highly attractive product or service with malicious intent. Therefore, customers who provide their data need to take security measures, such as regular backups and using strong passwords (Tharshini et al., 2021). Due to the slow adoption of technology, many enterprises did not have enough time to respond quickly to the technological changes. Therefore, in 2020, many companies became insolvent (Surianshah, 2021). Loh et al. (2021) also emphasised that there is a large gap in data connectivity, especially in rural communities. According to Shafi et al. (2020), such problems affect business operations and productivity.

6. CONCLUSION

This study found that digitalisation has positively impacted economic performance during the pandemic. Productivity, employability, transaction efficiency, and product and service innovation are all benefits can be seen in the growth of e-commerce. The adoption of digitalisation has significantly reduced the cost of production, time, and energy. The adoption of digitalisation has also been accelerated by the efficiency of transactions conducted online, companies' production innovation has also increased. Due to the ease with which information is now available, digitalisation has resulted in fierce competition among businesses.

Digitalisation has a positive impact on economic performance; however, there are some negative effects of digitalisation such as cyber-attracts, digital fraud, and digital divide. Cybercrime, "internet fraud," and the "digital divide" pose the most serious challenges. In terms of cyber-attacks, the main concern has been data leaks. In terms of internet fraud, those who are new to digital transactions are particularly vulnerable. Finally, there is a significant disparity, the "digital divide." This digital divide continues to be a challenge for the elderly and rural population. It is likely to increase income inequality and raise social concerns.

It can be concluded that digitalisation has been a key driver of increased industrial productivity, employability, transaction efficiency, and innovation, whereas the pandemic has boosted the adoption of digitalisation, high internet penetration, and expansion of e-commerce, though there are barriers to the adoption of the digital economy. The focus of transformation to pursue innovation, digitalisation and use of technology should be on reducing costs and increasing

productivity through energy efficiency, good employment practices, and a strong corporate governance structure, which also inculcates sustainability principles comprising environment, social and governance (ESG) in the long run.

7. RECOMMENDATION

The government should continue to protect and educate Malaysians about digital fraud through laws, talks, seminars, webinars, and other means. The main challenge for this initiative is to attract the older people or low-skilled. This widened the digital divide between those who have digital access and those have not. Thus, self-awareness may help to avoid becoming a victim of digital fraud as well as being well-informed in this digitalisation era. The government should also offer more incentives to retrain, reskill and upskill older and lower-skilled workers with digital and technology-related skills. Furthermore, fundamental computer coding skills should be introduced to young learners in schools. Furthermore, policymakers should increase incentives to assist SMEs as well as trade associations and the ecosystem in adopting digitalisation. It is also important to improve infrastructures such as better internet connectivity and data security at affordable cost. Continuous research and development also play an important role in the continued innovation and adoption of digitalisation. Furthermore, the government must avoid any unnecessary bureaucracy or corruption in carrying out the policies.

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