The Impacts of Environmental Social and Governance and Organizational Economic Resilience on Digital Transformation and Firm Performance: Evidence from Malaysian Firms in the Post-Pandemic Era

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ABSTRACT

This research explores the influence of Environmental, Social, and Governance (ESG) factors and firm Organizational Economic Resilience on digital transformation and firm performance in the post-Covid-19 era of Malaysia. The purpose of this study is to explore the direct, indirect, and moderating effects among these variables. This study employed a quantitative approach with purposive sampling and data were gathered from 574 respondents, including managers, executives, and decision-makers from various sectors in Malaysia. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS 4.

The results showed ESG factors and Organizational Economic Resilience have a positive influence on digital transformation, which is in turn associated with firm performance. It also plays a moderating role between ESG factors, Organizational Economic Resilience and firm performance. But Organizational Economic Resilience has no significant direct impact on firm performance, which implies a trade-off between Organizational Economic Resilience and efficiency. Moreover, risk perception of the COVID-19 pandemic does not moderate the impact of digital transformation on firm performance.

The research concludes that digital transformation is a key link in translating ESG factors and resilience into firm performance, offering valuable insights for policymakers and practitioners.

Keywords

ESG implementation, Organizational Economic Resilience, digital transformation, firm performance, corporate sustainability.

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Overview of Research

1.1 Introduction

Purpose of this study is to investigate the impact of ESG, Organizational Economic Resilience and subsequent digital transformation's impact on the firm's performance focusing during post pandemic era. This chapter includes the background of the research, issues that are to be researched, Objectives that are aimed to be achieved through this study, questions that are to be addressed in this research and significance of this study.

1.2 Background of the Study

The 21st century has witnessed numerous diseases that have significantly impacted public health and specifically global business landscape. In December 2019, a novel coronavirus, COVID-19, was identified in Wuhan, China, leading to a worldwide pandemic with severe consequences and devastations. As Quek (2020) highlighted, this pandemic caused a humanitarian crisis in many countries, including Malaysia. According to the World Health Organization (WHO), various diseases have influenced public health globally, including COVID-19, Crimean-Congo hemorrhagic fever, Ebola virus disease, Marburg virus disease, Lassa fever, Middle East respiratory syndrome coronavirus (MERS-CoV), severe acute respiratory syndrome (SARS), Nipah and henipaviral diseases, Rift Valley fever, Zika virus, and the latest Disease X as stated by WHO (2024). The study will aim to evaluate the relevant impact of pandemics on economic, environmental, social and governance (ESG) aspects in Malaysia. The focus would be on how these factors drive technological transformation and their collective impact on the firm's performance, considering post pandemic era.

Understanding the impact of COVID-19 on Malaysia is crucial because the pandemic has uniquely affected the country's economic, social, and governance landscapes, making it a devastating event. The COVID-19 pandemic has not only posed immediate health threats but has also led to profound disruptions across various sectors, significantly challenging the resilience and sustainability of businesses.

The ramifications of the pandemic extend far beyond the immediate public health crisis, affecting economic stability, social dynamics, and governance structures in ways that are unprecedented. The economic fallout has been severe, with many businesses facing bankruptcy, supply chain disruptions, and significant revenue losses as stated by Mohajan (2020). Socially, the pandemic has altered everyday life, increasing unemployment rates, and exacerbating inequalities. The governance landscape has also been tested, as policymakers have had to balance public health measures with economic survival strategies, often facing criticism for their approaches. Covid-19 adversely affected businesses in Malaysia, as highlighted by Yusuf and Oyelakin (2022). The pandemic's impact on Malaysian businesses underscores the urgent need to evaluate its effects comprehensively. This study aims to delve into the multifaceted impact of the pandemic on Malaysia, focusing on economic, environmental, social, and governance (ESG) aspects. By examining these areas, the study seeks to understand how the pandemic has influenced technological transformation within firms and its collective impact on their performance in the post-pandemic era. Technological transformation has become a key driver in navigating the challenges posed by the pandemic. Businesses have had to rapidly adopt digital solutions to maintain operations, from remote working setups to e-commerce platforms, highlighting the integral role of technology in sustaining business continuity. This study will specifically explore how these ESG factors have driven technological adoption and innovation, providing insights into how firms can enhance their resilience and performance moving forward.

These diseases share a common characteristic: they have all impacted firms' performance significantly. Several studies, such as those conducted by Abdullah et al. (2022), have shown that post-pandemic situations for adults in Malaysia have been particularly devastating. These

individuals have experienced a range of persistent symptoms, including cough, fatigue, and forgetfulness, as documented by Tok (2024). These health issues have not only affected individuals' daily lives but have also had far-reaching implications for workforce productivity and overall firm performance. As per data from DOSM (2020), during the month of April 2020, industrial growth of Malaysia was significantly negative as compared to subsequent and previous years. The country observed around 31.6% negative production rate during this month of the year. Similarly as per DOSM (2021), Malaysian Economy's overall labour productivity faced negative 12.7% growth during second quarter of 2021. This made evident that the pandemic's effects extended well beyond health concerns, deeply influencing social factors and exacerbating existing vulnerabilities within Malaysia's labor market. According to the Bank Negara Malaysia (BNM) (2023), the crisis disproportionately impacted vulnerable segments, including low-income workers, informal sector employees, and those in precarious employment situations. These groups faced heightened job insecurity, reduced working hours, and significant income losses, which in turn affected consumer spending and economic stability. Furthermore, the social fabric of the workplace has been altered, with remote working becoming a norm and traditional business operations undergoing significant transformations. The need for social distancing and other health measures disrupted regular business activities, necessitating rapid adaptation to new ways of working and increased reliance on digital tools. This shift has presented both challenges and opportunities for firms, as they navigate the complexities of maintaining operations and supporting their workforce under unprecedented circumstances.

The situation reached beyond public health to affect both workplace output and employee health status. The studies by Abdullah et al. (2022) alongside Tok (2024) indicate that fatigue along with cognitive symptoms affect work force efficiency following COVID-19. The industrial production levels in Malaysia registered a decrease of 31.6% during April 2020 while the workforce showed a 12.7% reduction in productivity during Q2 2021 according to DOSM data (DOSM, 2020, 2021). Poverty-stricken working groups along with employees in unstable job positions experienced the worst impacts during the crisis (BNM, 2023).

The survival of businesses crucially depended on technological reformation. Companies rushed to implement digital platforms for remote working and online sales as well as automation systems. The pandemic forced major social and operational workplace changes that represent a critical development within modern business resilience plans.

Various industries have a different cost structure, competitive landscape, regulatory, and innovation cycles that have a strong effect on their performance and outcome to external shocks such as the COVID-19 pandemic. The non uniform nature of industries in Malaysia requires one to take extreme methodological deliberations to ensure that there is no biased or misleading conclusion by the way the performance of firms is analyzed.The Malaysian economy is highly diverse in terms of sectors. The Department of Statistics Malaysia (DOSM) shows that the services sector dominates the majority with 57 percent of GDP, second place goes to the manufacturing industry (24 percent), third place belongs to construction industry, fourth place to agriculture, and finally the mining & quarrying. All those sectors were significantly affected by the COVID-19 pandemic unevenly. As an example, the manufacturing industry suffered an extreme downturn in

its performance with a decrease of 37.2 percent against the performance before the pandemic (April 2019), with some subsectors in services practically being in an operational freeze (UNIDO, 2021).The gross margins of these industries are very different and generally technology companies have had higher margins (30-40%) against retail (15-20%) or agriculture (10-15%). Such of the differences in cost structures manifest itself especially during economical crisis. As an illustration, the Transparency International Malaysia research (2021) noted that manufacturing (10%) and construction (18%) were among the most active sectors to involve in the misappropriation of government aid money, bringing into sight how the financial tensions related to specific sectors shaped their practices in the pandemic.

There are also high performance differentials due to firm size that need to be addressed in a methodological manner. Economies of scale are maximized in the Malaysian operations of large firms especially in the manufacturing industries that are capital-intensive. They also tend to get easier access to financing, which is exceptionally important during COVID-19, when the liquidity became the key factor. SME Corp Annual Report (2021), the SME Annual Report (2021) stated that the small firms were impacted in disproportionate manner where 80 percent of the companies closed during the initial MCO categorize themselves as small enterprises as opposed to only 20 percent of the companies that were medium sized. The technological adoption gap between large firms and SMEs in Malaysia further exacerbated these differences. According to DOSM data from 2020-2021, larger firms had already achieved 70-80% digitalization of key processes before the pandemic, while SMEs averaged only 30-40%. This digital preparedness became crucial when remote operations became necessary during lockdowns. The World Bank (2021) reported that

digital tool adoption among Malaysian businesses doubled during 2020 compared to previous years, but this transformation was uneven, with smaller firms struggling to adapt.

The availability of comprehensive data on population impact, income loss, unemployment rates, and social impacts during the COVID-19 pandemic is extensively documented through Bank Negara Malaysia and Ministry of Finance Malaysia reports. According to the latest Department of Statistics Malaysia Economic Review (2025), Malaysia's economic recovery has demonstrated remarkable resilience, with unemployment rates declining to 3.1% in February 2025, significantly below the pandemic peak of 5.3% recorded in May 2020. The recovery trajectory indicates that employment has strengthened substantially, with 16.73 million employed persons in February 2025, representing a 2.9% year-on-year increase, while the employment-to-population ratio improved to 68.5% from the pre-pandemic level of 68.2%. Bank Negara Malaysia's Economic and Monetary Review (2024) provides comprehensive documentation of the pandemic's socioeconomic impacts and subsequent recovery patterns. The central bank's analysis reveals that Malaysia's economy registered robust growth of 5.1% in 2024, substantially outperforming initial projections and demonstrating marked resilience amid global uncertainties. This recovery is particularly significant when contrasted with the severe GDP contraction of 5.6% experienced in 2020, representing the worst economic performance since the 1998 Asian Financial Crisis. Income recovery has been notable, with Bank Negara Malaysia (2024) reporting that income growth is anticipated to accelerate, supported by improved labor market conditions and sustained economic expansion.

In the social impact readings, it is evident that the various demographic groups experience dissimilar recovery stages. Youth unemployment that was at its highest during the Covid-19

pandemic at 12.7 per cent in the fourth quarter of 2020 as stated in the labour market analysis by Bank Negara Malaysia has since improved but at a slow pace as 10.3 per cent of 15 to 24 year-olds experience unemployment as at the start of 2025. This ongoing issue reveals that the process of regaining strength after a pandemic is heterogeneous in different population groups. In the Economic Outlook (2024) by the Ministry of Finance Malaysia, it is recorded that vulnerable groups, especially low-income earners and their informal sector counterparts, were affected unequally during the crisis but that they are equally benefited by the targeted government intervention packages of up to RM295 billion or 17 percent of the GDP. According to the Department of Statistics Malaysia (2025), there is a substantial improvement in the manufacturing sector employment figures on a population basis with 2.39 million workers marking an improvement of 1.2 percent in a year by year comparison and 4.7 percent annually by manufacturing sales which recorded RM153.1 billion in February 2025. These indicators point to the fact that the economic base that underpins the population welfare has gained significant strength since the pandemic nadir, which proved the existence and viability of the data that capture the effects of the crisis and the recovery rates.

1.2.1 Historical Context

Historically, pandemics have had profound effects on public health and economic stability. Historical context of pandemics was explained by Jose et al (2020), Hilfiker and Ganguly (2020), Samal (2014) and Dasgupta and Crunkhorn (2020). The COVID-19 pandemic disrupted global economies, leading to significant changes in how businesses operate. Diseases such as the Spanish Flu (1918-1919) and the Hong Kong Flu (1968) caused significant mortality and economic downturns. These events highlight the recurrent nature of global health crises and their far-reaching consequences.

Looking at the Spanish Flu, for instance, which infected about one-third of the world's population and resulted in an estimated 50 million deaths. Same pandemic disrupted social structures and economies, demonstrating the vulnerability of societies to widespread disease outbreaks, which is similar to contemporary pandemic. Similarly, the Hong Kong Flu, which caused around one million deaths, emphasized the need for robust public health responses and international cooperation in combating pandemics, embossing the mark on the devastations.

Different industries exhibit unique cost structures, competitive dynamics, regulatory environments, and innovation cycles, which significantly influence their performance and responses to external shocks like the COVID-19 pandemic. The heterogeneity across Malaysian industries necessitates careful methodological considerations when analyzing firm performance to avoid biased or misleading conclusions.

In Malaysia, the economic landscape is characterized by pronounced sectoral diversity. According to the Department of Statistics Malaysia (DOSM), the services sector dominates the economy, contributing 57% of GDP, followed by manufacturing (24%), construction, agriculture, and mining & quarrying. Each of these sectors experienced markedly different impacts during the COVID-19 pandemic. For instance, the manufacturing sector experienced a severe 37.2% drop in performance compared to pre-pandemic levels (April 2019), while certain subsectors within services faced near-complete operational shutdowns (UNIDO, 2021).

The profitability margins across these sectors differ substantially—technology firms typically operate with higher gross margins (30-40%) compared to retail (15-20%) or agriculture (10-15%). During economic crises, these underlying differences in cost structures become especially pronounced. For example, the Transparency International Malaysia study (2021) revealed that manufacturing (10%) and construction (18%) sectors were prominently involved in

misappropriation of government aid funds, highlighting how sectoral financial pressures influenced behavior during the pandemic.

Firm size also creates substantial performance differentials that must be addressed methodologically. In Malaysia, large firms benefit significantly from economies of scale, particularly in capital-intensive sectors like manufacturing. They typically have better access to financing—a critical advantage during COVID-19 when liquidity became paramount.

This digital preparedness became crucial when remote operations became necessary during lockdowns. The World Bank (2021) reported that digital tool adoption among Malaysian businesses doubled during 2020 compared to previous years, but this transformation was uneven, with smaller firms struggling to adapt.

1.2.2 Emergence of COVID-19

Emergence of COVID-19, caused by novel SARS-CoV-2, has had significant global impact, with a high transmission rate and varying fatality rates, as stated by Rohaun (2020). Malaysia, along with many other countries, implemented lockdowns and screening approaches to control the spread of the virus according to Ang (2021). The pandemic also highlighted the resilience and adaptability of businesses, prompting a shift towards digital transformation and online business models as stated by Rahim et al (2022).

Indeed, understanding these dynamics is crucial for developing strategies to enhance resilience and it ensures sustainable growth in the face of future pandemics. It is evident how world's Covid-19 cases saw a rapid surge:

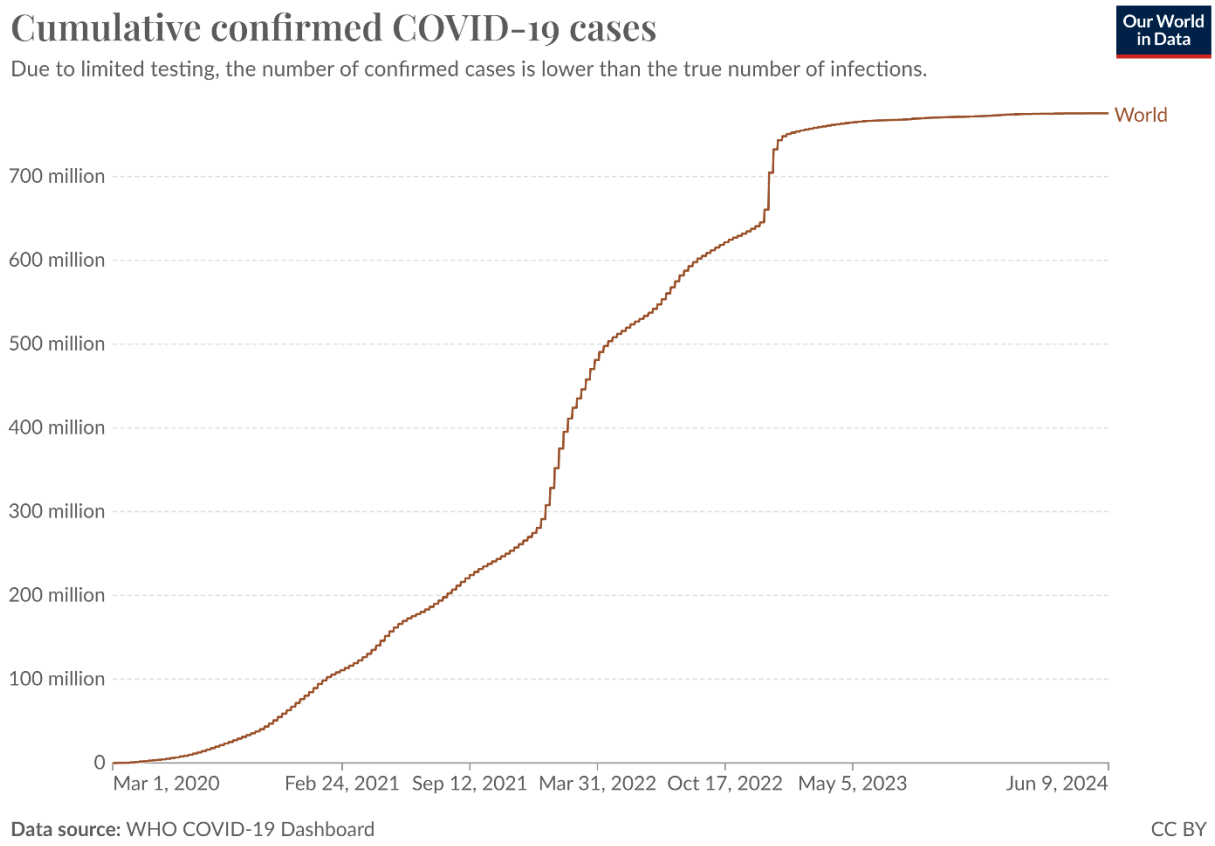

Figure 1. 1: Global COVID-19 confirmed cases-world

Source: The World Health Organization COVID-19 Dashboard-World- (09-06-24)

The above graph shows how rapidly Covid-19 had a surge over the years and went up to 775.62 million confirmed cases as of 9th June 2024, according to World Health Organization. It is important to understand devastations across the globe that are caused by pandemic. Based on this

information, analysis can be built to further explain the devastations that are caused or can be caused on ASEAN countries.

Figure 1.1 demonstrates that the global number of COVID-19 cases grew very quickly and lasted for a long period. As a result of this surge, problems with trade, supply chains and investments made their way to Malaysia's export-based and open economy. Because Malaysian firms had fewer customers, they faced a lack of needed products and delays in obtaining key materials and technologies. Fear among investors increased due to global business uncertainty which then caused companies to tighten their finances, lay off workers and avoid expanding.

The illustration of Figure 1.1 of the COVID-19 world confirmed cases proves that the crisis is global, and the total confirmed cases are equal to 775.62 million according to the data of the World Health Organization COVID-19 Dashboard until June 2024. The Malaysian companies were not spared as they faced supply chain challenges due to supply chain disruption in 78 percent of the companies during the Movement Control Order, the decreased amount of foreign investment flows, and the lack of export demand directionally affected them due to this global surge (DOSM, 2020).

Figure 1.2: COVID-19 confirmed cases-ASEAN Countries

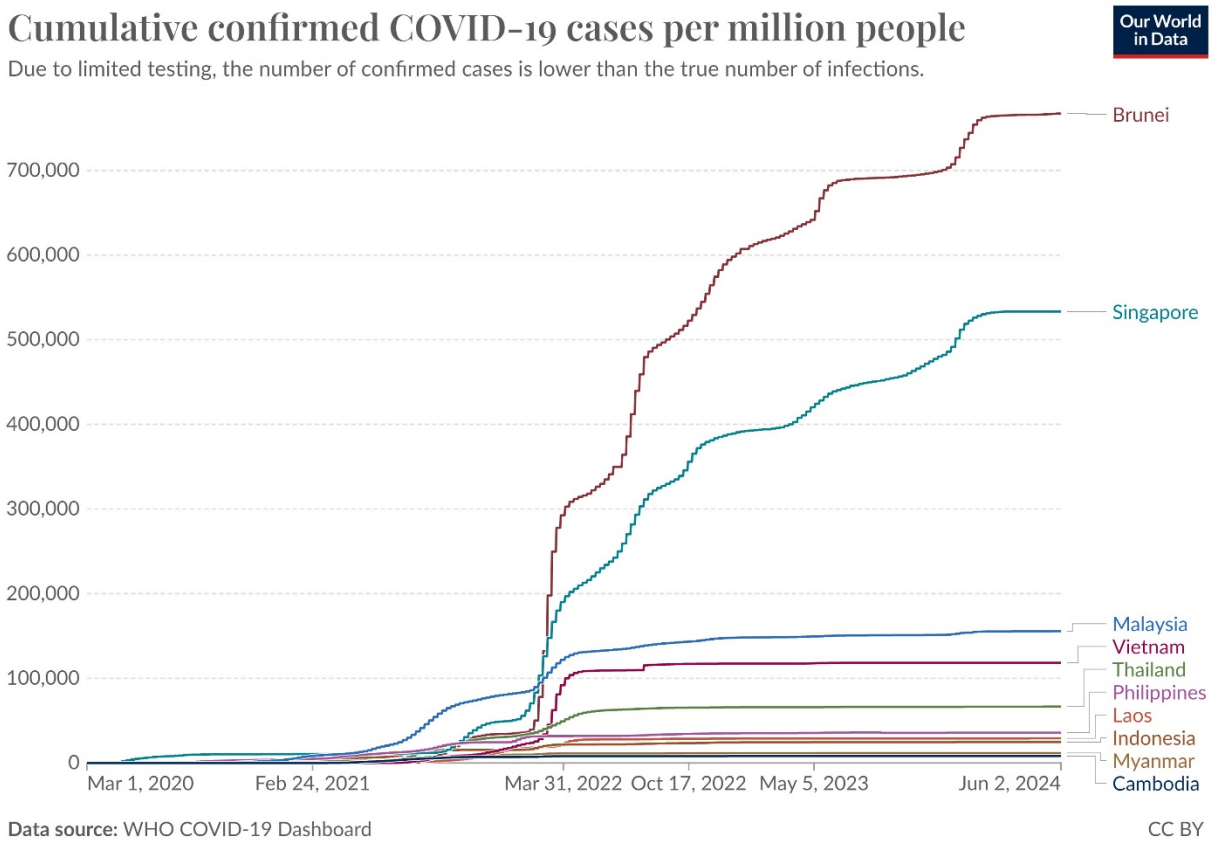

Figure 1. 2: COVID-19 confirmed cases-ASEAN Countries

Source: The World Health Organization– ASEAN - (02-06-24)

The figure above shows how there was surge of COVID-19 in ASEAN, which is congruent around the globe. The first cases of COVID-19 in ASEAN were reported in early 2020, with Thailand being the first country outside China to report a case on January 13, 2020, making marks of COVID-19 in ASEAN. Hence, soon after, other countries like Singapore, Malaysia, and Vietnam reported their initial cases. It is important to understand devastations across the ASEAN countries that are caused by pandemic. Based on this information, analysis can be built to further explain the devastations that are caused or can be caused on Malaysia.

Figure 1.2 shows how cases of COVID-19 have increased in ASEAN countries. Because the region's economy is closely connected and substantial amounts of trade and tourism happen within the ASEAN, the surge in infections in Indonesia, Thailand and the Philippines had a more indirect impact on firms located in Malaysia. It became much harder for firms to perform well when regional labor movement was restricted, joint ventures stopped and regional logistics links broke down. Intergovernmental rules and differences in ASEAN's pandemic responses added to the delays in getting Malaysian companies back on track that depended on nearby markets for sales or supplies. The ASEAN economic interdependence identified that the surges of infection in neighboring states, especially Indonesia, Thailand, and the Philippines, spilled over to affect Malay firms that relied on regional value chains and intra-ASEAN trade partnerships (UNIDO, 2021). The manufacturing sector in Malaysia is a sector that has been particularly susceptible to such regional disruptions as it clocked 37.2 percent decline in performance or in comparison to April 2019.

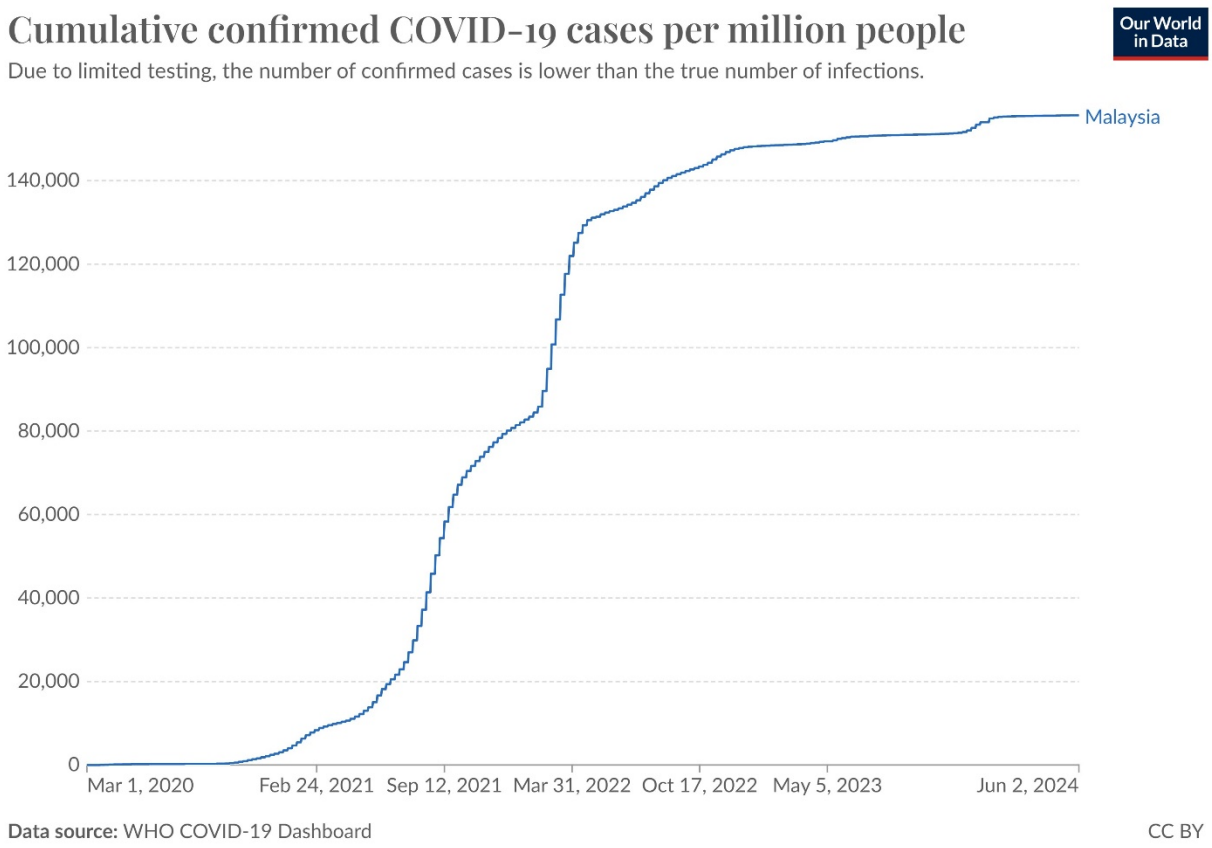

Figure 1. 3: COVID-19 confirmed cases-Malaysia

Source: The World Health Organization - Malaysia - (02-06-24)

The COVID-19 pandemic has had a significant impact on Malaysia, with several waves of infections leading to fluctuating numbers of confirmed cases, mostly there was surge in the cases of confirmed cases. This above graph shows provides an overview of the confirmed COVID-19 cases in Malaysia, highlighting surge of cumulative cases in Malaysia over the years. The country has 155,684 confirm cases as per WHO data bases. It is important to understand devastations

across the Malaysia that are caused by pandemic. Based on this information, analysis can be built to further explain the devastations that are caused or can be caused on Firms in Malaysia.

Considering the above three graphs of the confirmed cases of not only globe, ASEAN and specifically Malaysia. These graphs show that cumulative cases had a surge over the years.

Figure 1.3 is about what happens inside Malaysia. It evident from the timeline of infections that periods of MCOs, business closures and countrywide shutdowns happened during these infection waves. Although public health required these measures, they clearly impacted how well firms were able to perform financially. Revenue fell sharply in retail, hospitality and manufacturing, while companies in technology and logistics had trouble with staff and access to key business buildings. Firms were unsure about the future which led them to delay both their plans for digital transformation and their investments in capital. Waves of infections were also aligned with the implementation of Movement Control Order and closing of businesses, as well as business activity restrictions that significantly affected revenue generation. According to the data presented by Ministry of Finance Malaysia (2020), Malaysian GDP shrank by 5.6 percent during peak infection periods and the services sector recorded a 5.5 percent decrease and construction was down by 19.4 percent in 2020. These sectoral declines serve as direct confirmation of the connection between pandemic advancement revealed in your diagrams and the following decline of the performance of firms. The connection between these epidemiological trends and firm performance is further substantiated by employment data showing that 90% of surveyed firms reported reduced revenues during peak infection periods, with 34% experiencing revenue drops exceeding 50% (Transparency International Malaysia, 2021).

1.2.3 Firm Performance in Pre and Post-Pandemic era

Before the pandemic, the Malaysian companies were recording stable growth and consistent growth and development in the majority of the industries. As stated by the Department of Statistics Malaysia (DOSM), the SMEs contributed a total of 38.9 percent to the total national Gross Domestic Product (GDP) in 2019 upsurge in terms of 38.3 percent in 2018 measurement where its GDP share of the SMEs were RM552.3 billion compared to the total GDP measurement of RM1,421.5 billion, reckoning on the continuation of 2015 values. This indicated a steady increase trend in the preceding years between 2016 and 2019 (Transparency International Malaysia, 2021). The period between 2015 and 2019 in Malaysia has been characterised by the stability of the economy with the country averaging a GDP growth rate of 4-5% per annum which provides a good climate of doing business. It was characterized by strategic efforts of digital transformation, including opening Digital Free Trade Zone (DFTZ) in 2017 and introducing the MyDIGITAL Blueprint, both set the basis of the digitalization of the business nationwide - although the rate was different in different industries. At the same time, the Malaysian companies were becoming an even more active participant of the global value chains, notably in the manufacturing sector, where the level of the exports increased with staggering 7.3% annual rate. There was also the growth of entrepreneurship and this has been captured in the consistent increase in the number of small and medium enterprises (SMEs) which stood at 907,065, in 2015 but was rated at about 920,000 as at 2019 (SME Corp Malaysia, 2019). Other sectors also had a growth, with manufacturing providing 5.3 %, construction 4.3 % and agriculture 1.1 not to mention that these three sectors remained steady in their growth in number of firms as well as percentage contribution to GDP.

1.2.4 COVID-19 Disruption Phase (2020-2021)

The COVID-19 pandemic caused immediate and severe disruptions across all sectors of the Malaysian economy, marking the nation's worst economic performance since the 1998 Asian Financial Crisis, with GDP contracting by 5.5% in 2020 (Bank Negara Malaysia, 2020). This period exposed critical structural vulnerabilities in Malaysian business models. The implementation of the Movement Control Order (MCO) led to operational disruptions, with 34% of businesses temporarily closing and 28% operating at reduced capacity. Notably, 80% of these closures were small enterprises, indicating their heightened vulnerability (Transparency International Malaysia, 2021). Revenue loss was widespread—23% of businesses reported total income loss, 34% experienced revenue drops exceeding 50%, and another 25% reported declines of 21–50%, resulting in 90% of surveyed firms reporting reduced revenues overall. Sectoral disparities were stark: industrial production plummeted by 31.6% in April 2020, and manufacturing saw a 37.2% decline (UNIDO, 2021). The services sector, particularly tourism and hospitality, suffered up to 80% revenue losses. Employment was also severely impacted, with labor productivity falling 12.7% in Q2 2021 and unemployment peaking at 5.3% in May 2020, up from 3.2% pre-pandemic. Compounding the crisis, nearly 40% of SMEs reported having less than one month of cash reserves during the initial MCO period (SME Association of Malaysia, 2021), revealing deep financial fragility.

The recovery phase (2021–2023) displayed a K-shaped trajectory, marked by stark divergences in development among firms. Digital acceleration was significant—digital tool adoption nearly doubled in 2020, and by 2022, 70% of SMEs had integrated digital payment systems and online platforms, up from 35% pre-pandemic (World Bank, 2021; SME Corp, 2021).

However, the economic rebound was uneven: GDP grew by 3.1% in 2021, but while manufacturing expanded at 6.6% by Q4 2021, the services sector lagged behind at just 2.9%, with tourism, hospitality, and retail still struggling. Despite evident vulnerabilities, only 26% of SMEs altered their business models, with 73% retaining pre-pandemic approaches, highlighting a resistance to transformational change (Transparency International Malaysia, 2021). Government interventions like the wage subsidy program were widely utilized, with 85% of eligible businesses applying, though uptake varied across sectors and firm sizes. A resilience gap emerged as larger firms recovered to 97% of pre-pandemic revenue levels by late 2022, while SMEs reached only 76% (SME Association of Malaysia, 2022). This divergence was especially pronounced among digitally capable firms—45.61% reported increased sales, and 66.08% claimed positive outcomes during the pandemic (Rahim et al., 2022). In contrast, businesses that clung to traditional models remained constrained even after restrictions eased.

This comparative pre- and post-pandemic analysis reveals a dramatic shift in Malaysia's business landscape. While firms grew uniformly across sectors before 2020, the pandemic catalyzed deep asymmetries in development trajectories—particularly shaped by firm size, sectoral characteristics, and digital readiness. These differences continue to influence business performance and have permanently altered the dynamics of Malaysia's economic ecosystem.

1.2.5 Significant Developments during pandemic

Many small and medium enterprises (SME) in Malaysia were hit hard by the COVID-19 pandemic because disruptions in the supply chain, less customer interest and routine regulations made it hard for them to function. As a result of the crisis, using digital tools quickly turned into a top method for SMEs to survive. As stated in the SME Corp Malaysia Annual Report (2021), about

70% of SMEs tried out digital services like online payment and use of online platforms for sales and promoting their businesses during the pandemic. The World Bank (2021) published that the adoption of digital tools among Malaysian businesses was nearly twice as large in 2020 as it was in previous years. SMEs using online business methods were more able to retain or boost their income, even during the widespread restriction of movements and lockdowns. A study by MDEC (Malaysia Digital Economy Corporation) mentioned that almost half of the SMEs that utilized digital tools confirmed that their business continuity improved and about 40% said their engagement with customers rose. They highlight how digitalization greatly helps Malaysian companies become more resilient. Because of the pandemic, businesses moved from traditional ways of working to adaptable practices that relied on technology.

The Malaysian government set up several support programs to help companies go digital. The SME Digitalisation Grant, PENJANA e-commerce initiatives and MyDigital Blueprint give funds, training and necessary equipment to help companies start online. The measures reduced losses for companies and also boosted changes in how the businesses function over the longer term. On the whole, the crisis showed the flaws in regular business models and illustrated how digital changes could strengthen businesses from within. Technology adoption allowed SMEs to handle changes, protect their businesses and gain an edge over others in the post-pandemic setting.

Because of the pandemic, the way Malaysian SMEs and other firms run their business transitioned into new structures. Due to digital adoption and increased web usage, companies managed to continuing operating and revealed the importance of technology in crisis management. The shift was not the same for every business; those with better digital tools and management systems progressed more rapidly, but some companies were slower to change. Because of these variations, it is obvious that digital transformation is about more than technology, since it depends

on the business environment, social factors, ESG considerations and strengthens the company's economic security. This is also in line with current research which looks at how firms use ESG approaches and build resilience to achieve success post-pandemic in Malaysia.

1.2.6 Change in Governance Internationally and in Malaysia

The governance landscape in Malaysia has undergone significant changes in recent years, with a focus on improving corporate governance mechanisms as stated by Mohamad and Sori (2011) and Alnasser (2012). These changes have been driven by both domestic and global factors, such as COVID-19, including the need to attract investors, creating opportunities and respond to new socio-political conditions, such as post pandemic era, the changes were stated by Haryono (2017). Despite this, Malaysia initially managed to control the pandemic effectively due to its strong state infrastructure and centralized healthcare system as mentioned by Hong (2023). In response to COVID-19, the Malaysian government implemented pragmatic measures such as the Movement Control Order (MCO) as stated by MYGOV (2020). The government's response to the pandemic varied across different leadership periods as stated by Mohamad (2021). These measures, combined with timely responses, garnered both international and domestic praise for Malaysia's handling of the pandemic according to Passeri (2020). The government's efforts have been crucial in mitigating the pandemic's impact and supporting economic recovery. One can clearly see how there was contraction of GDP of Malaysia, consequent to pandemic.

1.2.7 Potential Threat of Pandemics

The global spread of infectious diseases is facilitated by international travel such as pandemics, emphasizing the need for rapid response and collaboration as stated by Sofia, (2011). While the world continues to grapple with diseases like COVID-19 and Ebola, emerging threats such as Disease X pose unknown risks to global health and economies. Malaysia, having

experienced significant unemployment during COVID-19 according to DOSM (2020), faces potential future economic challenges. Ongoing vigilance and preparedness are essential to address these threats and mitigate their impact on the economy.

The way governance changed during the pandemic affected firms as well, not only the government or policy. Businesses in Malaysia had to follow newly introduced regulations, health measures and digital rules. Agile governance which includes having strong compliance, making quick decisions visible and responding to all stakeholders, helped companies stay afloat. Because of this, companies can join ESG reports and meet the increased demands investors have for thinking and acting in a responsible manner. This research focuses on these governance dynamics since it aims to understand how governance in ESG supports the use of digital technology and improves firm performance when conditions are tough.

1.2.8 Role of Environmental, Social and Governance (ESG) Factors

Environmental, Social, and Governance (ESG) factors are critical components of sustainable business practices, as it ensures sustainable business practices, as stated by Peari (2023). They address a range of issues from environmental protection to social responsibility and corporate governance. For Malaysian firms, integrating ESG principles is increasingly seen as a strategic imperative that can drive long-term value creation and enhance corporate resilience, also ensure sustainable business practices. This mentioned overview provides insights into the current state of ESG adoption among Malaysian firms, the challenges they face, and the opportunities that arise from embracing these principles.

This research aims to evaluate the impact of pandemics on the economic, environmental, social, and governance (ESG) aspects of Malaysia, as Tang and Teoh (2023) have stated that ESG has significant influence in Malaysia. The study will examine how these factors drive

technological transformation and their collective impact on firms' performance. Understanding these dynamics is crucial for developing strategies to enhance resilience and ensure sustainable growth in the face of future pandemics.

The 21st century has been marked by significant challenges posed by various diseases, profoundly affecting public health and business operations worldwide. The COVID-19 pandemic highlighted the need for resilience and adaptability in both public health systems and businesses. Malaysia's experience underscores the importance of proactive measures, digital transformation, and international cooperation in overcoming such crises.

The pandemic disproved the idea that pandemics only affect health, showing that they can cause major changes in both the economy and organizations. It clearly showed Malaysian firms needed to incorporate resilience into core business decision-making. Business resilience requires both financial back-up, flexible technology, planning for risks from nature and being social responsible. For this reason, paying attention to ESG aspects like managing environmental risks and being socially involved is now needed for strategy instead of being limited to meeting rules. To this end, this study looks at how the risk people assign to pandemics affects firms' use of digital tools and environmental, social and governance (ESG) strategies for maintaining performance when uncertainty arises.

1.2.9 Role and Impact of Organizational Economic Resilience on Firm's Performance

Organizational Economic Resilience plays a crucial role in determining the performance of firms, as it ensures that firm is financially stable to sustain with any precedented events, specifically in the case of Malaysia as stated by Marmaya et al. (2018). These factors include macroeconomic conditions for the firm, market competition in which firm is operating, financial stability of the firm, and regulatory environments in which the firm is operating, among others.

This section will further explore the various Organizational Economic Resilience and their impacts on the performance of firms, particularly within the context of Malaysian companies. Referring to the macro-economic conditions in which Malaysian firms operate it makes it evident how the country's economy saw devastation.

Tough financial situations, adjustments of supply chains and the ability to adjust their work were key to the survival or success of many firms in the pandemic. Having enough liquidity, being flexible and having digital technology made it easier for firms to achieve their aims despite disruption. Strong firms could deal with upheavals and often focused on new digital plans while increasing their involvement in ESG efforts. This contrasted with companies that were not flexible; they frequently went out of business or had to shrink. It proposes that Organizational Economic Resilience actively helps organizations bring about digital transformation and ESG practice. Figuring out how resilience influences business results will assist in designing a comprehensive strategy for firms to endure in Malaysia following the pandemic.

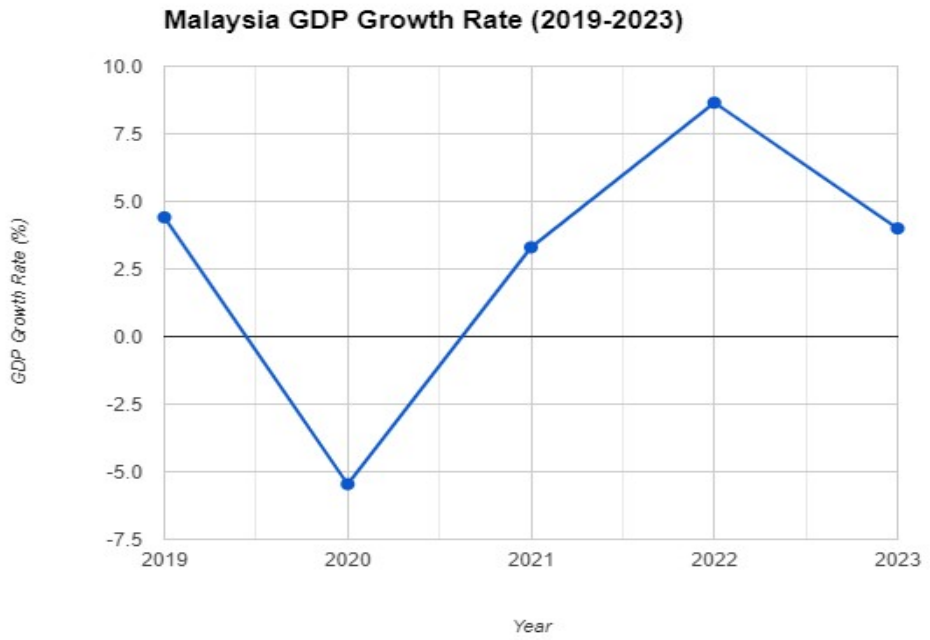

Figure 1. 4: Malaysia's GDP contraction during Covid-19 (2019-2023)

Source: The World Bank GDP (growth annual %) - Malaysia

The figure above shows how Malaysia had negative growth as well, but the percentage on which the growth went negative was way more than the world and East Asia & Pacific. The negative growth that Malaysia experienced was -5.5% in 2020 as compared to 4.4% in previous year and 3.3% in the next years. It also explained that unemployment peeked at 5.3% in May 2020 in Malaysia. This Analysis will help to understand the Macro-economic hit which has been caused by the pandemic or can be caused by the pandemic in the future.

Additionally, when considering the Macroeconomic factors in which Malaysian firms operate, it makes it inevitable to consider the inflation rate of the country in last 5 years. Below

mentioned graph will explain the inflation in Malaysia over the past 5 years

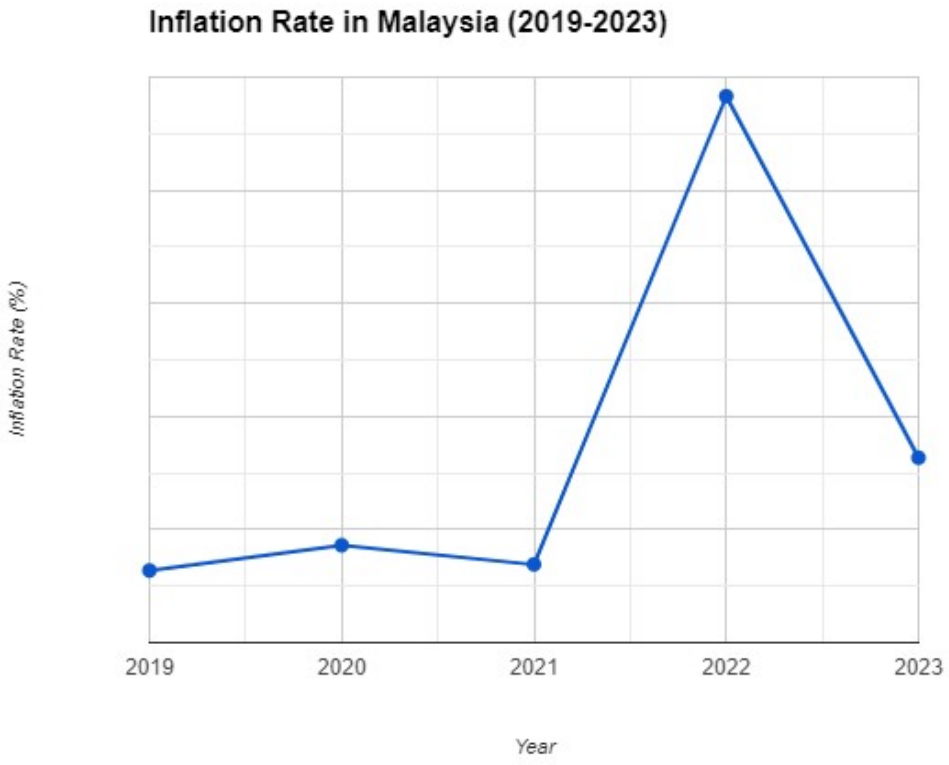

Figure 1. 5: Malaysia's Inflation Rate (2019-2023)

Source: The World Bank Inflation, consumer prices (annual %) - Malaysia

The above-mentioned graph is taken from the different sources such as The World Bank, International Monetary Fund and International Financial Statistics. This graph shows how COVID-19 had an impact on the Malaysia' Macro Economic Factors. This graph shows that how after couple of years of COVID-19 outbreak, Malaysia saw surge in the inflation. The inflation itself had an impact on the firm's performance, because country's inflation will lead to high cost of production. This is why economists study inflation and consumer prices side by side. This

Analysis will help also to understand the Macro-economic hit which has been caused by the pandemic or can be caused by the pandemic in the future.

Furthermore, Covid-19 led to digital transformation in the firm. Consequently, firms moved to Digital Transformation to ensure the efficient business practices. The table mentioned below explains how businesses found a ray of opportunity during pandemic.

Table 1. 1: Firm Performance of Tech Savy vis-à-vis Non-Tech Savy Business

Category	**Percentage**
Seeing income-generating opportunities	81.06%
Business sales during the COVID-19 pandemic	
Decrease	21.49%
No change	32.89%
Increase for Digital savvy businesses	45.61%
Impact of COVID-19 pandemic on business as a whole	
Negatively affected	33.92%
Positively affected Increase for Digital savvy businesses	66.08%

***Source*: The Resilience of SMEs in Fighting COVID-19 through Online Business Acceleration – Year 2020**

The Table has selected data taken from Rahim et al (2022), where it is evident how business stakeholder have recordered the responses in the favour of the notion which explains positive impact on the ressilent businesses. The table has importance in this study as it will help the readers to understand the importance of digitalization in businesses to improve their performance.Table

further explains how massive number of stakeholders believe that pandemic has created more income-generating oppertunities. Additionally, the stakeholders had more inclination in believing that impact of the business as a whole was positive rather than negative. Results of the table are focused on only the businesses that shifted towards digital techonology.

1.3 Problem Statement

The business environment in Malaysia is unique in that it has different features compared to those in the region and the whole world as reported by Bank Negara Malaysia and other government departments. Malaysian economy is a complex mixed-market system with a high degree of global trade interrelations, in fact, conducting trade with 90 percent of the countries in the world and many others in the region in terms of diversity of the trade (World Bank, 2024). This geographical positioning is unique because the Strait of Malacca is under the control of Malaysia and its geographical position enables about a quarter of maritime trades in the global arena. According to Bank Negara Malaysia (2023), the Malaysian business landscape has a number of peculiarities of its structure. First, there is impressive sector diversification of the economy with services constituting 57.8 percent of GDP, manufacturing 23.6 percent and mining boasting a 6.6 percent, agriculture 6.8 percent and 4 percent respectively in construction. This variation of diversification moves to form a different type of resilience relative to the region that is based on commodities. Second, Malaysia has unusual feature of the financial system which is manifested in its all-inclusive Islamic bank framework running concurrently with the traditional system to bring a dual track financial intermediation system to offer a different way of financing enterprises.

The distinctiveness of the Malaysian business environment also applies to regulations, because the country has a regulatory system that combines the common law legacies tradition under the British colonial rule, and the Islamic standards of commercial regulations. This two-legal system leads to unique business operations, especially in contract enforcing activity, corporate governance, finance trading (Ministry of Finance Malaysia, 2023). Also, the multi ethnic business environment in Malaysia contributes to a different kind of entrepreneuricity where the Malay, Chinese and Indian business group have diverse ways of openings up a business, managing risks and entering into a market.

The government agencies also focus on the concept of Malaysia in the global value chains, especially in the electronics, palm oil, and rubber industries where the country has a considerable market share and e-tech abilities. According to the Malaysia Digital Economy Corporation (MDEC), Malaysia has one of the highest contributions of digital economies to the GDP with the sector contributing 22.6 percent in 2020, making it one of the highest proportions in the Southeast Asian region and the opportunities that exist specifically in digital transformation also make Malaysian firms unique in the region in terms of competition.

The COVID-19 pandemic has severely disrupted business operations across various sectors in Malaysia, exposing significant vulnerabilities in firm performance and highlighting the urgent need for resilience and adaptability. Despite efforts to mitigate these impacts, Malaysian firms continue to struggle with integrating Environmental, Social, and Governance (ESG) principles alongside digital transformation initiatives in the post-pandemic era. Existing studies, such as those by Adams et al. (2015), Braubach (2017), and Li et al. (2020), have typically examined ESG implementation and digital transformation in isolation, neglecting their combined effects on firm

performance. The COVID-19 outbreak was a challenge that never before faced the businesses of both major and minor sizes in different industries, putting pressure on the system of the national economy as a whole. These challenges found extensive coverage in state bulletins, industry reporter, and statistics to the effect that the entire business undertakings were being disrupted. Among the most remarkable effects, there was a disruption of supply chains on a massive scale, initiated due to the curtailment of domestic and international movement. The Department of Statistics Malaysia (DOSM, 2020) stated that 78 percent of businesses experienced difficulties in supply chains in the time of the Movement Control Order (MCO). The manufacturing industry was the hardest hit as there was a decline in its performance index by 37.2 percent against April 2019. Such interventions entailed imminent raw materials shortages, as 72 percent of manufacturers also had trouble sourcing their inputs and saw their lead times triple to quintuple (MITI, 2020). The problem was exacerbated by bottlenecks in the supply chain since the cost of delivering goods between China and Malaysia increased by 300% (Malaysia External Trade Development Corporation). Inventory management was another issue that affected retailers with 82 percent of the retailers recording stockouts or overstocking because of unpredictable supply chains (Malaysia Retailers Association, 2020).

Pressures in terms of finances and liquidity were also quite rampant. Out of them, an impressive 90 percent of companies were affected by a fall in revenue due to the MCO, with almost a quarter losing all their income and another 34 percent facing declines by more than 50 percent (Transparency International Malaysia, 2021). Due to health-based SOPs and the increase in commodity prices, 1218 percent of the companies experienced an increase in the costs of operations across industries (DOSM, 2020), and 43 percent of businesses struggled to obtain financing despite government assistance as the loan rejection rate escalated in Q2 2020 (SME

Association of Malaysia). Another increase in complexity was the workforce management. Technology and productivity were some of the challenges faced by 88 percent and 65 percent of businesses during the transition to remote work, respectively (Malaysian Employers Federation, 2021). The adherence to the health procedures also came with additional expenses the industry-specific costs can be estimated as follows: RM15,000 to RM50,000 per site in manufacturing and construction, RM30,000 to RM100,000 in food industry, and RM50,000 to RM150,000, in the oil and gas industry (MITI, 2020). Worker shortage was also essential, particularly in the construction and agro-industry because foreign workers had no freedom to enter the country (Ministry of Human Resources, 2021). The SMEs in Malaysia lost 65 000 jobs (0.9 percent) in 2020, and this is mirrored in the 2020 employment record, which registered the smallest employment level (DOSM, 2021).

Compounding all these difficulties in operations was intricate and ever-changing regulation requirements. The moving target of SOPs also bothered businesses, and 78 percent of them got confused by rules (Malaysian Business Council Survey, 2020). Bureaucracy was heightened by the need to document the necessary facilities to be provided such as providing permits to access basic services, to be provided to employees to move, and to access aid. The existence of unstable cross-border regulations and import/export paperwork on international trade dealings further affected and burdened international trade activities, considering that the value of trade equates to 124 percent in Malaysia as a GDP value. Digital transformation also became a requirement to be able to survive because of the pandemic. Nevertheless, 67 per cent of businesses reported less digital infrastructure as a constraint (Bank Negara Malaysia, 2023). Although 70% of SMEs have introduced digital methods, including online payment and e-commerce (SME Corp Malaysia, 2021), quite a number of those experienced corporate vulnerabilities to cyberattacks since the

number of cyber incidents in Malaysian businesses increased by 82.5 percent in 2020-2021 (Malaysian Communications and Multimedia Commission).

Lastly, companies needed to deal with radicalities in consumer behavior. The number of people going to the retail and leisure areas physically dropped by 70-90 percent during the MCOs (Google Mobility Reports, 2020), and preference was diverted to basic necessities. Consequently, 38 percent of the firms cited the loss of revenue to the reduction in the customer demand (Transparency International Malaysia, 2021). The boom in the e-commerce market (38.3% in 2020 (DOSM, 2021)) caused a group of businesses to accelerate their service delivery and digital engagement patterns. At the same time, even those broad-reaching difficulties did not cause most companies to change significantly- 73 per cent of SMEs did not change their business models during the pandemic. This stagnation underscores the broader difficulty many Malaysian companies face in adjusting to crisis-driven innovation. In contrast, those firms that demonstrated greater digital readiness, financial resilience, and adaptability not only weathered the crisis better but also positioned themselves for stronger post-pandemic performance.

During the pandemic, Malaysian firms faced challenges including supply chain disruptions, reduced consumer demand, and operational inefficiencies, which underscored the need for enhanced Organizational Economic Resilience as stated by Hu and Kee (2021) and Ratnasingam et al (2020). The government's push towards digitalization as stated by Ayob et al (2022), sustainable practices present an opportunity to address these issues. Yet the specific ways in which digital transformation and ESG practices together influence firm performance remain underexplored. As Elgazzar et al (2021) and Browder et al (2023) have noted, understanding this

relationship is critical for developing strategies that enhance resilience and ensure sustainable growth in the face of future pandemics.

Talwar et al. (2023) and Choi and Wang (2009) suggest that exploring the relationship between digital transformation and ESG considerations could reveal how these factors impact operational efficiency, financial resilience, and innovation capabilities. There are insufficient studies to investigate the combined effects of ESG implementation, digital transformation, and Organizational Economic Resilience on firm performance in the post-pandemic era. Moreover, there is less research to provide a comprehensive analysis of how these interconnected factors influence firm performance, considering future pandemic threats. Understanding the dynamic relationship between digitalization, ESG implementation, and firm performance is crucial for developing strategies to enhance resilience and ensure sustainable growth in the face of future pandemics. Hence, there is a need to have significant literature by providing new insights into the combined impact of these factors on firm performance in the Malaysian context.

The Malaysian economy, heavily influenced by external shocks and internal policy changes, requires a nuanced understanding of how these factors interact. Previous studies by Freeman (2010) and Fichman et al. (2014) highlight the necessity for firms to adopt sustainable practices and digital solutions to maintain competitiveness, yet the post-pandemic scenario presents unique challenges that have not been fully addressed.

The COVID-19 pandemic exposed the vulnerabilities of many firms, highlighting the urgent need for resilience and adaptability for the firms. In Malaysia, the government's push towards digitalization and sustainable practices presents an opportunity to build more robust business models that are more sustainable than before. Yet, without a clear understanding of how these initiatives affect firm performance, businesses may struggle to implement effective strategies

that could overcome the devastation may occur by the pandemic in the future. The integration of ESG factors into business strategies is not just about compliance or risk management; it is about creating value for stakeholders and ensuring long-term sustainability of the firms. As Adams et al. (2015) and Talwar et al. (2023) have noted, companies that effectively integrate ESG considerations into their operations are better positioned to withstand economic shocks and capitalize on new opportunities that businesses can avail. This study seeks to explore this premise in the Malaysian context, particularly focusing on how digital transformation can enhance or hinder these efforts of increasing sustainability of the firms.

Additionally, the role of digital transformation in driving Organizational Economic Resilience cannot be overstated in studies. The rapid shift to digital solutions during the pandemic demonstrated the potential for technology to enhance business operations and customer engagement in an efficient manner. However, the extent to which digital transformation contributes to firm performance, in conjunction with ESG practices, remains unclear among masses. This study will investigate this complex relationship, providing insights that can inform policy decisions and business strategies. By examining the combined impact of ESG practices, digital transformation, and Organizational Economic Resilience on firm performance, this research aims to contribute to the broader understanding of how businesses can navigate and oversee post-pandemic challenges. The findings will have practical implications for firms in Malaysia and beyond, offering guidance on how to build more resilient and sustainable business models that could help to overcome challenges such as pandemics. Hence, this study addresses a critical gap in the literature by exploring the combined effects of ESG implementation, digital transformation, and Organizational Economic Resilience on firm performance in the post-pandemic era. By building on existing research and providing new insights, this study aims to inform both academic

discourse and practical business strategies, ultimately contributing to the development of more resilient and sustainable firms in Malaysia that could overcome the challenges of post-pandemic era.

1.4 Research Objectives

The general objective of the study is to investigate the multifaceted influences of social, governance, environmental, and Organizational Economic Resilience on digital transformation and its subsequent impact on firm performance in Malaysian firms after the pandemic.

The specific objectives of the study are:

1. To examine the impact of ESG factors on digital transformation in Malaysian firms.
2. To analyze the relationship between Organizational Economic Resilience and digital transformation.
3. To evaluate the impact of digital transformation on firm performance.
4. To examine the mediating role of digital transformation between ESG, Organizational Economic Resilience, and firm performance.
5. To assess the moderating effect of pandemic risk perception on the relationship between digital transformation and firm performance.

1.5 Research Questions

Subsequently, considering the research objectives given earlier it will be significant to derive some relevant research questions. So, the study aims to answer following research questions

1. How do ESG factors affect digital transformation in Malaysian companies?
2. What impact does Organizational Economic Resilience have on digital transformation?
3. How is digital transformation related to firm performance?
4. Does digital transformation mediate the relationship between ESG, Organizational Economic Resilience, and firm performance?
5. Does pandemic risk perception moderate between digital transformation and performance of firms?

1.6 Significance of Study

After looking at the questions that this study aims to address, it is important how this study can contribute to the businesses and their stakeholders. Study where ESG implementation coupled

with Organizational Economic Resilience and resultant digital transformation having impact on a firm's performance will be investigated during pandemic and epidemic. This comprehensive study will have significance in not only academic contribution and practical implications for business, but also will be apt for policy designing to prevent future devastations that may occur due to unprecedented events such as pandemic. The significance of the study can be demarcated by further explanation of each advantage that this study will have. Hence, this study aims to address several key questions about the impact of ESG implementation, Organizational Economic Resilience, and digital transformation on firm performance during the post pandemic era. The significance of this research extends beyond academic contributions, providing practical insights for businesses and informing policy design to prevent future disruptions and devastations. The specific contributions and implications of this study are outlined and explained below.

1.6.1 Theocratical contributions of the study

In the contemporary era, it has become so important to have proper ESG implementation vis-à-vis business performance in academic literature. For this study two theories are employed as explained in 2.2 of this study. Two theories that are employed help in understanding the relationship is Stakeholder Theory as explained in 2.2.1 of this study. This study will further enhance the scope of Stakeholder Theory, as an avenue will be opened after this study, because of the link which will be drawn with variables of this study and Stakeholders Theory. Furthermore, second theory which will be employed for this study will be Economic Complexity Theory as explained in 2.2.2 of this study. This study will further enhance the scope for this theory as well, because of the complex relationship of the variables which will be explained in this study will further open the avenue for this theory to be discussed in post pandemic era. To provide a hypothesis it is essential to have ESG scores to ensure the validity and relevancy as stated by

Clément et al (2023). The academic literature will be further enriched with Organizational Economic Resilience and their impact will be tested on Digital Transformation incentives jointly with ESG. This amalgamation of multi faced research will contribute significantly to the field of research and will open avenues to investigate further unexplored dynamics as explained by Eccles Serafeim (2013). This study further benefits the stakeholders of this study.

The Stakeholders Theory will also address the digitalization of the firms, as it was explained by Lock and Seele (2017). Digital transformation plays a pivotal role in enhancing operational efficiency by automating processes, improving supply chain management, and enabling data-driven decision-making, overall elevating the efficiency as well. This, in turn, directly influences firm performance by reducing costs, improving product quality, and increasing efficiency. For instance, Erik and McAfee (2017) highlighted that digital technologies can significantly streamline operations, leading to substantial improvements in efficiency and effectiveness of the businesses.

The adoption of digital technologies, as a consequent result of the digital transformation, further fosters a culture of innovation within firms. Digital transformation further leads to leveraging advanced analytics, artificial intelligence, and IoT (Internet of Things), companies can develop new products and services that meet evolving customer needs efficiently. This innovative capability is a critical driver of competitive advantage and firm performance even during pandemic. As noted by Fichman et al (2014), digital transformation enables organizations to innovate rapidly and respond to market changes more effectively and efficiently.

1.6.2 Practical Implications of the study

When studying about stakeholders which suffered or may possibly suffer in the future due to outbreak of pandemic or epidemic, it would be without a doubt business. This study will provide

the valuable and the possible insights to business to navigate and explore any probable complexities of the post pandemic and epidemic environment. If possible, impact of ESG consideration, Organizational Economic Resilience and the influence on digital transformation can be analyzed by businesses, it may help firms to make more relevant, efficient and performance-oriented decisions. These decisions could be related to finance allocation of firms, risk management or may be related to designing the long-term sustainability goals of the firm as stated by Schaltegger and Burritt (2015). This study will help business to achieve far sightedness to ensure endurance and stability of the firm. Considering this significance as prudent significance, this study also had specific advantages to the businesses.

After providing the firms with the way forward, it will be required to have an apt strategic decision to overcome any unprecedented event that could possibly impact the firm's performance. This objective will be fulfilling its requirement when insights will be provided that contains evidence having focus of ESG, Digital Transformation and the subsequent impact on firm's performance. As stated by Brynjolfsson and McAfee (2014) in a book where proper framework is being provided related to the digital strategies that firms could possibly implement and as stated by Xu and Gao (2021) where evolution of business process is explained, the study will be focused to provide the practical advice to identify the possible implications and overcome them effectively, considering the post pandemic era.

In addition, this study also helps the stakeholders of the businesses, such as Malaysian Government. Analysis was done that companies can get a lot of subsidies with the implementation of the ESG programs as discussed by Zhang et al (2023). However, the ESG implementation may also have benefit to Malaysian Government of Malaysia to draw and implement a policy which is focused towards ESG implementation. As far as the Digital Transformation is concerned, it paves

way for ESG implementation as discussed by both Kwiliński et al (2023) and Su et al (2023). Furthermore, Dobrolyubova (2021) discussed that the benefits of the digital transformation are not always clear and may be analyzed in assiduous manner, which means that if Digital Transformation is ensured at the right moment, it can lead to sustainable business practices. Hence this study provides the governments to analyze the actual benefits of the digital transformation in businesses.

1.6.3 Significance for Policy Makers and Business Practitioners

It gives support to government institutions, policymakers and development agencies seeking to revive the economy and improve its sustainability. It is also indicated that adding ESG to digital transformation helps firms succeed, so extra ESG grants, investments in digital tools and building up resilience should be considered. This study also notes unique areas where companies lag in ESG and digital aspects which policymakers can address on an industry basis. By using the research, Malaysia can apply evidence-based strategies, helping achieve its goals placed by MyDigital, ESG Reporting Guidelines and Sustainable Development Goals (SDGs) to stay economically competitive after the pandemic.

It provides business owners, corporate strategists and senior managers with a strategy to combine ESG efforts with digital transformation for better operational performance, fewer risks and creating lasting value. It shows that even though financial resources matter, other things like strong management, trusted stakeholders and flexibility with technology now impact a company's results more than before. Besides, the study finds links between risk perception in a pandemic and the economy's resilience when planning for crisis and continuity management. Corporations can apply these insights to improve their environmental actions, make sure investors are confident and build business models that can handle change thanks to technology. This study integrates academic

insights with practical implications by providing evidence-based recommendations relevant to both policymakers and business practitioners.

1.6.4 Significance for Researchers and Academics

It links Stakeholder Theory with Economic Complexity Theory to develop an empirical model that describes firm performance when concerns are uncertain. The research fills a major gap by analyzing the connections between ESG, Organizational Economic Resilience and digital transformation which are rarely examined together. Because SmartPLS-based structural equation modeling is used, the instruments are validated, making the study more rigorous and replicable. The research suggests that more inquiries should focus on other important aspects (like leadership and work culture), how things evolve over time and how different countries or industries compare.

1.7 Summary

This chapter begins with an introduction in regard to the background of the research covering overview of ESG, Organizational Economic Resilience, their subsequent Digital Transformation and their consequent impact on the firm's performance. The background remained focused on post pandemic era, complementing the focus of the research. The Research Problem has been also highlighted in this chapter. Moreover, Research Objectives and Research Questions have also been highlighted in this chapter. Lastly, following the flow of the chapter, the chapter ended by explaining the Significance of this study. Next chapter will explain the Literature Review with relevant Theoretical Framework of the study and will also develop an apt hypothesis looking at the flow of the chapter.

Chapter Two

Literature Review

2.1 Introduction

The chapter is designed to introduce the background for the study by explaining how the key literature developed and what main theories and debates formed as this research area emerged. Initial work involves reading existing research studies on similar subjects, helping to explain the core ideas in the present article. Their purpose is to surround the study with other works that summarize successes and unresolved issues in the field. Through analyzing this literature, the chapter points out the importance of the subject and also illustrates how ideas have both continued and changed, leading to the need for additional research. With this as a basis, the chapter turns to discuss and describe the main theoretical perspectives used in the subject. These approaches are applied when they fit the concepts being investigated and have been shown useful in previous research. They will allow researchers to look at how variables connect and interpret those connections. After discussing theory, the chapter explains the main variables that are in the study. Every concept in the thesis will be defined and explained, highlighting its importance and literature will confirm these explanations. By breaking down the concepts, the study is able to look closely at the important aspects it is trying to study.

While discussing the research, the chapter demonstrates where scholars have missed understanding certain aspects due to problems in prior studies. This difference, be it in approach, location or ideas, is the basis for this study and helps explain why the study's aims are important. After the gap has been identified, the hypotheses to examine and test will be introduced, arranged following the previous theories and evidence. By using these hypotheses, we hope to address the

questions missing in the literature and introduce new ideas about the phenomena. The chapter concludes with the introduction of a framework that combines all the variables and hypotheses into one structure, directing the rest of the empirical work. It presents the links between the constructs and gives researchers a way to collect and study data. This research is more important due to its concern with the services sector which, based on Al-Amin et al. (2010), is vital for driving Malaysia's economic progress, job market and overall development. Focusing the study on this important sector makes the research reflect today's economy and becomes both more useful and interesting.

On 11 March 2020, World Health Organization (WHO) Director General Dr. Tedros Andhnom declared Covid-19 as a global pandemic in a press conference Cucinotta and Vanelli (2020). Within less than a couple of weeks, number of Covid-19 confirmed cases reached to 500,000 and it continued to increase as the time passed as reported by WHO (2020). The Covid-19 brought an unprecedented challenge to the planet earth. The pandemic disturbed economies around the world and provided the dent to booming economies. Various sectors of the business world experienced an absolute dent. An apt example of the moderation effect caused by pandemic policy was Malaysia, a diverse economy with an exceptional potential to grow in Asia.

Quirico (2010) made it evident that how 2007-8 global crises had an impact on Italian economy, due to lack of structural reforms prior to crises. This makes a similarity of pandemic that how it occurred in one country, and it spread across the border. The similarities of Global Crises of 2008 and pandemic can be drawn by looking at the vast spread of economic devastations caused by these two events as beautifully illustrated by (Moreno et al., 2020) . Majority of literature exist on the direct impact of the Covid-19 pandemic on businesses with focus on supply chain disturbance, abnormal demand fluctuations and remote working adoption. According to

some studies the focus was on the influence of government's policies and firm's specific factors throughout the Covid-19 outbreak. According to World Bank Group Representative to Malaysia and Country Manager Mr. Firas Raad, those who have lost their jobs and businesses can contribute to recovery of Malaysian Economy. Malaysia's Economy Expected to Contract Sharply Due to COVID-19 in 2020; Growth to Rebound in 2021: World Bank. The governments around the globe have designed and implemented various policies including providing financial packages, implementing lockdown and supporting remote working. These polices created a context that the firm's performance is influenced by Macro Economic factors of the Malaysian Economy.

On the other hand, companies have focused on implementation of Environmental, Social and Governance Factors to ensure sustainability. However, since the outbreak of Covid-19, it was evident that pandemics interplay of factors influencing economic and Environmental, Social and Governance (ESG) have an impact on the firm's performance, while providing technological advancements an impetus. Malaysia has seen several lockdowns. It is also supported by previously researched studies and literature.

Historical stock market analysis has revealed positive stock performance of healthcare companies in Malaysia during lockdown proclamations, with this industry recording the best stock performance in the 1st quarter compared to other sectors in the year 2021 (Mazur et al., 2021). The healthcare travel sector was the first to be hit but has proven to come back strong with by 2022 the sector is already at 76 per cent of its pre-pandemic performance value of RM1.7 billion (FSMOne, 2023).

Malaysia healthcare industry has the characteristics of unique performance during the pandemic due to several differences that make it different to the other industries. The percentage of GDP spent on healthcare rose to 5.1% in 2021 during the highest point of pandemic responses

across the globe, and the medical businesses enjoyed higher demand of medical services, drugs, and equipment (World Economic Forum, 2024). Compared to manufacturing industries where there was a 37.2 percent contraction or services industries where there was a 5.5 percent contraction, healthcare showed counter cyclical growth with service essentiality and stronger health awareness among the consumers. Nevertheless, adding healthcare industries in research on the impact of the pandemic necessitates methodological rationality, depending on the purpose of the research. In case you want to investigate the concept of broad based Organizational Economic Resilience and digital transformation in the Malaysian industries, then leaving out the healthcare would make your sample biased in terms of not covering an important economic sector that was employing a large number of people and that were important contributors to GDP. On the other hand, in case you are studying a factor that affects industries adversely because of pandemic-induced impacts, healthcare exclusion could be methodologically adequate since it has a particular positive performance trend. This research defines digital transformation as process digitalization rather than transformation of the business model. While digital transformation is typically defined as a holistic change to strategy, structure and culture, the items used to measure this construct in this study specifically relate to the use and integration of digital technologies in operational processes, such as automation, data management and communication.

This is in line with previous research, which defines process digitalization vs. business model transformation (Vial, 2019). Thus, the construct of digital transformation in this research represents process-level digitalization that seeks to enhance operational performance and coordination, as opposed to a complete transformation of the business model.

These sectoral impact differences in the pandemic could be represented in a systematic way using the following industry performance framework in the year 2020-2021: manufacturing industry was severely affected, with the industry downturn by 31.6 percent in the month of April 2020; the services sectors experienced varied effects with accommodation and food services industry downturn by 35.4 percent, transportation and storage industry downturn recorded by 23.1 percent, whereas information and communication sector showed increased growth by 7.1 percent; construction sector is disadvantaged by project delays and labor.

2.2 Theoretical Perspectives

2.2.1 Stakeholder Theory

According to Freeman (2010), stakeholder theory offers a different viewpoint on how companies can add value for their clients, who then give that value back to the companies. According to Godam et al. (2019), this idea highlights that a company's ability to satisfy all its stakeholders, rather than just those who directly contribute to its profits—is what determines how successful it is. These stakeholders also include government agencies, environmentalists, workers, suppliers, and above all, customers. A business can improve its sustainability and reap long-term benefits by managing these varied stakeholder groups well.

A theory being detailed in 1984 by R. Edward Freeman addresses moral and values that must be kept under consideration by businesses. Dissecting the ESG, Social proximity between the owner of the small businesses and their local stakeholders, influences the management to consider the legitimacy, power and consider the stakeholders and their claims as stated by Lähdesmäki et al. (2019). This close social proximities provide impetus to the business to take consideration of the social stakeholders as well. Resultantly, this theory influences the business policy, as stakeholders exert their influence in the decision-making as mentioned by Kristen

(2015). When studying about ESG and relation of Stakeholder Theory as mentioned by Li et al. (2021), we can identify that Stakeholder Theory helps to formulate that the stakeholders must be kept under consideration by the businesses by keeping in view morality and ethics. Thus, keeping value creation for the stakeholders must be kept under consideration, while applying Stakeholder Theory as stated by Kumar S (2023). Stakeholder's measures may directly determine ESG, and it was explained that ESG performance is consequent of the Stakeholder Theory as stated by Kumar et al. (2021). Furthermore, when collectively studied about ESG, it can be formulated that it is directly linked with Firm's performance, which is consistent with the Stakeholder Theory according to Peng and Isa (2020). Firms with higher Corporate Social Responsibility and environmental, social, and governance (ESG) performance demonstrated greater resilience during the pandemic as stated by Al and Khatib (2023) and Buertey et al. (2024)

This theory contains importance to the research topic which investigates Environmental, Social and Governance (ESG) factors coupled with economic dynamics on the firm's performance, specifically during and after the pandemic. Hence by considering the stakeholders including employees, investors, communities, and the regulators as a vital part of the corporate strategy, this theory properly explains how exactly their interests, their concerns and their engagement has a direct influence on the organizational decision and its resultant outcome. Furthermore, during transformation of the firm led by Digital Transformation influenced by pandemic, stakeholder's responses and their perspectives serve as an important yet critical mediator, carving the firm's adaptive strategies as well as resilience in guiding it for any kind of unprecedented disruptions that could possibly occur. Inclusion of this theory will provide the research a comprehensive and a detailed overview to understand the complex dynamics between ESG practices, the economic dynamics, engagement of the stakeholder and the technological evolution, offering real time

insights that are vital for the resilience and sustainability as well as effective business strategies in contemporary era.

Figure 2.1: Stakeholders Theory as explained by Freeman (2010)

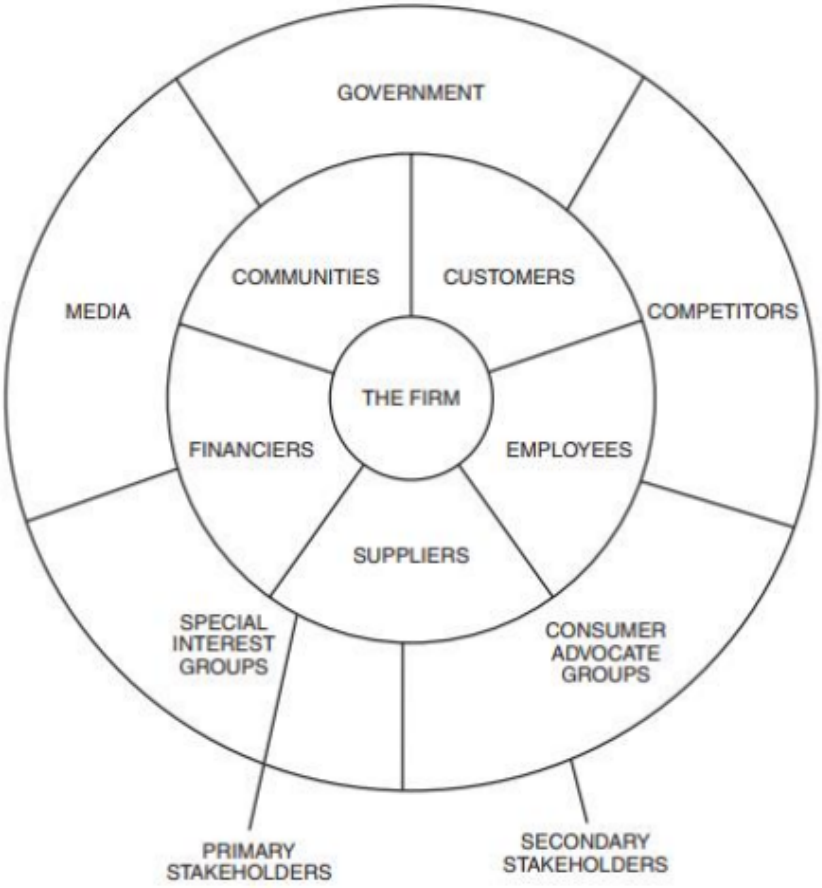

Figure 2. 1: Stakeholders Theory as explained by Freeman (2010)

Source: Ibrahim et al (2019) and Freeman (2010)

The figure above shows how Stakeholders exert pressure on the firms to implement ESG in the firm as well as the ensuring that the firm is Economically resilient. These stakeholders may include internal stakeholders of the firm's that mostly exert pressure and want firm to be

economically resilient and external stakeholder that want firm to focus on ESG for the betterment of society, environment, or the governance. Moving forward to the implementation of ESG and firm becoming economically resilient, the firm may look to digitization to ensure efficiency in the operation. The overall process may or may not positively impact the firm's performance, considering the pandemic's intensity. The same theory was implemented by Miralles-Quirós et al. (2018), when investigating the impact of ESG on the firm.

This theory points out the need to involve everyone both within the company and in the external community during ESG implementation. Because of their ethical responsibilities and connections, companies add stakeholder concerns to their ESG actions. People notice the value of this theory especially in times of crisis such as the COVID-19 pandemic. During the pandemic, stakeholders looked for businesses to be more committed to responsibility, health and safety and sustainability. As Kristen (2015) pointed out, stakeholders are able to greatly influence business decisions. While pandemics were taking place, employers had to allow remote work and keep positions safe, customers looked for companies that cared about their health and regulators increased the regulations companies had to follow. Because of these changing pressures from stakeholders, businesses had to rapidly alter their strategies which made Stakeholder Theory crucial for studying their actions when dealing with pandemic dangers.

Because of this framework, the data shows how companies came to terms with pandemic changes. According to Li et al. (2021), businesses that take stakeholders' views into account in ESG models were better prepared to handle crises, showing how the theory relates ESG to crisis performance. According to Buertey et al. (2024) and Al & Khatib (2023), companies that strongly involve ESG stakeholders tend to have higher trust from stakeholders and greater agility during crises which further supports the importance of engaging stakeholders.

Automation and the increased speed of digital transformation, partly brought on by the pandemic, meant stakeholder input now had an important role. Like every business, staff underwent training or upgrading their skills, in-person shopping waned as people began shopping online and supply chains were changed to rely on digital technology. The company had to keep aligning with what stakeholders expected which reinforces that communicating with stakeholders improves agility. As a result, Stakeholder Theory provides the reason why companies face pandemic threats by keeping in line with, supporting and adjusting to what stakeholders want. For this reason, it is important for this research which looks at how ESG factors influence economic stability, digital adoption, performance and firm activity in the world after COVID-19.

2.2.2 Economic Complexity Theory

Indeed, Economic Complexity Models are now widely used as a tool to study geographical economics, development at international scale and innovation studies as stated by Hidalgo (2021). The Economic Complexity Theory helps us to understand that economy does not remain at the same stage always, it may experience highs and may experience lows, so it is important for the decision makers to understand the fact that economy has an ever-changing belief according to Arthur (2021). This theory is relevant to this literature review so that a decision maker should have apt knowledge of the changing trends to the economy, as the countries or economies may often be misjudged, can produce beyond the expectation as stated by Alloway et al (2023).Researchers claim to validate ESG as a comprehensive theory and by conducting detailed analysis revealed that governance reforms are most traditional and least controversial generally yield business performance according to Morrison (2021).

The Economic Complex Theory (ECT) has a very significant importance to the research as it holds holistic understanding of the economic dynamics, as it provides a framework to

comprehend the dynamic and complex nature of the economic systems. Furthermore, it provides emphasize on the interdependence and complexities within economies, which is apt when examining how ESG factors and Digital Transformation impact the firm's performance during economic disruptions like pandemic. Recent studies have explored the impact of pandemics on economic complexity and firm performance. Pandemics can reduce economic complexity, particularly in emerging and low-income countries, by deteriorating human capital quality as stated by Nguyen et al. (2024).

Additionally, the theory could be used in evaluating how firm's ESG practices and utilize technology to identify and track the threats and challenges by further embracing on the opportunities and further enhancing Organizational Economic Resilience of the organization. Additionally, the theory explains the strengths of firm and it also helps to evaluate how ESG and technology contribute to competitive advantage. The theory further provides a holistic view by providing the real time insights to policy makers of the company on how to shape and create environment, which is inclined towards innovation and long-term sustainability, enhancing the Organizational Economic Resilience.

This theory is very important when big disruptions like the COVID-19 pandemic take place, as they highlight how quickly global supply chains can fail, fewer workers are often less productive and the economy is often hit hard, most noticeably in emerging economies such as Malaysia. According to Nguyen et al. (2024), pandemics undermine both human skills and organizational learning which harms economic complexity. So, managers should observe and analyze the firm's business environment to deal with sudden systemic changes.

Companies and nations that had a wide range of skills—especially in the digital field—were better able to handle the shocks brought by the pandemic, explains Economic Complexity

Theory. Businesses that had set up digital systems or agile processes managed the crisis better. It matches the research framework, as digital transformation helps link environmental, social and governance practices, economic resistance and company performance.

The arrival of the pandemic meant that businesses had to assess quickly how much they could produce and how quickly they could introduce new technologies. The complex methods ECT uses allow researchers to see these shifts as possible results from equal societies or from where people are not equal. As an illustration, firms with low technology skills or weak consideration of ESG issues found it hard to shift their operations during lockdowns, showing how economic structure and pandemic risks are linked. Firms are more able to build resilience in the economy as the result of ESG-driven innovation which is strongly supported by ECT. Firms can secure their right to exist as organizations and expand their abilities by embracing sustainability and governance in their value creator systems. As Morrison (2021) notes, progress in both governance and environmental sustainability increases complexity and leads to -over time- strong firm performance.

2.3 Previous empirical studies on impact on the Firm Performance

Pandemic at times has proven to be a test for the managerial abilities of the organizaitons, as studies had analysis that managerial ability on firm performance is different during pandemic than during pre-pandemic according to Nguyen et al. (2023). Previous empirical studies have shown that there are negative effects on the firm's performance in post pandemic era as stated by Shen et al. (2020) and Alsamhi et al. (2022). Furhtermore, these studies also clarified how satisfying employees can increase overall productivity of the firm, especially during times of pandemic as stated by Shan and Tang (2022).

This literature review will put light on the existing studies by the researchers on pandemic and epidemic in context of Malaysia. According to some studies it has been evident that Pandemic and Epidemic has impacted Malaysian Businesses as stated in National Library of Medicine (2021) in terms of revenue stated in Malaysian Employers Federation (2022). The theoretical framework shows the relation of government policies and their social, economic and technological impact after the pandemic and epidemic and how it has resulted into technological transformation by having an impact on the performance of the firm. This multidimensional impact will help to study the challenges that pandemics pose, as well as the opportunities to grow as business.

2.4. Organizational Economic Resilience and Digital Transformation

There is a body of research that stresses the strategic significance of digital transformation, albeit with different focuses. For example, Berawi (2021) emphasises efficiency, while Pierri (2020) emphasises resilience during a crisis. On the other hand, Abdelkafi (2022) views digital transformation as an enabler of innovation and future competitiveness. These contributions collectively imply that digital transformation does not just serve one purpose but is a multifaceted capability that enhances efficiency, resilience and innovation simultaneously. But the literature is unclear about which of these outcomes may be most important in the post-pandemic world, suggesting the need for empirical research. Technological and Digital adoption at first requires cost and efforts for the companies to adopt, but in long term continuous digital inputs help in Port Operational Resilience, in case of supply chain disruptions during pandemic according to He et al. (2023). It was also explained in Leo et al. (2023) that Digital Transformation leads to crises management and in turn, crises preparedness increases life satisfaction. Furthermore, studies have shown as the organizations have shifted towards remote working, so it has become challenging for Human Resource Managers to manage employees effectively during pandemic Tanveer et al.

(2020). Furthermore, policy makers and managers have understood the importance of the digital marketing and digital commerce for long-term success and survival of their business Jianli et al. (2023). According to some studies, not only policy makers of the business, but also the government supported E-commerce adoption, keeping in view its positive impact on the business sales as stated by Radeef and Sasidharan (2023). Moreover, the impact of pandemic had negative impact on the firm's performance as stated by Li (2021). Whereas, according to Uzkurt et al. (2023) digital technology acceptance by employees contributes to enriching their knowledge during pandemic

Furthermore, Digital Transformation has stronger impact on firm resilience when information complexity is high as stated by Cui et al. (2022). According to Covid-19 Malaysia (2022), pandemic and epidemic impacts Stock market and worsen the labor market conditions. Furthermore, a study explains the impact of Pandemic and Epidemic on the technological acceleration of Malaysia and how it is having an impact on the firm's performance Tong and Gong (2020). The Pierri andYannick (2020) has given apt evidence of it by stating that had pandemic occurred 5 years ago, then the case would have been different, because of unavailability of the technology in the world. The study stated that the world would have seen 2 percent more unemployment during the pandemic due to unavailability of the technology, because in areas where firms adopted Information Technology saw less unemployment as a consequent to quarantine and social distancing. Smart cities, having modern technologies can enhance overall resilience of the firm against any sort of unprecedented event, such as pandemic. Their ability to enhance the overall planning, absorption and recovery during such unprecedented events make them most reliable choice as stated by Sharifi et al. (2021).

But, not every study gives a totally optimistic view. The early stages of using digital tools often had to deal with significant expenses, not enough IT experience and inadequate digital

infrastructure (Tanveer et al., 2020). Also, He et al. (2023) said that using digital technologies increased port resilience, but firms in developing nations do not have access to these, so the gap between resilient and less resilient regions expanded. Leo et al. (2023) made the link between improved life satisfaction and being ready for crises with digital transformation, but only when technology is already advanced.

Using remote work also created issues for both managers and employees psychologically. Just as Uzkurt and her colleagues (2023) observed, digital technology allowed workers to gain knowledge, though it also increased levels of burnout and struggled communication. Radeef and Sasidharan argue that not all firms could take full advantage of e-commerce and digital migration since small and rural businesses often faced difficulties getting internet access and help from the government (2023). Cui et al. (2022) showed that, in cases where information is highly complex, digital transformation greatly aids a firm's ability to handle disruptions. Alternatively, in firms that mainly focused on only a few activities, shifting to digital pushed them into inefficient actions and disorganization. Tong and Gong (2020) as well as Zhen et al. (2021) pointed out that the pandemic made Malaysians use technology at a quicker rate, but this led to problems such as security gaps, differences in access and too few policies. Sharifi and his team (2021) proposed making use of smart cities and digital ecosystems for greater resistance, but the lack of long-term resources and consistent policies prevents this in developing nations. It is because of this that digitalization can be successful only where there are infrastructure, skilled people and effective governance.

2.5. Environmental, Social and Governance (ESG) Factors

The Covid-19 pandemic made importance of the Environmental, Social and Governance factors evident in recent year and has shown strong emphasis on the social investments for the

companies. Riaa and Mani (2022). The pandemic has not only emphasized on the social investments that can impact the firm's performance, but also has strong emphasize on the inequity that are related to Environmental Health and has called for an urgent need for a systematic approach for these types of issues that occur as mentioned by Moniz et al. (2022). Firms have started investing in Environmental, Social and Governance factors in recent years, despite financial burden during pandemic and the firms investing in ESG have observed pandemic affect was different as stated by Janahi et al. (2022). However, Tanjung and Miranda, (2023) has made the understanding of the overall ESG impact complicating by concluding that ESG firms could not benefit from their investments on ESG activities during pandemic and the overall cost of capital incurred by the firms was negative in Non-ESG firms as compared to the firms that invested in ESG activities. On this skeptic notions, previous empirical studies are reported and analyzed further to juxtapose the positives and negatives of ESG.

According to some studies higher the performance of ESG activities in the firm, smaller the decline in earnings during pandemic as stated by Hwang et al. (2021). When focusing separately on Environmental factor of the ESG, it is evident according to various studies that firm's market performance is positively affected by focusing on the environmental factors as stated by Dangelico and Pontrandolfo (2015). Furthermore, studies have proved that pro-environmental management can boost the productivity and competitiveness as stated by Lundgren and Zhou (2017). However, some studies also criticize the importance of the environmental factor by considering it indirect impact and depending on sector to sector according to López-Gamero et al. (2009). However, criticism was done according to findings of some studies that compliance on ESG makes it financially difficult for the firms, especially during pandemic time when most of the companies undergo financial crunch according to Amosh and Khatib (2023). However, some

specific studies to Malaysian companies have findings that there is no significant relation with ESG and the profitability of the company, but combined score of ESG positively and significantly influences the cost of capital of a company Atan et al. (2018). Subsequently, some studies negate the notion that ESG has impact on the firm's performance, because ESG score is not yet part of firm performance measurement Junius et al. (2020).

In Malaysia ESG factors started with the imitation of corporate responsibility practices Atan et al. (2016). Furthermore, according to the study which is specifically related to importance of ESG in Malaysia states that if we increase one unit of ESG disclosure, it may increase firm performance by at least four percent, which makes it evident of how ESG is relevant to firm performance according to Mohammad and Wasiuzzaman (2021). According to a study it is important to ensure that the business is not contributing to the environmental degradation or human right abuses Camara (2023). It is important to consider the ESG during and after the pandemic as well. To minimum the impact of pandemic on the businesses, it is important to take ESG into the consideration as analysed by Chen et al. (2022). It was evident that firms in Europe showed more inclination towards ESG compliance than the Asian firms. Whereas the Asian firms was more invested in Energy sectors and Asia Pacific firms showed more inclination towards technology according to Shaikh (2022). The post pandemic affects were not limited to male workers and developed countries, but it also had an impact on female workers of developing countries, as discussed in previous empirical studies Wu (2022). It led companies to adopt methodology of Sustainable Human Resource Development, rather than traditional Human Resource Management, which had ethical issues in it Piwowar-Sulej et al (2024). ESG itself has positive and statistically significant impact, yet economically modest impact on firm's performance (Huang, 2021).

Moreover, it is revealed in studies that ESG benefits could make firms appear more attractive to investors and other stakeholders, creating higher value for the firm's assets Nguyen et al. (2022).

Consequently, later studies have identified that Environmental factors, in the face of CSR, when exercised on external stakeholders influences Organizational Performance as analyzed by Singh and Misra (2021).Considering the pandemic time, it was explained in some studies that the organizational culture, job satisfaction and technology provides motivation to work and has significant positive effect on the employee's performance, which leads to overall increasing the firm's performance as stated by Setia et al. (2020). According to Ribeiro-Navarrete et al. (2021) social networking, experienced manager may enhance the company performance, especially during an era of digitalization. Furthermore, as far as social factors contributing firm's performance post pandemic is concerned, it was analyzed by Zhang et al (2021) that firms having Work from Home model performed well with variations related to industry or may be caused by the pandemic. Another proponent study of ESG Veeravel et al. (2024) has also explained positive relation of ESG and the firm's performance by stating that firm's when looking to ensure the sustainability in the firm, needs to ensure the implementation of ESG.

Similar studies were conducted but revealed difference results in Muttaqin et al. (2020), as they analyzed that Work from Home culture has changed the routine of the employees of the company and it requires better control and assiduous leadership pattern to ensure that employees work comfortably. Changing the modus operandi or the in other words, any organizational change depends solely on the Organization's top management and readiness of the organization to change. The above-mentioned dimensions have significant impact on the organizational performance, keeping Malaysian manufacturing industry as a case study to analyze the effect Hameed et al. (2021). Hence the investment used in regard to ESG have turned out to be playing important role

in bolstering the risk related to stock during and after the pandemic crises. Which means that it can also curb the overall negative impact of pandemic on the firm as stated by Mounir and Ali (2022). To measure the ESG implementation and the overall firm's sustainability, ESG index can be a reliable tool as explained by Lokuwaduge and Heenetigala (2017). The tool further can help the firms to compare the ESG performances or other firms to do a comparative analysis.

At the same time, the literature also points out doubts and other issues. According to Tanjung and Miranda (2023), investing in ESG during the pandemic cost companies more financially than not investing which goes against the idea that ESG always benefits companies financially. According to Amosh and Khatib (2023), obeying ESG rules can cost companies extra money when cash resources are being stretched thin in down markets.

López-Gamero et al. (2009) further argued that the performance of companies on environmental factors differs substantially by industry, showing that general ESG benefits may not be constant. ESG disclosure was reported by Atan et al. (2018) to have no effect on the profitability of firms in Malaysia, yet it did affect their cost of capital. According to Junius et al. (2020), questions have been raised about including ESG in firm performance data because there is not a standard way to gauge it. Using ESG can be more complicated because of cultural and regional differences. Even though European firms made greater efforts, Asian firms in the energy and heavy industry sectors trailed, mainly because of cultural and structural disagreements (Shaikh, 2022). Also, firms in developing countries find that investors want ESG ideas adopted, but these firms rarely get help from laws or institutions.

In addition, HR had to deal with ESG-related difficulties. According to Wu (2022), women in developing nations bore more of the burden during the pandemic, showing that ESG policies miss important issues regarding gender equity. According to Piwowar-Sulej et al. (2024), during

the crisis, the old approach to HRM was lacking in ethics, so they said it was essential to design sustainable HR development. Although ESG raises interest from investors and maintains trust with stakeholders (Nguyen et al., 2022), the results are usually not significant. Huang (2021) concluded that ESG does have a statistically strong impact, though the benefits are small. Thus, because ESG cannot address all issues, it should be considered based on company size which industry it belongs to, its location and the situation a company finds itself in.

2.6. ESG, Economic and Technological Impact on Firm's Performance

According to Lin and Qamruzzaman, (2023) a positive linkage between can be noticed between Environmental disclosure, Technological adaption, good governance and the firm's performance sustainability. Despite financial burden that companies have experienced during pandemic, but it may have expedited the adoption the technology and paved way for technological advancements, with a significant boost to innovation. Juhee Hwang and Jung (2021) and Gao et al. (2022) have analyzed through findings that there is a positive relation between ESG performance of a firm and the consequent financial outcomes of it. The ESG inclined activities have also diminish the negative growth performance of the firms during pandemic as well. Zhang (2022) has reported the relationship in other way, as it reported that minimum impact of the ESG performance could be because of increased importance of cash flow during the pandemic. Organizations have shifted their focus towards the investing in technological factors to broaden their scope of doing business as stated by Seyayi (2015).

However, this shift has inverse repercussions such as Cyber-attacks as stated by Lallie et al. (2021) on firms. According to Bendig et al. (2023) digitalization can result in improving overall environmental performance. Furthermore, studies explain the impact of Pandemic and Epidemic on the technological acceleration of Malaysia and how it is having an impact on the firm's

performance according to Tong and Gong (2020) and how that has resulted into change in modus operandi of the companies as stated by Zhen et al. (2021). Several studies have either advocated Digital Transformation or have opposed the consequent of the Digital Transformation, Work from Home model. However, considering Bai et al. (2021), which states that its outcome of the Work from Home effect on the firm's performance depends on ability of the firms to use technology and nontechnological and technological firms. Wang et al. (2023) explained the ESG and Technological relationship and the impact of this relationship on the firm. The study concluded that overall digital transformation is favourable to ESG performance of the firm. However, it also depends on the market dynamics in which the firm is operating. If the firm is operating in the enoviroment which has monopolies operating, digital transformation will be as much effective. The monopolistic market condition of the market bolsters the impact of the digital transformation on ESG performance. Kuznetsov et al. (2019) has explained in proper manner how coporate governance of the pose challenges and oppertunities during an era of digitalization. This understanding is important as the firm's have transformed into an era of digitalizaiton and have pressure to implement ESG. It seems to have a need to understand the challenges that will posed for the corporate governance in digtal era, specially considering the ESG implementation, but it will be counted as the effiencey of the firm if they also identify the oppertunites that it posses.

The theoretical framework starts with the Government policies and announcement on pandemics as stated in Covid-19 report of MOH (2020). It further leads to Social impact that pandemic and epidemic has and linking it with firm's performance according to Lee et al. (2023). Organizations have shifted their focus towards the investing in technological factors to broaden their scope of doing business Seyayi, (2015). However, this shift has inverse repercussions such as Cyber-attacks Lallie et al. (2021) on firms. The study further explains the direct and indirect

economic impact that Pandemic and Epidemic has on firm performance which includes supply chain disrupt as stated in Malaysian Performance Investment Report (2021) and Central Bank of Malaysia (2022) on Stock market and worse labor market conditions. Furthermore, the framework explains the impact of pandemic and Epidemic on the technological acceleration of Malaysia and how it is having an impact on the firm's performance Tong and Gong (2020) and how that has resulted into change in modus operandi of the companies as stated by Zhen et al. (2021).

However, several empirical studies caution against overgeneralizing these benefits. Zhang (2022) argued that during periods of financial strain, firms often deprioritize ESG to preserve cash flow. Similarly, Bai et al. (2021) found that remote work success was largely dependent on a firm's digital readiness—non-tech-oriented businesses often faced operational challenges, reduced productivity, and coordination issues. Digital transformation can enhance ESG performance through better data transparency as mentioned by Wang et al. (2023), but this is context-dependent. In competitive markets, it may lead to superficial ESG adoption or "greenwashing" if not supported by robust governance. Moreover, Lallie et al. (2021) highlighted increased cybersecurity risks linked with rapid digitalization.

Organizational Economic Resilience also plays a critical role. Resilient firms are better positioned to invest in both ESG and digital initiatives, while financially weaker firms may abandon long-term sustainability goals in favor of short-term survival as mentoned by Sarkis (2020). In Malaysia, digital acceleration during the pandemic showed mixed outcomes. While some firms improved performance, others struggled due to inadequate infrastructure or workforce readiness (Tong and Gong (2020) ; Central Bank of Malaysia (2022)). Overall, while ESG and technology can enhance firm resilience and performance, their effectiveness is shaped by sector,

governance quality, and economic conditions. A balanced, context-aware approach is crucial for realizing their full potential.

Assessing ESG's effect, Organizational Economic Resilience and technology changes starts by assessing a firm's performance, as this is usually measured via financial indicators of profit, ROA, market value and operational efficiency according to Hwang and Kim (2021). Because the COVID-19 pandemic hurt companies worldwide, it is important to examine which factors influence the performance of firms in crisis conditions. Studies prove that companies that focus on ESG generally have stable finances and stronger relationships with their stakeholders, also in times of economic problems. Albuquerque and his team (2020) found that U.S. businesses with favorable ESG scores suffered less stock price variation and did better than their counterparts in the first weeks of the pandemic. Also, Malaysian research by Mohammad and Wasiuzzaman (2021)finds that an advance in ESG reporting leads to an overall firm performance boost of up to 4% when applied to long-term planning.

New technologies are also playing a key part. Use of digital systems helped companies maintain their normal operations when the pandemic hit. Zhai et al. (2022) point out that companies with highly developed digital abilities saw increased results in innovation and finances. On the other hand, some side effects were negative. According to Bai et al. (2021), some businesses did not have enough support or training to use technology which reduced their output and made employees unhappy.The ability to remain active inspite of changes or difficulties is possible when a firm is economically resilient. Sarkis (2020) points out that enterprises that are stable or resilient invested heavily in changes when crises hit and managed to continue being profitable. However, several companies that found it hard to survive the pandemic did not have sufficient financial power to invest in recovery which led to slower recovery. Although ESG, technology and

resilience tend to help firms, their impact on performance relies on internal skills, the industry and the way firms are governed. Because of this, empirical literature points out that a lack of these enablers can result in limited or negative performance outcomes.

2.7. Research Gap

It has been evident in the past studies that sustainability is directly interlinked with economic activities. The relation between Digital Transformation and sustainability was properly explained by Machado et al. (2022), targeting post Covid-19 era. However, business research in the study was missing where variables consequently affecting the firm's performance. Furthermore, this study had a wider scope, where it tried to cover macro geography rather than focusing on a single region or a single country. Moreover, according to Wang and Esperança (2023), solutions were provided to improve the firm's performance and ESG performance, but it had little or no exposure to the post pandemic situation that a company can go through and had targeted a different market, China. A similar gap was identified in the Alkaraan et al. (2022), where studies revolved around ESG influence on the firm and also addressed financial performance of the firm. It not only made the post pandemic situation in studies unheeded, but also it focused on the United Kingdom businesses.

Furthermore, according to studies conducted Srinivasan and Eden (2021) post pandemic era is being discussed, while going digital and the Economic and Social imperatives were discussed. However, it lacked the focus on Environmental, Social and Governance when discussing. Another relevant study Moalla and Dammak (2023) explained the ESG performance pre and post pandemic. It also explained how Organizational Economic Resilience, specifically stock market was also affected by the outbreak of the Covid-19 and how it led to relegating the interest of ESG policies. However, the studies had more focus towards stock market only, rather

than focusing on the each factor halting the firm's performance. Subsequently, the study had different target geography, US-Stock market, rather than Malaysian firms. Similar gap was identified in Liu et al. (2023) where corporate ESG performance and stock returns shared close dependence on each other and showed positive relation. However, the studies did not analyze the impact of this positive relation on the firm's performance. Moreover, these studies had geography different from Malaysia and focused on Japan.

Rapid economic growth of the Malaysia makes it participant of the global economic race. Different fast-growing economies such as United States, China, Japan and United Kingdom have multiple studies on ESG and its impact on the firm's performance. Some studies have also analyzed the impact of the Organizational Economic Resilience on the firm performance. However, amalgamation of ESG and Organizational Economic Resilience and its impact on the firm's performance to counter the unprecedented events like pandemic still lack in these studies. Malaysia having diverse cultures in the human resource of the organization needs its very own studies, which will be having demographics that are specific to this country. Furthermore, some of the above reported studies have been found to have analysis on single industry, which makes the scope of the study very limited. To have a prudent analysis, a study is required to have a holistic analysis rather industry specific. Such analysis will prove to be a panacea for the firm's operating in the economy, in this case Malaysian economy and it will also curb it from any unprecedented pandemic in the future.

2.8. Development of Hypothesis

ESG performance and Digital Transformation has a positive relation according to Hao et al. (2023) which mean that if there is digital transformation the ESG performance of the firm will increase and if there is focus of firm to digitally transform, it must focus to digitalize the firm.

Different Hypothesis are drawn which help to demarcate the ESG's each factor as well as Organizational Economic Resilience. This demarcation and narrow analysis will be having a consequent impact on the firm's performance and the hypothesis are shared as under.

2.8.1 Environmental Factors impact on Digital Transformation

Environmental factors need to be considered when considering digital transformation in the organization. Digital transformation, driven by digital technologies, has the potential to positively impact towards environmental sustainability. It can enhance waste management, pollution prevention, and sustainable resource management as stated by Kaluri (2022). This also includes protecting public environment by significantly reducing the emissions that are consequent of pollution activities as stated by Wu et al. (2022) and Wang et al. (2022). Furthermore, it was found that positive impact of digital transformation on the company's overall environmental protection performance, making it a positive relation as well according to Wen et al. (2021). The findings and studies collectively conclude that environmental factors do play a significant and a positive role in digital transformation. Klassen and McLaughlin (1996) found that strong environmental management is linked to improved financial performance, while Gupta and Gupta (2020) demonstrated a positive influence of environmental sustainability on various dimensions of firm performance. Tommy and Zhou (2017) found that organizations prioritizing environmental efficiency can boost productivity and competitiveness, overall increasing the efficiency of the firm. Implementing environmentally friendly practices not only reduces operational costs but also enhances brand reputation, attracting consumers which are inclined towards protecting the environment and investors towards the firm. Efforts such as energy conservation, waste reduction, and sustainable sourcing can lead to cost savings and improved resource utilization, directly or indirectly, but positively impacting firm performance. Such practices can also provide a

competitive edge in markets by increasing sustainability, resulting in increased market share and profitability. It will be apt to conclude that the focus of the firm's towards environmental protection can improve the firm's performance indirectly or may be directly.

H1: Environmental factors significantly influence digital transformation.

2.8.2 Social Factors impact on Digital Transformation

Range of social factors were found to have an impact on digital transformation in an organization and they directly influenced the digital transformation. Subramaniam et al (2021) highlights the role of technology, automation, and collaboration in enabling work from anywhere and work-life balance. Furthermore, Muehlburger et al (2019) stated factors that positively influence a company's ability to initiate digital transformation, with social factors likely playing a significant role. Salam et al. (2021) has pointed out how readiness in an organization lead to digital transformation and emphasized the importance of having support from the senior management during this process. However, Tripathi (2021) has concluded from the findings that other factors which included teamwork in an organization, remote working in the company and overall health and safety of the employees is one of the determinants of digital transformation. This means that digital transformation can be influenced from several social determinants during and after pandemic.

H2: There is significant influence of social factors and positively lead to digital transformation in an organization.

2.8.3 Governance impact on Digital Transformation

Governance plays a significant role in transforming not only an organization, but also overall business environment as well. It is therefore highly important to emphasize on the IT governance to ensure business innovation and transformation according to Pacheco et al. (2020).

Furthermore, IT governance not only helps in innovation and digital transformation, but also it helps to improve overall organizational performance, specifically during pandemic as stated Afifah et al. (2022). The studies not only concluded that governance provides impetus to digital transformation, but also it suggested that digital transformation leads to efficient corporate governance and improves the quality according to Fang et al. (2022). Following the above discussion and support from past studies, the research can be argued that governance positively impact the digital transformation and also impact firm's performance positively, specifically during pandemic.

H3: Governance has positive relation to digital transformation and consequently lead to digital transformation in an organization.

2.8.4 Organizational Economic Resilience impact on Digital Transformation

A body of research, including studies by Ji and Huang (2024), Wang and Chen (2022), Xu et al (2024), and Zhang et al (2021), consistently demonstrates the positive impact of digital transformation on Organizational Economic Resilience. COVID-19 pandemic compelled organizations to adopt digital transformation, requiring substantial resources for technology, training, and business process restructuring. Sarkis (2020) highlighted that such investments are feasible only if a firm possesses Organizational Economic Resilience, the ability to withstand and recover from economic shocks. Organizational Economic Resilience involves maintaining operations, preserving employment, and sustaining profitability during adverse conditions. This resilience allows companies to allocate necessary resources for digital transformation without risking financial stability, giving impetus to digital transformation. Digital transformation, in turn, enhances operational efficiency, customer experience, and revenue streams, contributing to overall economic robustness as stated by Mohamed (2022). Despite challenges like high costs and

potential disruptions, the benefits of digital transformation, such as cost reductions, increased productivity, and innovation, help firms to overcome these obstacles. Firms that are economically resilient are better equipped to undertake and benefit from digital transformation initiatives, which further strengthens their Organizational Economic Resilience.

H4: Organizational Economic Resilience and digital transformation have a positive relationship.

2.8.5 Environmental Factors impact on Firm's Performance

Klassen and McLaughlin (1996) found that strong environmental management is linked to improved financial performance, while Gupta and Gupta (2020) demonstrated a positive influence of environmental sustainability on various dimensions of firm performance. Tommy and Zhou (2017) found that organizations prioritizing environmental efficiency can boost productivity and competitiveness, overall increasing the efficiency of the firm. Implementing environmentally friendly practices not only reduces operational costs but also enhances brand reputation, attracting consumers which are inclined towards protecting the environment and investors towards the firm. Efforts such as energy conservation, waste reduction, and sustainable sourcing can lead to cost savings and improved resource utilization, directly or indirectly, but positively impacting firm performance. Such practices can also provide a competitive edge in markets by increasing sustainability, resulting in increased market share and profitability. It will be apt to conclude that the focus of the firm's towards environmental protection can improve the firm's performance indirectly or may be directly.

H5: Environmental factors have a positive impact on firm performance.

2.8.6 Social Factors impact on Firm's Performance

According to Famiyeh (2017), firms that prioritize corporate social responsibility (CSR) tend to exhibit superior operational performance, specifically in post pandemic era. Deb (2023) also highlights the benefits of Corporate Social Responsibility (CSR) initiatives, which can enhance a firm's financial and non-financial performance, improving overall firm's performance. Engaging in CSR activities can enhance a firm's reputation, leading to increased customer loyalty and attracting socially conscious investors. Jayachandran et al. (2013) also advocates the positive impact of product social performance on firm performance. These firms often experience reduced operational costs through efficient resource utilization and improved waste management practices, increasing the elevation in firm's performance. Additionally, a strong focus on social responsibility fosters a positive work environment, leading to higher employee morale and productivity of the organization. Companies committed to CSR are better positioned to adapt to market changes and regulatory demands, resulting in greater flexibility and resilience. These benefits collectively contribute to improved overall performance, making CSR a strategic asset for firms, specifically in post pandemic era.

H6: Social factors have a positive impact on firm performance.

2.8.7 Governance impact on Firm's Performance

Several studies, including Todorovic (2013), suggest that companies adhering to higher standards of governance in the firm typically exhibit better overall performance. AlSaffar (2018)

and Javaid (2015) also supported this notion, noting that good corporate governance has a positive impact on firm performance. Effective governance ensures transparency, accountability, and ethical conduct within the organization, which can enhance investor confidence and attract capital towards the organization. Well-governed firms are also more likely to have robust risk management practices, reducing the likelihood of financial mismanagement and fraud in the firm. Additionally, high governance standards can lead to better strategic decision-making processes, fostering long-term growth and sustainability in the firm. Such companies often experience improved operational efficiency due to clear policies and procedures, and they tend to have stronger relationships with stakeholders, including customers, employees, and regulatory bodies, increasing overall firm's performance. These governance practices contribute to a stable and resilient organizational structure, ultimately enhancing firm performance.

H7: Governance helps to positively improve the firm's performance.

2.8.8 Organizational Economic Resilience impact on Firm's Performance

Studies have bifurcated Organizational Economic Resilience into macro and microeconomic factors, specifying the scope. According to Hunjra et al. (2014), analyzing microeconomic factors such as production costs, consumer demand, and internal company efficiencies can reveal their significant positive impact on a firm's performance. While Mitra et al (2023) advocated that macro-economic factors have positive relationship between macro-economic factors and firm performance. These factors are directly controllable by the firm and can be optimized to enhance productivity and profitability, increasing the firm's performance. On the other hand, Issah et al. (2017) concluded that macroeconomic indicators, such as GDP growth, inflation rates, and interest rates from the previous year, are crucial for understanding a firm's actual performance, showing the real picture of the firm. These holistic economic conditions

influence market stability, consumer purchasing power, and investment climates, thereby affecting the firm's financial health, which may be crucial for the firm. Combining both micro and macroeconomic analyses provides a comprehensive view of how economic environments shape firm performance, helping companies to strategize effectively, posing significant impact on the firm's performance.

H8: Organizational Economic Resilience has a significant impact on the firm's performance.

2.8.9 Pandemic Risk Perception impact on Firm's Performance

Research indicates that Pandemic Risk Perception significantly impacts firm performance. Stakeholders' perceptions of a company's strategic dimensions, including sustainable development and digital transformation, influence its ability to survive during a pandemic as stated by Hristo, (2021). Improved risk management during crises can enhance organizational performance, with companies adapting by reducing risk appetite and lowering tolerable risk thresholds as stated by Ewertowski and Butlewski (2022). The prevalence of infectious diseases negatively affects nonfinancial corporate performance, particularly for smaller and younger firms, increasing their probability of failure as mentioned by Cevik and Miryugin (2020). An epidemiological susceptibility risk (ESR) index, incorporating factors such as infrastructure, demographics, and institutional governance, proves to be a significant predictor of corporate sales growth and business performance during pandemics like COVID-19 as stated by Mertzanis (2021). These findings underscore the importance of comprehensive risk management and adaptive strategies for firms to navigate pandemic-related challenges.

H9: Pandemic risk perception moderates the relationship between digital transformation and firm performance.

2.8.10 Digital Transformation impact on Firm's Performance

Plethora of studies advocate that digital transformation serves as a panacea for firms during challenging times like the pandemic and its aftereffects. The adoption of digital technologies enables companies to streamline operations, improve efficiency, and enhance customer engagement, increasing the firm's performance. Masoud and Basahel (2023) and Alrawashedh and Shubita (2024) both found that digital transformation significantly enhances firm performance. Digital tools facilitate remote work, automate processes, and provide data-driven insights, which are crucial for maintaining productivity during disruptions caused by pandemic. According to Zhai et al. (2022), digital transformation significantly boosts a firm's performance by fostering innovation, increasing operational agility, and enhancing competitive advantage for the firm. The integration of advanced technologies such as artificial intelligence, cloud computing, and big data analytics allows firms to respond swiftly to market changes, optimize resource allocation, and deliver superior value to customers, increasing the firm's performance. Therefore, digital transformation not only helps firms survive during crises but also positions them for long-term growth and success, impacting positively during post pandemic era.

H10: Digital Transformation has a significant impact on firm's performance.

2.9 Theoretical Framework

The Theoretical Framework mentions the important and key points of the study which includes Environmental, Social and Governance (ESG) factors, the economic determinants that are vital for the firm's performance and Digital Transformation and lays the foundation of theories explaining their interrelation such relation can be understood by looking at Eriandani and Winarno,

(2023), Lu et al. (2023), Wang et al. (2023) and Fang et al. (2022). Considering from the theories such as Stakeholder Theory, Economic Complexity Theory, this review has made the basis of heterogenous dynamic of the study. A detailed and a comprehensive analysis of the study unveils the importance of ESG factors on the firm's performance and studies have shown the interrelation of the environmental responsibility, cooperate social responsibility, multifaced government practices and their financial outcomes on the firms. Furthermore, Organizational Economic Resilience has shown significant influence on the firm's performance and profitability as well. Central to the review involves the exploration of the mediating factor, Digital Transformation and its impact on the firm's performance.

The Digital Transformation not only enhances the efficiency of the company by saving the unnecessary cost and efforts, but also it contributes to implementing the ESG in the firm and unprecedented risks as well. Digital Transformation also brings opportunities and threats to the firm by creating change into the modus operandi of the firms. Previous empirical research underlines the positive implications of ESG factors, Economic and Technological factors on the firm's performance. While some studies have directly addressed the implications of the variables, such as Lunawat and Lunawat (2022). whereas some studies addressed the mediating role of the technological factors as well. Additionally, some studies just could only explain the variables and the mediating role of the Technological factors such as Cheng et al. (2022) and Gao et al. (2023), but some gave apt example of how it could fit into the pandemic times. Some of the studies did also mention Malaysian business market as well. According to Freeman (1984), Stakeholder Theory claims that businesses involve not only employees, customers, investors and regulators, but also the wider society. It also shows how digital transformation supporting transparency, flexibility and stakeholder communications helps link ESG initiatives to results. At the same time,

Economic Complexity Theory (ECT) shows that the way an economy or firm is built and can adjust—using technology, knowledge and depending on other parts—affects its performance when subject to disruptions. Because of ECT, both Organizational Economic Resilience (H8) and pandemic risk perception (H9) are included in the contextual part of the model. The theory suggests that digital transformation (H10) is more important for strategy than for operations, helping a company stay flexible, answer needs faster and complete ESG actions during difficult times. Organizations that have strong digital expertise are more able to respond to shocks which is consistent with ECT's ideas about how agents grow by dealing with complexity, diversity and innovation. The theoretical lenses are applied to the research model by connecting ESG factors and Organizational Economic Resilience (inputs), digital transformation (mediator) and firm performance (output), while risk perception acts as the moderator. Both theories support this occurrence: Stakeholder Theory explains why companies adopt ESG strategies (because of external pressure) and ECT shows how companies use technology to react to crises, as ECT happens during COVID-19. The mixture of stakeholder and economic complexity aspects in the framework makes it possible to evaluate firm actions, capabilities and outcomes in detail. The merging of theories and statistics ensures that the hypotheses are meaningful and useful in real life which improves the benefits of the study to science and practice.

Figure 2.2: Theoretical Framework

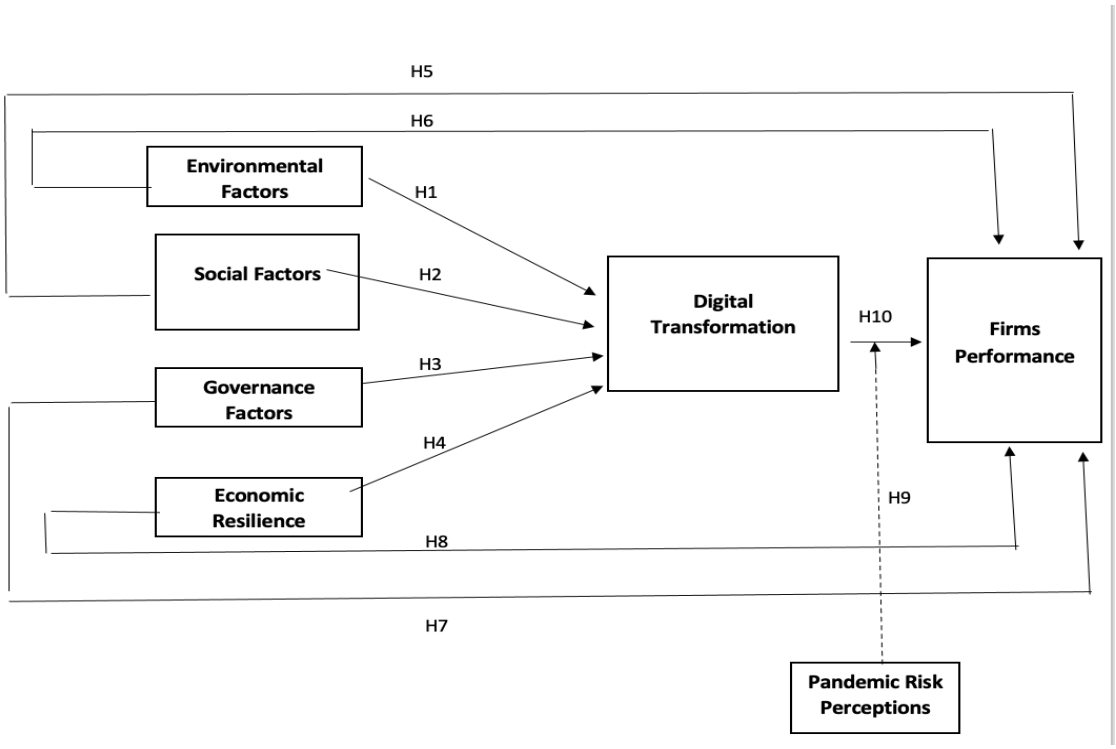

Figure 2. 2: Theoretical Framework

2.10 Summary

The literature reports and analyze the previous empirical studies done to identify the possible impact of ESG and Organizational Economic Resilience and their consequent impact on the firm's performance. First case of Covid-19 in Malaysia was discovered on February 04, 2020 as stated by Menhat et al. (2021), since then Malaysian economy saw devastations in terms of economy, as it deeply relied on exports as pointed out by Statistics of Fourth Quarter of 2022 in Statisics as stated by DOSM (2022). Pragmatic measures by the government led to reopening of the tourism sector in 2020 as stated by Marwan et al. (2020). According to some economists' oil and gas sector may experience slow recovery till 2024 as predicted by Barbosa et al. (2020). In summary, existing literature and studies valuable information into various dimensions influenced

by pandemic. Yet there is a gap in understanding the influence of pandemic and epidemic on ESG and consequently its impact on firm's performance. This research aims to target the gap of studying the impact of Pandemic on Environmental, Social and Governance factors with mediating factor of Digital Transformation and its impact on the firm's performance and will provide practical implications by conducting a case study in Malaysia. Hence to conclude, the review comprehensively highlights the interrelation of the ESG factors, Organizational Economic Resilience and consequent technological advancements and firm's performance, post pandemic era. Understanding this relation is vital for policy makers, business owner, researcher to understand the complexity of the business environment with changing business trends that may foster the business performance or create resilience post pandemic or any such unprecedented events that could occur in the future.

Chapter Three

Research Methodology

3.1 Introduction

The following chapter will be focus on the methodology that will be implemented to collect the data for this research. The chapter will include the research design, data collection methodology, sampling techniques and ethical consideration. In the end, this chapter ends with a summarized description regarding the processing of the data with apt analysis, which will be discussed in the next chapter.

3.2 Research Design

The quantitative data collection will be adopted for this research for this purpose guidance is taken from Creswell and Clark (2017) to conduct the quantitative analysis of the data for the impact of Environmental, Social and Governance (ESG) factors, Digital Transformation and Economic Variables. This approach will enhance the reliability and validity of the variables, as it will provide both quantitative by providing the data from the stakeholders of the firms that have been impacted due to pandemic.

It will have analysis of the data collected. Whereas further quantitative research will be conducted through questionnaires. The research will further undergo a process of Data Collection, Analytical tools and accurate research design for the topic. Furthermore, this right research design will help to achieve the Research Objectives and test the hypothesis which is aimed.

This study adopts a positivist paradigm for the research design. The positivist paradigm is based on the rationale that reality is objective and can be measured and quantified to extract best results. It has high reliance on observable phenomena and employs statistical and mathematical techniques for hypothesis testing and theory development, which is needed for the study. This

paradigm is suitable for this study because it allows for the systematic investigation of the relationships between ESG implementation, digital transformation, Organizational Economic Resilience, and firm performance, as required in this study. By using this paradigm, the study can provide empirical evidence to support the hypotheses and offer generalizable insights that can inform business practices and policymaking, which will further improve the performance of the business.

The study will utilize a quantitative research approach to ensure optimum results. Quantitative research involves the collection and analysis of numerical data to identify patterns, test theories, and make apt predictions that are required for this study. This approach is justified for several reasons such as objectivity in the research as quantitative methodology in research minimizes researcher bias by focusing on numerical data and statistical analysis. Secondly it ensures replicability and the methods used in quantitative research can be replicated by other researchers, ensuring the reliability and validity of the findings, as many researchers can reuse it. Thirdly, it also ensures generalizability, as Quantitative research often involves large sample sizes. However, it is worth noting that the adoption of non-probability purposive sampling approach in this study may limit its generalizability. While the purpose of quantitative research is to generate generalizable results, sampling strategy used in this study is geared towards getting feedback from interested and informed sources rather than complete population representation. Finally, this will ensure apt Hypothesis Testing in the research. This approach is well-suited for testing the specific hypotheses related to the impact of ESG factors, digital transformation, and Organizational Economic Resilience on firm performance.

The study employs a survey method as its research strategy. The survey method involves collecting data from large number of respondents using structured questionnaires. This strategy is

appropriate for this study because it allows for the efficient collection of data from a broad cross-section of firms in Malaysia. It also has rationale for selecting the survey method. Firstly, efficiency will be ensured as surveys can gather data from a large number of respondents in a relatively short period. Secondly, standardization will be ensured, as surveys provide a standardized way of asking questions, ensuring that all respondents interpret the questions similarly. Thirdly, comparability of the research will be guaranteed, as the data collected through surveys are easily comparable across different respondents and firms. Fourthly and lastly, it will be ensured that quantitative analysis will be employed as Surveys yield numerical data that can be subjected to various statistical analyses to test the study's hypotheses.

The questionnaire will be designed to collect primary data from the target respondents on ESG implementation, digital transformation initiatives, Organizational Economic Resilience measures, and firm performance metrics. It will include closed-ended questions with Likert scales to quantify respondents' perceptions and experiences of the respondents. The questionnaire will be distributed electronically and face to face to ensure a broad reach and to facilitate the efficient collection and processing of responses. Before the full-scale survey, the questionnaire will be pre-tested with a small sample of respondents to identify and rectify any issues related to question clarity and format of the questionnaire. Furthermore, primary data will be collected from managers, board members, CEOs, and other executives who are directly or indirectly involved in decision-making processes within their organizations of the organization, further explanation of this will be given in Target Respondent's section. This ensures that the respondents have a comprehensive understanding of the variables under study. Respondents of this study will be assured of the confidentiality and anonymity of their responses to encourage honest and accurate answers for this study.

3.3 Data Collection

The study focus on the Quantitative data and looks for primary data sources rather than Qualitative interviews. The target market is Malaysian companies in various industries. Data were collected through a purposive sampling method to involve managers, executives and decision-makers. The 574 respondents were selected and responses were taken from diverse locations across Malaysia.

3.3.1 Quantitative Data

The data which is of financial nature will be extracted and analyzed from the primary sources such as those questionnaire responses from the respondents. Furthermore, data will be extracted from databases such as World Bank (2024) and International Monetary Fund [IMF] (2024) this addition will help to analyze the actual affect that has been posed during and after the pandemic in Malaysia, making the horizon of the study specific.

The target audience of the study would be the industry experts, managers, employees, depending on the company type and size. In other words, the ones having knowledge of their firms performance. Furthermore, in some case policy makers of the company will also be asked to participate in data collection to ensure actual insight of the impact of governance can be recorded and considered. The questionnaire data will play a vital role in the research.

3.4 Sampling Design

As per Lakens (2022), it is very important to have most appropriate sample design, specifically the sample size for the best analysis of the data in the research. This means that this study will be focused to choose the relevant sample size out of large population. As the sample will be represent the population at large. Issues related to confidentiality, feasibility, time and cost constraints may arise if the researcher study a large population, especially when data collection is

focused towards the companies. To have access to the information of the data collected, it makes important for the researchers to have apt knowledge such as targeted location of the sample, population study including the behaviors of the respondents and overall relevant technique applied to the sample size.

Considering Leguina (2015), large samples lead to more reliable results. Usually in business research samples often consist of sample sizes from 400 companies. The sample size of this research will be calculated using apt statistical formulas that which will to check the desired confidence level, margin of error and the population size with each strata or stratum. Sampling design will be done prior to selecting the target population for this research.

The study used non-probability purposive sampling to gather data from senior employees like executives, board members and managers who were qualified to discuss how ESG and digital transformation influences the company's performance. Researchers thought purposive sampling was right because it helps them choose people with related experience to the research acts. Since the research was about changes in strategy following the pandemic, those who served as the sample were required to have authority at work and understand how COVID-19 disturbed their field. For the four paths to the model's most complex endogenous construct, the minimum sample size needed was 400. The number of participants needed was 380. A total of 571 responses were collected which let us use the results with great confidence. The data collection period covering the period between the end of 2024 and the beginning of 2025 can be regarded as a methodologically ideal timeframe at which the purposes of the exploration of the post-pandemic digital transformation, implementation of ESG, and the implications of Organizational Economic Resilience on the performance of firms within the object of research can be achieved. The reason behind this timing is that it is strategic in terms of several overlapping factors that will help with

the validity and relevance of the study. According to Bank Negara Malaysia's Economic and Monetary Review (2024), most robust post-pandemic growth performance in Malaysia has been witnessed in 2024 whereby Malaysian economy experienced te growth of 5.1 percent in the GDP which is a total cycle of recovery and has enough time lag to ensure it is not too close to the phase of the acute pandemic phase of the intervention and it captures the integrated patterns of transformation. In addition, the 2024-2025 data set will reflect the situation in which such firms have attained their new normal business operation stage in which the digital transformation processes and the ESG strategies are not only implemented in emergency response mode but have been set as components of their normal business operations. The Malaysia Economic Monitor (2024) by the world bank indicates that the recovery trends of Malaysian firms by 2024 constitute institutional adaptation to the pandemic as opposed to a short-term adaptation, and this is an essential period when one should consider the long run consequences of the pandemic induced changes on firm performance. The timing allows the researchers to distinguish between hormonal driven emergency actions and calculated organizational development.

The fact that the external economic conditions stabilized also supports the fact that the methodological appropriateness of this data collection period did not violate the principles of methodological appropriateness. Bank Negara Malaysia (2025) that depict a stable economy at least until 2025 where the GDP would slow down to a rate of 4.7% is an indicator that the firms are functioning in a fairly predictable environment where strategic decisions can be evaluated without the complexities of dealing with crisis at the same time. The OECD economic outlook (2025) substantiates this fact by stating that the Malaysian economic path has largely been stabilized such that meaningful insights can be acquired into the drivers of organizational

performance. This time aligning makes the research results representative of the process of conducting sustainable business more than the decision as a reaction to the crisis.

The choice of this period of data collection accords with the existing principles of research methodology into investigating the organizational behavior and change outcomes post crisis. The economic indicators of Malaysia show that 2024 was the year when the initial stage of recovery was over, and a new way of doing businesses became stable, which is why it is an excellent time to evaluate the long-term effects of digital transformation and the execution of ESG ideas. According to a report by the Department of Statistics of Malaysia (2025), the unemployment levels stabilized at 3.1 per cent in February 2025 which was lower than that experienced before the pandemic hence the firms had time to execute and consolidate their strategic reactions to the pandemic shocks. This is temporal location that enables one to observe the mature transformation processes and not to observe reactive crisis measures.

Malaysia's most important economic sectors are services, manufacturing and construction, so the study took care to include companies from these industries. This group was made up of businesses in tourism, education, ICT, retail and healthcare, because the largest share of Malaysia's economy is the services sector (57% as stated by DOSM in 2023). The manufacturing sector makes up about 24% of GDP and was filtered out because it was especially important for changes in both the environment and business operations, during the pandemic. Because of Malaysia's strict rules around construction which calls for digital and ESG changes, this sector was included in the analysis of the recovery. Mapping the sectors made sure the findings showed how ready each

sector is for digital change, its governance models and how it follows ESG guidelines in Malaysia's changed economy.

So that the study would capture Malaysia's economic diversity, the sampling reached out to firms operating in essential industries such as the services, manufacturing and technology sectors. These sectors were choses as they play a big role in Malaysia's GDP and each sector has a different experience with ESG implementation and adopting digitization. The Department of Statistics Malaysia (DOSM) and World Bank suggest that these industries had to adjust more than others during the COVID-19 pandemic, yet they dedicated much effort to using digital tools and becoming greener. The targeted approach focuses on firms that help to achieve the research goals which look into how ESG and resilience impact company performance after the pandemic. Concentrating on these sectors makes the results usable in different countries and fitting for Malaysia after the pandemic. Considering O'Neill (2024), the breakdown of industries in Malaysia is following. As of 2022, Services Sector contribute 50.93%, Industry Sector contributes 39.1% of the economy and Agricultre Sector contributes 8.92% to the economy of Malaysia. Where as percentage of firm's in Peninsular Malaysia is mentioned in this table:

Table 3. 1: Number of SMEs by state

State	**Number of SMEs**
Selangor	179,271
Kuala Lumpur	133,703
Johor	98,190
Perak	75,140

Penang	66,921
Putrajaya	1,236
Perlis	6,808
Malacca	31,361
Kelantan	46,618
Negeri Sembilan	32,721
Terenggau	29,324
Labuan	2,567
Pahang	37,573
Total	741,433

Source: **Economic Census 2016, SME profile, Statistic Department of Malaysia**

The data above is latest available data in tabular form and is collected from Department of Statistics Malaysia Official Portal, SME Corp. Malaysia-State and Sectoral Distributions of SMEs and Economic Census Report-Malaysian Government Publications. The mentioned number of firms are estimated number of firms and does contain as per latest available information.

3.4.1 Sampling Technique

Purposive sampling is a non-probability sampling approach in which the samples are chosen with purpose, using purposive sample are peculiar characteristics, expertise or interest or otherwise as relevant to the nature of research proposed. This method is especially helpful if the focus is to receive insights from a specific group like industry experts and managers that can give rich meaningful data. It enables the researcher to be able to guarantee that the chosen individuals

have the required knowledge and experience that will enable them to provide valuable information to a study which is a key factor in accomplishing the aims of this research.

Purposive sampling is selected in the context of the present study because of the peculiarity of the target population—manufacturing students (industry experts and managers). This technique enables to choose the participants deliberately and according to his knowledge, experience, and relevance to the research focus. By organising to study individuals directly involved in or have keen insights on the industry, the study helps obtain rich meaningful and reliable data. Further, it helps to conserve both time and resources in that it allows one to focus on a well-defined group with who can give a great insight, thus increasing the depth and practicality of the research results.

3.4.2 Justification of choosing Sample size

The justification for the sample size is rooted in ensuring statistical validity and reliability of the tests. By using the Yamane (1967) formula and Purposive Sampling technique, the study aims to achieve a high confidence level (95%) and a manageable margin of error (5%). This methodological rigor ensures that the sample size is neither too large to be impractical nor too small to be statistically insignificant.

3.4.3 Criteria for Selecting Samples

To ensure that the sample is as representative as possible of the broader population of firms in Malaysia, certain criteria will be established for selecting firms to participate in the study. These criteria include Industry Representation, as firms from various industries (e.g., manufacturing, services, technology, finance) will be included to ensure diversity in the sample and to capture the different impacts of ESG factors and digital transformation across sectors of businesses. Secondly, only firms and individuals who are willing to participate and provide honest

and comprehensive responses will be included in this study. This ensures the reliability and validity of the data collected for the study.

It makes researchers responsible to identify the relevant cluster for their data out of large data, focusing specifically on the research domain. In this research study, the target population will be the ones in organizations who are directly or indirectly involved in policy making. Furthermore, focus will be on the ones having the knowledge of the holistic picture of the firm, meaning that they should be associated with company for significant amount of the time to identify the impact of the variables on the firm's performance. However, various samples from the decision makers will be taken that serve in organizations in Malaysia.

As discussed earlier, the target sample of this research are the ones directly or indirectly involved in the decision making of the company, this means that managers, board of directors, CEOs and other executives will be the target sample. The reason to select them as the target population makes the objective of this study more viable generally make these individuals an apt respondent for the questionnaire as well. Additionally, these set of individuals have a holistic overview of the company and have seen objectives with prudent vision.

Certain criteria were used to choose participants so that the data represented the real situation in Malaysian businesses. Respondentias were asked to be part of decision-making or policy-setting teams within their companies such as board members, senior executives, managers and directors. Because of their knowledge of strategies, challenges and goals across the organization—especially during the post-pandemic period—they became targets. To help guarantee reliable responses, all participants had to have three or more years working in their profession. To guarantee responses relating to structured management, proper ESG practices and digital changes, the analysis covered only organizations with at least 50 employees. Additionally,

only firms with annual earnings over RM 10 million were considered. The industries chosen reflected how Malaysia's economy is structured and how important ESG and digital transformations are in each industry. Being aware of their strong effect on the environment and their key part in rebuilding and upgrading infrastructure, most respondents focused on the manufacturing and construction sectors. Respondents were also gathered from services, schools, tourism, healthcare, retail, farming and technology areas to represent a variety of Malaysian industries. By doing this, the results are relevant to more than one company or production setting. Also, having a representative mix of countries and industries was seen as essential to studying differences in business practices and ESG use among different regions. Those who took part in the study were sampled from Kuala Lumpur, Johor, Pulau Pinang, Selangor and Sabah which represent not only Malaysia's economic powerhouses but also its fast-growing territories.

3.4.4 Determining the Sample Size

To ensure a robust and statistically valid sample size, this study will utilize the Yamane (1967) formula, which is commonly used for determining sample sizes in research studies. The formula is as follows:

$$n = \frac{N}{1+N(e^2)}$$

Where:

- *n* is the sample size,
- *N* is the population size,
- *e* is the margin of error (acceptable error level, usually set at 0.05 for a 95% confidence level).

Given the population size (*N*) of companies operating in Malaysia and assuming a margin of error (*e*) of 0.05, the sample size will be calculated to ensure sufficient representation and accuracy of the sample. N= 1,560,578 represent total number of companies in Malaysia as of June 2024. Whereas N= 929,062 is total number of businesses in Malaysia as of June 2024. The data is extracted from Companies Commission of Malaysia where the data is taken from the overall economy rather than specific industry. Whereas the data in Table 3.1 states SMEs data, which was last and only available data related to bifurcation of businesses state wise.

Considering this to calculate the sample size:

$$n=\frac{1{,}560{,}578}{1+1{,}560{,}578\ (0.05^2)}$$

$$n=\frac{1560578}{1+1560578(0.0025)}$$

$$n=\frac{1560578}{1+3{,}901.455}$$

$$n=\frac{1560578}{3{,}902.455}$$

$$n\approx 399.88$$

Furthermore, considering total number of businesses in Malaysia:

$$n=\frac{929{,}062}{1+929{,}062\ (0.05^2)}$$

$$n=\frac{9{,}29{,}062}{1+9{,}29{,}062\ (0.0025)}$$

$$n=\frac{929{,}062}{1+23{,}226.5725}$$

$$n=\frac{929{,}062}{23{,}227.5725}$$

$n \approx 399.84$

Hence, approximately 400 respondents, considering SSM (2022) would be an appropriate sample size for this study, ensuring a high level of confidence and accuracy.

3.5 Data Collection Methods

The questionnaire for this study will include sections on ESG implementation, digital transformation, Organizational Economic Resilience, and firm performance. Questions will quantitative in nature. Additionally, the questionnaire for this study will be pre-tested with a small group of respondents to ensure clarity, relevance, and reliability of the questions which will be designed. Necessary adjustments will be made based on feedback from the respondents.

For the distribution of the questionnaire, primary mode of administering the questionnaire will be through an online survey tool which will include Google Forms or SurveyMonkey. This allows for easy distribution of questionnaire and efficient data collection. Personalized email invitations were sent to potential participants explaining the purpose of the study, the importance of their participation, and instructions for completing the questionnaire. Reminders will be sent to non-respondents one week after the initial invitation and another reminder after two weeks to encourage participation. Furthermore, Researchers of this study will attend relevant expos and events happening in Peninsular Malaysia to distribute and collect questionnaires in person. They will engage with participants directly and will help explain the purpose of the study, answer any questions they might have, and encourage immediate completion of the questionnaire. Target to complete the data collection is 3-6 months in total.

Methods employed for Ensuring High Response Rate and Handling Non-Responses will be firstly, engagement strategies, which will include personalization, where emails will be personalized to make participants feel valued and highlight the importance of their specific input.

Furthermore, participants may be offered incentives such as summary results of the study, which could provide valuable insights for their own firms. Additionally, face-to-face interactions at expos and events will be ensured to increase engagement and willingness to participate. Secondly, follow-up reminders will be sent to potential reminders, and it will further include structured reminders, where two follow-up reminders will be sent. The first reminder to potential respondents will be sent one week after the initial invitation and the second reminder after two weeks. Additionally, besides email, other contact methods will be used such a phone calls and LinkedIn messages, which may be used for critical respondents. Thirdly for handling non-responses, analysis of non-respondents will be done. If a significant number of non-responses occur, an analysis will be conducted to understand potential biases. This could include comparing early and late respondents to check for any systematic differences. s

Data collection was done from different locations including Johor Baru, Penang, Kampar and Kuala Lumpur. The event that helped to connect with potential responses were Oil and Gas Asia Form, where majority of respondents took part. Secondly, Asia and Pacific Semi connector Summit 2024 also contributed significantly in providing target respondents. Thirdly, social events in Johor Baru and Penang, such as Food Expo helped to connect with relevant respondents, due to their presence.

Primary data were collected from executives, managers and board members working in Malaysian firms through using a structured questionnaire. Previous studies were used to select the questions included in the questionnaire, so it could be validated and relied on. On a 5-point Likert scale, one stood for “Strongly Disagree” and five stood for “Strongly Agree.” People in the social sciences widely use this scale type because it allows for clear and comparable assessment of attitudes.Four items each were used to represent the constructs to reach proper coverage and

consistency. More specific details on digital transformation were obtained from four items (DT1, DT3, DT5, DT7), found in the works of Jardak and Hamad (2022) and Tandon et al. (2021). Four Organizational Economic Resilience items (ER4, ER5, ER6, ER7) were also used, based on the concepts in modern business resilience frameworks. For environmental factors, the study used four indicators (EF1, EF2, EF3, EF5) guided by the research of Sarkis et al. (2020) and Le Quéré et al. (2020). The social and governance factors (SF2, SF3, SF4, SF7 for social and GF6, GF7, GF8, GF9 for governance) were based on existing ESG metrics and resources, specifically Anas et al. (2023) and Liang and Renneboog (2003). Pandemic risk perception was measured via four questions (PRP1, PRP2, PRP3, PRP4) adopted from Almustafa et al. (2023) and Sharma et al. (2020). Firm performance was measured by four indicators (FP1–FP4) which are in line with existing studies on financial and operational results.

3.6 Questionnaire Design

Considering Murray (1999), questionnaire is the most effective way to collect the data. All it requires English language for the questionnaire to be effective. Keeping forth this notion, the questionnaire will be used to collect the data for this research, looking at the convenience and cost effectiveness. However, the questionnaire may vary from being in printed form or the online collection. The face-to-face questionnaire is usually a time consuming and costly method for the data collection as explained by Pramod R Regmi et al. (2016), so the data collection will be done online google forms to avoid any delay and unnecessary costs.

Moreover, to gather responses from the respondents, QR code or the link will be shared via online medium. This method will be to avoid unnecessary problems for the respondents to access the questionnaire, making the data collection easy for the respondents as well.

Table 3. 2: Questionnaire design

Construct Name	Code of the Item	Item	References
Firm's performance	FP1	Our firm's revenue has significantly decreased due to the COVID-19 pandemic.	Bartik et al. (2020)
	FP2	We have had to make significant operational adjustments to cope with the impacts of COVID-19.	Bartik et al. (2020)
	FP3	Our firm has reduced the number of employees because of the pandemic.	Ivanov (2022)
	FP4	Our supply chain has experienced disruptions due to the COVID-19 pandemic.	Queiroz et al. (2020).
Social Factor	SF2	Employee morale and well-being have significantly influenced our firm's performance after the pandemic.	Brown et al. (2022)
	SF3	Maintaining strong relationships with customers has been vital for our firm's recovery post-pandemic.	Dwivedi et al. (2021).
	SF4	Increased engagement on social media platforms has positively impacted our firm's performance in the post-pandemic era.	Salam et al. (2021).
	SF7	Pandemics affected collaboration and team dynamics within your organization.	Salam et al. (2021).
Organizational Economic Resilience	ER4	Our firm's diversified product or service offerings have contributed to our Organizational Economic Resilience post-pandemic.	Simmien and Martin, (2010)
	ER5	Flexibility in our supply chain management has been key to maintaining our firm's performance during the post-pandemic era.	Guan et al. (2020)
	ER6	It was challenging for your firm's imports and exports for your firm during pandemics, epidemics, and their consequent changes.	Guan et al. (2020)
	ER7	Profit margins impacted for your firm during pandemics, epidemics, and their consequent changes.	Donthu and Gustafsson, (2020)
	DT1	Our firm's operational efficiency has improved due to digital transformation initiatives implemented after the pandemic.	Jardak and Hamad, (2022)

Digital Transformation	DT3	Customer satisfaction has increased due to the digital transformation efforts our firm undertook after the pandemic.	Tandon et al. (2021)
	DT5	Digital transformation has enhanced our firm's competitiveness in the market following the pandemic.	Tandon et al. (2021)
	DT7	Digital transformation influenced your firm's revenue growth post-pandemic.	Tandon et al. (2021)
Pandemic Risk Perception	PRP1	Your firm's overall revenue has been negatively impacted due to pandemic-related risks.	Almustafa et al. (2023)
	PRP2	Your firm's operational costs have increased due to enhanced health and safety measures implemented during the pandemics.	Verma and Gustafsson. (2020).
	PRP3	Pandemic has negatively affected your firm's supply chain efficiency.	Verma and Gustafsson. (2020).
	PRP4	Customer demand for your firm's products or services has declined due to pandemic-related concerns.	Sharma et al. (2020).
Governance Factors	GF6	The size of our audit committee has been effective in improving financial oversight and performance during the recovery from the pandemic.	Anas et al. (2023)
	GF7	Directors serving on multiple boards (board busyness) have had a positive impact on our firm's performance post-pandemic.	Liang and Renneboog (2003)
	GF8	Our firm's commitment to CSR activities has significantly improved our performance in the post-pandemic era.	Liang and Renneboog (2003)
	GF9	Effective corporate governance practices, such as regular audits and transparent reporting, lead to improved firm performance.	Liang and Renneboog (2003)
Environmental Factors	EF1	Our firm has increased investments in sustainable practices post-pandemic.	Sarkis et al. (2020)
	EF2	Complying with new environmental regulations post-pandemic has affected our business operations.	Le Quéré et al.(2020).
	EF3	We have improved our energy efficiency as a response to environmental concerns heightened by the pandemic.	Rochedo et al. (2021)

	EF5	There is a greater demand for environmentally friendly products/services from our customers post-pandemic.	Rochedo et al. (2021)

3.6.1 Techniques to check Reliability and Validity

3.6.1.1 Reliability

The meaning of reliability is that the measurement instruments consistently reflect the intended idea. In this case, researchers assessed how well items work together by using Cronbach's alpha and composite reliability (CR). 0.70 was set as the standard for both measurements to show an acceptable pattern. All the measures showed results above the needed values which points to strong reliability.

A Pilot Test group of 38 respondents, made up of senior personnel in Malaysian companies, was used to test how clear, consistent and organized the questionnaire was. A pilot study of 38 respondents was undertaken to allow the proper validation and reliability of the research instruments to be undertaken before the actual collection of main data commenced. Such a samplesize is in line with the accepted methodological principles of the pilot testing. Hertzog (2008) says, a sufficient number of participants is 10 to 40 to evaluate the clarity of items and reliability of instruments and feasibility of the study in general. On the same note, Julious (2005) recommends a rule of thumb of 12 people per group or a minimum of 30 people collectively in pilot studies that are geared to assess parameters. Moreover, Van Teijlingen and Hundley (2001) suggest that pilot studies must contain at least 30 cases or percentage of projected total numbers of cases, whatever is larger. Thus, the chosen sample of 38 persons who were recruited during this pilot stage can be deemed not only methodologically effective but also enough to test the survey instrument before a full-scale data collection. ssA Cronbach alpha was used as an indication of the

internal consistence of the research instrument. The coefficient is commonly applied in social science study to determine the extent of correlation among items in a measure. Nunnally and Bernstein (1994) referred to Cronbach alpha as acceptable in terms of establishing initial reliability at least with the initial stage of research that is pilot testing whereby the value is quoted at 0.70-reliability level and above. Moreover, George and Mallery (2003) provide generally accepted guidelines: values of alpha values of >= 0,90 are regarded as awesome, 0.80-0.89 great, 0.70-0.79 accept above average. Although values greater than 0.90 are considered to indicate high consistency, elevated coefficients (above 0.95), depending on their interpretations, can imply the possibility of redundancy between items. Hence, the application of Cronbach alpha in the research yields good grounds of scale reliability evaluation and the uniformity of questionnaire prior to full-scale data collection. The remarks from the reviewers prompted updates to language and layout, mainly in confusing areas.

The Reliability refers to the consistency of a measure. A measure is considered reliable if it would yield the same results under consistent conditions such as in Cronbach's Alpha. The purpose is to assess the internal consistency of a set of items, indicating they measure the same underlying construct. The procedure to calculate the Cronbamch's alpha for each scale in the questionnaire is that values range from 0 to 1, with higher values indicating greater reliability. A common threshold for acceptable reliability is 0.70 or higher as stated by Tavakol and Dennick (2011). If the alpha value is below 0.70, items that are poorly correlated with the overall scale can be identified and possibly removed to improve reliability. The application of it is that each of the key variables such as environmental factors, social factors, governance factors, Organizational Economic Resilience, digital transformation, firm performance, pandemic risk perception will have their Cronbach's alpha calculated to ensure reliability.

3.6.1.2 Validity

The instrument must measure what it is supposed to measure, as examined by validity. It evaluated content validity, construct validity and convergent validity in this study. To achieve content validity, questions included were adjusted from proven and scientific sources. Two academics and one professional from the relevant industry also looked at every item to make sure it was easy to understand, in line with the objectives and meaningful. Evidence of construct validity came from the factor loadings obtained through SmartPLS. All scores among the items were over 0.60 on each construct, verifying that each group of items stood for one cohesive and different concept.Average Variance Extracted (AVE) was used to confirm convergent validity. Data showed that each scale had an AVE above 0.50, suggesting the items in the questionnaire shared a lot of variance and measured the same main element. Heterotrait-Monotrait (HTMT) ratios were all below 0.90 for all variables, confirming discriminant validity. As a result, each construct was shown to measure something different from the others which confirmed the structure of the model.

Moreover, validity refers to the extent to which a measure accurately represents the concept it is intended to measure. For this study content validity needs to be implied, because it ensures that the measure covers the entire range of the concept's meaning. The Procedure to check the validity is to employ Subject matter experts (SMEs), which will review the questionnaire items to ensure they comprehensively cover the construct being measured. Further to this, they will use the Item-Content Validity Index (I-CVI) to quantitatively assess content validity as stated by Polit et al (2007). The I-CVI Calculation will start when SMEs rate the relevance of each item on a 4-point scale (1 = Not relevant, 2 = Somewhat relevant, 3 = Quite relevant, 4 = Highly relevant). Moving towards to calculate I-CVI for each item as the proportion of SMEs giving a rating of 3 or 4. A common threshold for acceptable I-CVI is 0.78 or higher as stated by Polit et al (2007). For the

application, each item for the key variables will be evaluated using I-CVI to ensure content validity.

3.7 Data Analysis

For the purpose of this study Smart PLS version 4 is used to conduct the Partial Least Squares, employing the Structural Equation Modeling Analysis, as the newer versions have enhanced user friendliness of the software, as stated by Sarstedt and Cheah (2019). The reason to employ this method is to comprehend the relationship between the stated variables and this method can efficiently handle the smaller sample sizes. To test the validity of the measurement model and the structural model, PLS-SEM 4.0 is being utilized. Furthermore, to test significance of the paths and mediating effects, Bootstrapping method is used with resamples as well as instructed by Zhang et al. (2012).

3.7.1 Software

The data for this research study will be analyzed with the help of SPSS v29 for conducting the descriptive statistics, correlation analysis and multiple regression analysis. Second software that will used to analyze the data will be Microsoft Excel for initial data cleaning, organization and early analysis of the study. It will help in managing and organizing raw data before importing it into specialized statistical software. Excel will also create basic charts, graphs and tables to summarize findings Furthermore, it will generate frequency distributions for categorical variables to understand their distribution and proportion within the sample.

Additionally, PLS-SEM 4.0 will be used to for more complex sample size and where the sample size would be smaller, as PLS-SEM 4.0 is a statistical technique that allows for the analysis of complex relationships between observed and latent variables. It is particularly useful when the research model involves multiple constructs with multiple indicators the application of it to the

study would be data cleaning where it will assist in handling missing values, detecting outliers and data transformation for the research. Furthermore, PLS-SEM 4.0 focuses on maximizing the explained variance of the dependent constructs and is appropriate for exploratory research or when the research model is complex and involves a large number of indicators. The SmartPLS4 is employed, because it is a robust software tool specifically designed for PLS-SEM 4.0 analysis. It offers a user-friendly interface and a wide range of functionalities for conducting both the measurement model assessment and the structural model assessment, which is exactly required for this research. Specifically aligning with the research, it will help in handling complex models, because it can manage models with multiple dependent and independent variables, making it ideal for studies involving various ESG factors, Organizational Economic Resilience, digital transformation, and firm performance. Secondly, it will conduct prediction orientation as PLS-SEM 4.0 is designed for prediction and theory building rather than theory testing, making it suitable for exploratory studies. Thirdly, it will conduct Minimal Distributional Assumptions as PLS-SEM 4.0 does not assume normal distribution of data, making it robust for non-normally distributed datasets.

3.7.2 Statistical Tests

To summarize the data, coupled with the ranges key variables descriptive statistics will be used. The data that will be summarized will include means, medians and standard deviations. Whereas ranges of key variables will include ESG scores of the firm, its Organizational Economic Resilience metrics, digital transformation indices of the firm and key performance indicators of the firm.

Additionally, to conduct the correlation analysis of this study in which relationships between ESG practices, Organizational Economic Resilience, digital transformation and firm

performance will be studied. To conduct this analysis Pearson correlation analysis will be conducted to examine above mentioned relationships.

Subsequently, to conduct the regression analysis of this study, where impact of ESG practices and Organizational Economic Resilience on digital transformation and, in turn, the effect of digital transformation on firm performance will be analyzed, multiple regression analysis will be conducted. Three different models will be applied to the regression analysis. Firstly, the Organizational Economic Resilience as a function of ESG practices. Secondly, digital transformation as a function of Organizational Economic Resilience and ESG practices. Thirdly, a model which explains firm performance as a Digital Transformation, Organizational Economic Resilience and ESG practices.

Capturing the interplay between ESG practices, Organizational Economic Resilience, digital transformation and firm performance is a complex task, hence Structural Equation Modeling (SEM) using SPSS AMOS will be employed for this task. One of positive qualities that SEM has is that this method will allow simultaneous testing of the multiple pathways and effects that this study pose.

Thresholds and Significance Levels

For all statistic tests that will be involved in this study, significance level (alpha) of 0.5 will be used. It further will have different thresholds such as Pearson Correlation Coefficient, Regression Coefficients and SEM will be used. Pearson Correlation Coefficient will be used with the value ± 0.3 to ± 0.5 will considered to be moderate and the values which will be greater than ± 0.5 will be considered as strong. Furthermore, the Regression Coefficients will be having p-values less than 0.05 and will indicate that the value has statistical significance.

This study uses standard cut-off points for every important analysis to make sure the results are statistically valid. Statistical significance will be inferred if the p-value is less than 0.05. A result with a p-value lower than 0.05 shows that the predictor is significant for regression models. Model strength will be assessed by the R^2 value and anything above 0.67 is considered substantial, from 0.33 to 0.66 is seen as moderate and anything below 0.33 is seen as weak. VIF values will show you if multicollinearity exists and here, anything up to 3.3 is acceptable.

In SEM analysis, to determine if the model fits well, compare SRMR (less than 0.08 for enough fit) and NFI (a value of 0.90 or higher is desired). In addition, Chi-square, d_ULS and d_G will be mentioned for looking at how well the model fits overall. Cronbach's alpha and composite reliability (rho_A and rho_C) are used to check reliability and both should have a minimum value of 0.70. A measure of 0.50 should be observed in AVE to show effective convergence. HTMT ratio is acceptable if it does not exceed 0.90. Reaching all of these thresholds together guarantees that the findings are dependable and correct.

3.7.4 Pre-Test

A pre-test will be conducted to ensure that the questionnaire is clear, concise, and free from ambiguities. The pre-test involves a small number of 5 subject matter expert who are not part of the actual study. This group helped identify any issues with the wording, structure, or understanding of the questions, as mentioned by Maxwell (2012). The feedback obtained was used to refine the questionnaire, ensuring that it accurately captures the intended data. The steps involved in the pre-test are selection of Pre-Test experts, in which participants were selected based on their knowledge on the topic, ensuring they have relevant knowledge and experience. Looking at the perquisites, distribution of questionnaire is done. In this step pre-test questionnaire was distributed to the selected participants via email or in person. Subsequently, collection of feedback

was done in which participants provided feedback on the clarity, relevance, and comprehensibility of each question, as stated by Gill et al (2008). lastly, revision of questionnaire will based on the feedback, necessary adjustments made to improve the questionnaire's clarity and effectiveness.

3.7.5 Pilot Test

Following the pre-test, a pilot test is conducted to further validate the questionnaire and the data collection process. The pilot test involves a larger sample, typically 30-50 respondents, who are representative of the target population. This test aims to identify any remaining issues and to test the reliability and validity of the questionnaire as stated by Connelly (2008). The pilot test also provides preliminary data that can be used to refine the study's methodology. The steps involved in the pilot test are firstly, selection of pilot test participants, where participants were chosen to closely match the demographics and characteristics of the actual study's target population as stated by Thabane et al. (2010). Secondly, administration of questionnaire is done. In this step, the revised questionnaire was be distributed to the pilot test participants through the same method planned for the main study such as online survey and in-person distribution. Thirdly, data collection and analysis, in which Responses were collected and analyzed to test the reliability and validity of the questionnaire. Reliability was assessed using Cronbach's alpha to measure internal consistency. Validity was checked through Item-Content Validity Index (I-CVI) and feedback from respondents as stated by Polit and Beck (2006). Thirdly identification of issues is done. In this step any issues related to question comprehension, response rates, or data collection procedures will be identified and addressed. Lastly, final revision. In this last step of Pilot-Testing, based on the findings from the pilot test, the final revisions will be made to the questionnaire and the data collection process to ensure accuracy and reliability in the main study.

3.8 Ethical Consideration

The research will evolve around the ethics and human grounds will be taken into consideration throughout the research. Furthermore, the research will consist of the series of interviews with the stakeholders and ethical consideration will be the most priority.

3.8.1 Informed Consent

Participants of the questionnaire will be informed about the purpose of the research and their participation in the data collection. Before participation, all potential respondents will be given detailed information about the research, including its purpose, objectives, methodology, potential benefits, and any risks involved as stated by Bryman (2016)

Therefore, prior to conducting interview or asking them to participate in the questionnaire, the stakeholders will be informed. The information will be provided about the research topic, research objectives, the procedure of the data collection activity and the potential benefits or any risks involved in the data collection. Furthermore, the voluntary consent of the participants will also be taken, and they will be given an opportunity to ask questions regarding the data collection or maybe the research as a whole.

3.8.2 Confidentiality of the participants

As the process involves the participants to voluntary provide the information for the research, so their confidentiality will be the top priority following the research code of conduct. This will involve storing data by keeping in mind the anonymity of the participants. Furthermore, the anonymity will be placed until there is need for disclosure and the disclosure will take place with only the permission of the participants. This research will provide the responses from different companies and the manager, so that real impact of the pandemic on the firm's performance can be measured, making confidentiality most priority.

3.8.3 Process for Obtaining Ethical Clearance

To ensure the ethical integrity of the research, the following steps will be taken to obtain ethical clearance such as firstly submission of research proposal with a detailed research proposal, including objectives, methodology, potential risks and benefits, and ethical considerations, will be prepared. Secondly, Ethics Committee Approval will be involved in which the proposal will be submitted to Institute of Postgraduate Studies and Research of UTAR for ethics committee for review and approval.

This may include the ISPR of the university, as stated by Bryman (2016). Thirdly, compliance with guidelines will be ensured where the research will comply with the ethical guidelines and standards set by the ISPR, including any revisions or recommendations provided during the review process. Lastly, continuous monitoring will be ensured where ethical considerations will be continuously monitored throughout the research process. Any issues that arise will be addressed promptly, and additional approvals will be sought if the research design changes significantly.

3.7 Conclusion

A detailed and a comprehensive analysis of the study unveils the importance of ESG factors on the firm's performance and studies have shown the interrelation of the environmental responsibility, cooperate social responsibility, multifaced government practices and their financial outcomes on the firms. Furthermore, Organizational Economic Resilience in firms have shown significant influence on the firm's performance and profitability as well.

Central to the review involves the exploration of the mediating factor, Digital Transformation and its impact on the firm's performance. The Digital Transformation not only enhances the efficiency of the company by saving the unnecessary cost and efforts, but also it

contributes in implementing the ESG in the firm and unprecedented risks as well. Digital Transformation also brings opportunities and threats to the firm by creating change into the modus operandi of the firms.

Previous empirical research underlines the positive implications of ESG factors, Economic and Technological factors on the firm's performance. While some studies have directly addressed the implications of the variables, whereas some studies addressed the mediating role of the technological factors as well. Additionally, some studies just could only explain the variables and the mediating role of the Technological factors, but some gave apt example of how it could fit into the pandemic times. Some of the studies did also mention Malaysian business market as well.

Hence to conclude, the review comprehensively highlights the interrelation of the ESG factors, Organizational Economic Resilience and consequent technological advancements and firm's performance, post pandemic era. Understanding this relation is vital for policy makers, business owner, researcher to understand the complexity of the business environment with changing business trends that may foster the business performance or create resilience post pandemic or any such unprecedented events that could occur in the future.

Chapter Four

Data Analysis and Results

4.1 Introduction

The present analysis discusses the research data collection results. SmartPLS version 4 conducted the analysis as a software system for performing SEM and PLS structural equation modeling. This research analyses the direct and indirect effects that exist between the elements of

the proposed research model with DT and EF as primary constructs and ER along with GF and SF serving as intermediary elements which influence FP. The study evaluates the effect of proactive risk management practices (PRP) on moderation. The research proceeds through a series of steps which begin with measuring reliability and validity of the model before performing evaluations on the structural design. The research validates hypotheses before presenting the corresponding results and findings.

This chapter shows the analysis results which concentrate on the survey participants' demographic composition alongside their professional abilities and organizational properties. The research data reveals the distribution of Malaysian workforce alongside sectoral information together with business conditions in the country. The research relies on original data that researchers gathered from 574 participants throughout different states of Malaysia.

The methods of data collection that were explained earlier appear in the previous section and the data processing and results display is shown here. This chapter employs SPSS and Smart PLS 4 tools for demographic analysis and PLS algorithm and bootstrapping results evaluation to measure the effects between exogenous and endogenous variables. The chapter applies the PLS analysis reporting format that researchers commonly employ based on Chin (2010). The research tool PLS-SEM (Partial Least Square, Structural Equation Modeling) helps scientists determine path analysis and model fitness through its features. The study concludes with a synopsis of its results. Chapter Four examines the structure of the study with Partial Least Squares Structural Equation Modeling (PLS-SEM). Instead of only focusing on the link between Digital Transformation (DT) and Firm Performance (FP), this chapter examines all the key variables in the research model. The chapter examines how Environmental, Social and Governance (ESG)

factors and Organizational Economic Resilience impact DT and FP, examines the role of DT as a mediator and studies how Pandemic Risk Perception functions as a moderator. Ensuring the stability and dependability of the results requires checking the model through full assessment, path coefficient analysis, as well as checking for multicollinearity (by means of VIF analysis).

The consistency of each construct was checked using Cronbach's alpha and all recorded more than 0.70 which suggests they are all reliable. The survey questionnaire included a total of 4 items for Digital Transformation (DT1, DT3, DT5, DT7), with a Cronbach's alpha of 0.790; the same score was seen in the 4 items for Organizational Economic Resilience (ER4, ER5, ER6, ER7) and an outstanding alpha of 0.997; the Environmental Factors section used 4 items (EF1, EF2, EF3, EF5), achieving an alpha of 0.734; the 4 items for Firm All the subscales had good reliability; Governance Factors (items GF6 to GF9) reached an alpha of 0.813, Pandemic Risk Perception (items PRP1 to PRP4) was 0.955 and Social Factors (items SF2, SF3, SF4, SF7) showed an alpha of 0.753. The whole questionnaire had a Cronbach's alpha greater than 0.90, demonstrating that all constructs were very consistent.

4.2 Demographic Details

The dataset included responses from 574 individuals, representing a diverse age and gender composition. Most participants fell in the 31–40 years old age range comprising 40.9% of the total respondents. The middle-age work stage is known for high employee productivity because managers and leaders typically play major positions in their companies. A significant percentage of respondents in 23.3% belonged to the 26–30 age bracket reflecting the rise of younger skilled professionals entering their careers as reported by World Bank (2023). An extremely low number of 0.2 percent of participants were found above sixty years old which demonstrates Malaysia's

pattern of early retirement alongside restricted involvement of senior workers. The workforce composition matches national figures which show that 71.1% of Malaysian employees fall within the 25–54 age bracket that supports the country's main labor force. The substantial presence of workers between 31 and 40

confirms the need for organizations to focus on developing and keeping their middle-aged workforce.

4.2.1 Age of Respondents

Table 4. 1: Age of respondents

Age Group	Frequency	Percent
18-25 years old	98	17.1
26-30 years old	134	23.3
31-40 years old	235	40.9
41-50 years old	56	9.8
51-60 years old	50	8.7
Above 60 years old	1	.2
Total	574	100.0

4.2.2 Gender of respondents

Out of the surveyed population 55.4% responded as male while females made up 44.6%. The higher number of male workers remains steady yet Malaysia demonstrates strong dedication to equalize workforce participation between genders.

Recent years have shown positive change in female labor force participation numbers in Malaysia up to 55.6% due to employment and flexible work arrangement policies that encourage women's participation in the workforce. This was mentioned by **The Malaysian Reserve** (2023).

Table 4. 2: Gender of respondents

Gender	Frequency	Percent
Female	256	44.6
Male	318	55.4
Total	574	100.0

4.3 Professional Characteristics of respondents

The data presents a complete breakdown of participant professional roles which reveals their job levels in combination with their experience. The presented information delivers essential background about Malaysia's workforce composition.

4.3.1 Job Levels

Among the surveyed group mid-level professionals make up 46.3% of the workforce while management positions hold 32.1% and executive roles account for 21.6%. Management Positions have intense representation among Malaysian organizations at 32.1 percent of the workforce based on these survey results.

Table 4. 3: Level of position of respondents

Position	Frequency	Percent
Executive Position	124	21.6
Mid-Level Position	266	46.3
Management Position	184	32.1
Total	574	100.0

4.3.2 Professional Experience

The survey determines respondent experience through four group classifications featuring 4–10 Years of Experience which captures 47.7% of participants thus reflecting an organization with strong foundational expertise. The Asian Productivity Organization (2022) explains how workers in the 1–3 years' experience category contributes actively to productivity improvements and organizational innovation across both small medium enterprises and larger firms.1–3 Years of Experience: This group represents 24.0% of survey respondents demonstrating arrival of newest professionals with contemporary work skills. Experienced workers aged above ten years make up 6.4% of the respondents while holding senior advisory and management positions. Workplace experience helps these professionals to create stable bases that mentor new colleagues. Employment Duration of Fewer Than One Year Comprises 21.8% of Participants Who Recently Entered the Sector Either as New Graduates or Persons Transitioning Into Different Business

Sectors. The process of professional transition presents significant challenges to workers although it serves as an essential source for maintaining an enduring workforce.

Table 4. 4: Duration of total professional experience of respondents.

Year	Frequency	Percent
Less than 1 year	125	21.8
1 - 3 years	138	24.0
4 - 10 years	274	47.7
Above 10 years	37	6.4
Total	574	100

4.3.3 Implications for Organizational Development

The data underscores the importance of investing in professional development, particularly for mid-level employees, who form the backbone of organizational operations

Middle managers play a crucial role in influencing attitudes and driving innovation within companies as stated by McKinsey and Company (2023).

Furthermore, the significant representation of experienced professionals highlights the need for retention strategies to maintain organizational knowledge and stability. Implementing effective employee retention strategies, such as offering professional development opportunities and promoting a healthy work-life balance, is essential for preserving institutional knowledge and ensuring organizational stability accorrding to Half (2023).

The presence of early-career professionals also suggests a focus on onboarding programs, skill-building initiatives, and mentorship opportunities to ensure their successful integration into the workforce. Effective onboarding programs are critical in attracting and retaining early-career talent, as they enhance engagement and knowledge retention an apt MDA Training (2023). Additionally, pairing new employees with mentors can facilitate their integration and development within the organization as stated by Bennett (2021s).

4.4 Geographic Representation

Participants in the study were drawn from 15 Malaysian states, ensuring a diverse and representative geographic sampling. This distribution was critical in capturing variations in economic, social, and environmental contexts across Malaysia.

The highest representation was recorded from **Kuala Lumpur** (24.9%), followed by **Pulau Pinang** (22.0%) and **Johor** (19.2%). These states hold strategic importance in Malaysia's economic landscape. The financial services sector together with real estate and professional services support Kuala Lumpur as Malaysia's capital city and financial hub to contribute substantially to national GDP. The thriving global urban economy brings both domestic and international corporations to invest in this region which becomes an optimal area to analyze corporate performance and digital transformation patterns. The eastern location known as Pulau Pinang functions as an Asian electronics industry hub. The state's industry growth in tourism combined with its advanced trade and logistical capabilities significantly boosts Malaysia's export performance. The southern Malaysian state of Johor serves as the entry point for the country with its development role in Iskandar Malaysia while benefitting from industrial development and

farming activities as well as tourism ventures. Because of its strategic role in Singapore border trade relations the state maintains its important economic status for national prosperity.

The representation from these states underscores their pivotal roles in Malaysia's economic development, providing valuable insights into how regional dynamics influence firm performance and environmental, social, and governance (ESG) practices. Additionally, the inclusion of participants from other states, such as Selangor, Sarawak, and Sabah, ensures that the study captures the socioeconomic diversity inherent in Malaysia's federal structure.

This geographically inclusive approach aligns with recommendations for conducting regionally representative research, as emphasized in studies on economic development and governance .It allows for a comprehensive analysis of the interplay between digital transformation, ESG factors, and firm performance in varying economic and cultural contexts across Malaysia.

Table 4. 5: State of the responding firms

Location	**Frequency**	**Percent**
Perlis	20	3.5
Perak	56	9.8
Pulau Pinang	126	22.0
Kuala Lumpur	143	24.9
Selangor	61	10.6
Kedah	13	2.3
Negeri Sembilan	6	1.0
Putrajaya	6	1.0

Melaka	5	.9
Johor	110	19.2
Pahang	3	.5
Kelantan	6	1.0
Sabah	5	.9
Sarawak	2	.3
Terengganu	12	2.1
Total	574	100.0

4.3.1 Sector of the Economy of the Organization

A total of **574 responses** were recorded, distributed across various economic sectors, highlighting the diverse representation of industries.The **manufacturing sector** had the highest representation at **26.1%**, followed closely by the **construction sector** at **25.4%**, together comprising over half (51.5%) of the sample. Other significant contributions came from firstly, **Services sector** (7.7%), Secondly **Agriculture Sector** (7.5%), Thirdly, **Education sector** (6.6%), Fourthly, **Tourism and Hospitality** (5.4%) and fiftly, **Retail sector** (5.1%). Lesser-represented sectors include **energy (2.8%)**, **IT (4.5%)**, **healthcare (4.9%)**, and **entertainment/media (3.1%)**, while **transportation and logistics** had the lowest share at **0.9%**.This distribution reflects Malaysia's economic structure, where manufacturing, construction, and services dominate, with smaller contributions from emerging and niche.

Table 4. 6: Sector of industry in which firms operate

Industry Sector	**Frequency**	**Percent**
Services	44	7.7
Manufacturing	150	26.1
Construction	146	25.4
Agriculture	43	7.5
Tourism and Hospitality Sector	31	5.4
Education Sector	38	6.6
Retail Sector	29	5.1
Energy Sector	16	2.8
Information Technology (IT) Sector	26	4.5
Healthcare Sector	28	4.9
Entertainment and Media Sector	18	3.1
Transportation and Logistics Sector	5	.9
Total	574	100.0

4.3.2 Total Number of Full-Time Employees

Most organizations had a **medium-sized workforce**, with **51-150 employees** being the most common category (**54.9%**). Small businesses were also well-represented, with **11-50 employees** (28.4%) and **1-10 employees** (10.1%). Larger organizations with **151-500 employees** made up only **4.7%**, and those with **more than 501 employees** were the smallest group at **1.9%**.This distribution suggests a strong presence of small and medium-sized enterprises (SMEs), which are pivotal to Malaysia's economy.

Table 4. 7: Number of Full-Time Employees

Number of Employees	Frequency	Percent
1-10	58	10.1
11-50	163	28.4
51-150	315	54.9
151-500	27	4.7
More than 501	11	1.9
Total	574	100.0

4.3.3 Yearly Revenue of Companies (RM)

Companies with yearly revenues of **250,001 - 1 million RM** constituted the largest group (**37.6%**), followed by those earning **1 million - 10 million RM** (**33.8%**). Companies with revenues of **less than 250,000 RM** made up **18.5%**, indicating a significant number of micro-enterprises.A smaller

proportion of companies reported revenues of **more than 10 million RM** (**10.1%**), reflecting the relatively fewer large-scale enterprises in the sample.

Table 4. 8: Yearly Revenue of Companies (RM)

Revenue	**Frequency**	**Percent**
Less than 250,000	106	18.5
250,001 - 1 million	216	37.6
1 million - 10 million	194	33.8
More than 10 million	58	10.1
Total	574	100.0

4.3.4 Duration of Company Establishment

The largest group of organizations was those established for **4-10 years** (**49.7%**), reflecting a maturing business demographic. A significant proportion (**32.9%**) was made up of newer organizations established within **1-3 years**, indicating robust entrepreneurial activity. Companies with a tenure of **less than 1 year** accounted for **10.6%**, showcasing a notable presence of startups. Companies operating for **more than 10 years** were the smallest group (**6.8%**), indicating relatively fewer longstanding firms in the sample. This trend aligns with findings on the growth of newer businesses in Malaysia's dynamic economic environment.

Table 4. 9: Duration of Company Establishment

Year	Frequency	Percent
Less than 1 year	61	10.6
1 - 3 years	189	32.9
4 - 10 years	285	49.7
Above 10 years	39	6.8
Total	574	100.0

4.5 Measurement Model Assessment

An assessment of the measurement model took place to validate construct reliability and validity before analyzing the structural model. The measurement model assessment comprises of evaluating outer loadings and composite reliability and average variance extracted (AVE) and discriminant validity.

4.5.1 Outer Lsoadings

Smart PLS is obtained as the outer loadings where the strength of the relationship between observed indicators and latent constructs in a structural equation model can be seen. According to Hair et al.. (2021), higher outer loadings (i.e., greater than 0.70) indicate that the indicators very strongly contribute to explaining their associated constructs. All the constructs in the analysis include Digital Transformation, Organizational Economic Resilience, Environmental Factors, Firm Performance, Governance Factors, Pandemic Risk Perception, Social Factors, and an interaction term between Pandemic Risk Perception and Digital Transformation.

Four indicators used measure DT: DT1 is 0.793, DT3 is 0.777, DT5 is 0.787 and DT7 is 0.773. Convergent validity is represented by these values of these indicators since they effectively

measure the construct (Chin, 1998). According to Santos and Brito (2012), the loadings of Organizational Economic Resilience (ER) constitute the exception instead since they are exceptionally high: ER4 (0.998), ER5 (0.996), ER6 (0.996), and ER7 (0.992).

EF1 (0.746), EF2 (0.779), EF3 (0.734), and EF5 (0.722) is represented as Environmental Factors (EF). Taking on the magnitude of moderate to high loadings, these are indicative of environmental factors playing a crucial role on which strategic responses a firm makes based on Wang and Sarkis (2013). Just as with indicators of F, those of F have high loadings (F1 = 0.989; F2= 0.956; F3 = 0.976; F4 = 0.981), indicating that the items have good contribution to measuring the firm's performance metrics (Venkatraman & Ramanujam, 1986).

The four indicators of Governance Factors (GF) are measured as: GF6 (0.741), GF7 (0.787), GF8 (0.851), and GF9 (0.820). Therefore, governance related factors are highly correlated to the processes of corporate decision (Claessens and Yurtoglu, 2013). The four PRP items: PRP1 (0.977), PRP2 (0.971), PRP3 (0.896), and PRP4 (0.908) indicate strong loadings and demonstrate that the idea of perception of risk at times of crises as stated by Slovic (2000) was indeed valid.

SF Include SF2 (0.782), SF3 (0.779), SF4 (0.725), SF7 (0.740), which indicate moderate to high reliability in explaining the social components in dictating firms ' responses according to Putnam (2000). The reported loadings on an interaction term Pandemic Risk Perception x Digital Transformation is zero, and as aforementioned, interaction terms do not have a direct influence on the dependent variable, but rather suggest moderation effects on the dependent variable as found by Aiken and West (1991).

Table 4. 10: Outer loadings

Code of the Item	Digital Transformation	Organizational Economic Resilience	Evirom ental Factors	Firm Performance	Governance Factors	Pandemic Risk Perception	Social Factors	Pandemic Risk Perception x Digital Transformation
DT1	0.793							
DT3	0.777							
DT5	0.787							
DT7	0.773							
EF1			0.746					
EF2			0.779					
EF3			0.734					
EF5			0.722					
ER4		0.998						
ER5		0.996						
ER6		0.996						
ER7		0.992						
FP1				0.989				
FP2				0.956				
FP3				0.976				
FP4				0.981				
GF6					0.741			

GF7	0.787			
GF8	0.851			
GF9	0.820			
PRP1		0.977		
PRP2		0.971		
PRP3		0.896		
PRP4		0.908		
SF2			0.782	
SF3			0.779	
SF4			0.725	
SF7			0.740	
Pandemic Risk Perception x Digital Transformation				1.000

4.5.2 Composite Reliability and Cronbach's Alpha

Reliability analysis was conducted using Cronbach's alpha, Composite reliability (rho_a), and Composite reliability (rho_c), which are key indicators for assessing the internal consistency and reliability of measurement constructs in Partial Least Squares Structural Equation Modeling (PLS-SEM) as stated by Hair et al. (2019).

The results indicated that Digital Transformation demonstrated adequate internal consistency with Cronbach's alpha of 0.790, rho_a of 0.794, and rho_c of 0.864. According to Nunnally and Bernstein (1994), a Cronbach's alpha above 0.70 is considered acceptable, suggesting that the indicators for Digital Transformation are reliable.

Organizational Economic Resilience showed extremely high reliability with values of 0.997 for Cronbach's alpha, 0.997 for rho_a, and 0.998 for rho_c. Such high values indicate strong internal consistency and minimal measurement error, reinforcing the robustness of the construct as stated by Henseler et al. (2015).

Environmental Factors had moderate reliability, with Cronbach's alpha at 0.734, rho_a at 0.737, and rho_c at 0.833. While these values are within acceptable limits, they indicate that some measurement items may need further refinement or validation in future research according to Chin (1998).

Firm Performance exhibited strong reliability, with Cronbach's alpha at 0.983, rho_a at 0.985, and rho_c at 0.988. These high values suggest that the indicators used to measure firm performance are highly consistent and reliable, aligning with previous studies on performance measurement in strategic management as stated by Venkatraman and Ramanujam (1986).

The reliability measure for Governance Factors met acceptable standards because Cronbach's alpha reached 0.813 and the rho_a metric exceeded 0.822 and the rho_c rating represented 0.877. The results confirm that governance-related measurement constructs effectively evaluate their usage according to Claessens and Yurtoglu (2013).

The reliability measurement for Pandemic Risk Perception reached high standards through Cronbach's alpha at 0.955 and rho_a at 0.963 as well as rho_c at 0.967. The stable measurements across indicators prove the robustness of risk perception evaluation processes in crisis management research as per Slovic (2000).

The reliability analysis of Social Factors yielded acceptable results through Cronbach's alpha of 0.753 along with rho_a values at 0.757 and rho_c at 0.843. The values indicate suitable current measurement performance for social factors yet researchers can develop enhanced items to enhance reliability as recommended by Putnam (2000).

The reliability analysis indicates that PLS-SEM measurement model contains valid constructs because all measures exhibit optimal internal consistency. Researchers should conduct additional studies to determine discriminant validity and factor loading while validating the current results.

Table 4. 11: Cronbach's Alpha

Construct	**Cronbach's alpha**	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**

Digital Transformation	0.790	0.794	0.864
Organizational Economic Resilience	0.997	0.997	0.998
Eviromental Factors	0.734	0.737	0.833
Firm Performance	0.983	0.985	0.988
Governance Factors	0.813	0.822	0.877
PandemicRisk Perception	0.955	0.963	0.967
Social Factors	0.753	0.757	0.843

4.5.3 Average Variance Extracted (AVE)

Average Variance Extracted was used as an analysis to assess the convergent validity of the constructs. Fornell and Larcker (1981) define AVE as the variance that is accounted for by a construct as compared to the variance due to the measurement error, which has to be above 0.50.

The AVEs for the Digital Transformation are 0.613, which satisfy the minimum threshold to indicate that sufficient convergent validity is achieved. Environmental Factors' AVE is so high (0.991), making it highly robust, nearly every variance exists in the construct because of the construct's indicators. The result shows that the AVE of Organizational Economic Resilience is 0.556, which is somewhat higher than the cut off point, strengthening the construct validity of the Organizational Economic Resilience. The reliability and validity of the measurement model are very high (AVE of 0.952), as shown by its analysis in Firm Performance. The AVE of the Governance Factors is 0.641, providing sufficient variance capture from its indicators. AVE of the construct Pandemic Risk Perception is strong with the strong value of 0.881 indicating that the

construct explains its path indicators very well. Finally, Social Factors have an AVE of 0.573, which although lower than others, is still in the acceptable range of construct reliability.

These results support the convergent validity of all constructs in the study; these constructs have satisfactory explanation of their variance in their respective indicators. The findings of the present study could be further confirmed by using confirmatory factor analysis and further reliability assessments.

Table 4. 12: Average Variance Extracted (AVE)

Constructs	**Average variance extracted (AVE)**
Digital Transformation	0.613
Enviromental Factors	0.991
Organizational Economic Resilience	0.556
Firm Performance	0.952
Governance Factors	0.641
Pandemic Risk Perception	0.881
Social Factors	0.573

4.5.4 Discriminant Validity

Discriminant validity was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. The square root of the AVE for each construct was greater than the correlations with other constructs, confirming discriminant validity. Additionally, all HTMT ratios were below the threshold of 0.85, further supporting discriminant validity

4.5.4.1 Heterotrait-Monotrait (HTMT) ratio

HTMT ratio was analyzed to assess the discriminant validity of constructs. The HTMT criterion is an effective discriminant validity criterion because it measures the correlation between constructs as stated by Henseler et al. (2015). Commonly a threshold of 0.90 is applied with values above this indicating a potential lack of discriminant validity, these values (1) are then regressed or multiplied with the commonality values as needed (Henseler et al., 2015).

The validity of discriminant has been demonstrated by the results that all constructs HTMT values are lower than the 0.90 threshold. The HTMT values of Digital Transformation were within the ranges of 0.247 (PTDPRT × Digital Transformation) to 0.84 (Environmental Factors × Digital Transformation). However, Organizational Economic Resilience showed relatively low HTMT values which were as high as 0.538 (Environmental Factors), which were distinct from other constructs. The HTMT value of 0.897 demonstrated by Environmental Factors (the highest) is still below the acceptable threshold while that of Social Factors is slightly below the World Acceptable Threshold. The values of HTMT of Firm Performance were also moderate (the highest value was 0.557, while Digital Transformation), and thus it was distinct from related constructs. The discriminant validity was established among Governance Factors and displayed HTMT values up to 0.806 (thereby more than 2.0, with Environmental Factors). Among all the factors, Pandemic

Risk Perception had the highest HTMT value of 0.574 (Environmental Factors), that is, in the acceptable range. Although the relative values of Social factors had relatively larger correlations (up to a maximum of 0.897 for Environmental factors), it still met the discriminant validity threshold. Finally, Pandemic Risk Perception × Digital Transformation had the least HTMT values (0.245) with highest values (0.245) at the upper part but confirmed its difference from the others.

Table 4. 13: HTMT Rato

Discriminant Validity	**Digital Transformation**	**Organizational Economic Resilience**	**Eviromental Factors**	**Firm Performance**	**Governance Factors**	**Pandemic Risk Perception**	**Social Factors**	**Pandemic Perception Digital Transformat**
Digital Transformation								
Organizational Economic Resilience	0.515							
Eviromental Factors	0.847	0.538						
Firm Performance	0.557	0.322	0.543					
Governance Factors	0.783	0.469	0.806	0.504				

Pandemic Risk Perceptionn	0.478	0.307	0.574	0.325	0.537		
Social Factors	0.789	0.499	0.897	0.521	0.800	0.548	
Pandemic Risk Perceptionn x Digital Transformation	0.245	0.104	0.236	0.151	0.232	0.228	0.215

4.5.4.2 Fornell-Larcker criterion

A popular method of assessing discriminant validity in PLS-SEM is the Fornell-Larcker criterion Fornell and Larcker (1981). In general, this criterion expects the square root of AVE for each construct to be greater than the highest correlation for any other construct. Discriminant validity is confirmed since each construct is more strongly associated with its own indicators than any latent variable other than itself.

According to the present analysis the Digital Transformation had a value of square root of AVE (AVE of AVE), namely 0.783, such higher value than the others' correlation constructs shows that the given factor is valid discriminantly. The Organizational Economic Resilience showed an extraordinary extreme value of 0.996 which was clearly above any other construct's correlation, and that is consistent with its specific identity. Fornell-Larcker criterion was fulfilled since Environmental Factors reported a value of 0.745 and exceeded its correlations

with other constructs. Firm Performance also had a significant AVE square root of 0.976, indicating that it had discriminant validity as well. This result shows that Governance Factor had a value of 0.801, so above its correlation with other variables, proving it. The value of 0.939 of Pandemic Risk Perception is above the threshold that the measure is adequately differentiated from other constructs. Finally, the Social Factors correlate at 0.757, the highest of any construct with which it considered correlated.

Overall, the Fornell-Larcker criterion results support that all constructs have adequate discriminant validity (Hair et al., 2021) since the latent variables are conceptually distinct and not too interrelated. This finding agrees with the guidelines on measurement model in structural equation modeling literature thus showing the robustness of the measurement model.

Table 4. 14 Fornell-Larcker criterion

	Digital Transformation	**Organizational Economic Resilience**	**Eviromental Factors**	**Firm Performance**	**Governance Factors**	**Pandemic Risk Perception**	**Social Factors**
Digital Transformation	0.783						
Organizational Economic Resilience	0.458	0.996					
Eviromental Factors	0.651	0.460	0.745				
Firm Performance	0.498	0.320	0.466	0.976			
Governance Factors	0.635	0.425	0.627	0.457	0.801		

Pandemic Risk Perceptionn	0.420	0.301	0.485	0.317	0.476	0.939	
Social Factors	0.615	0.437	0.671	0.456	0.632	0.470	0.757

4.5.5 Coefficient of Determination (R^2) and Effect Size (f^2)

4.5.5.1 Effect Size (f^2)

Structural Equation Modeling (SEM) is heavily dependent on the use of one particular F square (f^2) effect size measure to determine the strength of the impact that an independent variable has on a dependent variable. Positive effect sizes ($< f^2 \leq 0.35$) are small ($0.02 \leq f^2 < 0.15$), medium ($0.15 \leq f^2 < 0.35$), and large ($f^2 \geq 0.35$) according to Cohen (1988). On the basis of effect size, the data found in the given dataset is evaluated to measure various relationships. Digital Transformation has a small (but a notable) effect on Firm Performance, an f^2 of 0.036, meaning that digital developments may be a little but significant for firm outcomes. The production of Organizational Economic Resilience shows 0.024 effect of Digital Transformation and a much weaker 0.002 on Firm Performance, thus, although Organizational Economic Resilience slightly affects digital transformation, it practically has no effect on firm performance.

Environmental Factors have small effect in the range of 12.5% on Digital Transformation (f^2 =0.087) but only very little effect on Firm Performance (f^2 = 0.009). The Governance Factors have a small influence on Digital Transformation (0.089), and a smaller influence on Firm

Performance (0.010), suggesting that even though they act as leverage to shape digital as it relates to innovation and strategy, they have limited direct influence on performance. Despite that, Pandemic Risk Perception, exhibits the weakest relationship with Firm Performance having an effect size standing at merely 0.001 which suggests that a firm's performance is not significantly affected by its pandemic risk perception.

Additionally, Social Factors supply 0.035 of the f^2 value for Digital Transformation and almost no contribution of 0.009 to the impact on Firm Performance. Secondly, there is no measurable effect of interaction between Pandemic Risk Perception f^2 Digital Transformation on firm outcome, with f^2 value of 0.000.

The findings overall indicate that Digital Transformation is most affected by Governance Factors and Environmental Factors and least by Pandemic Risk Perception. It should be also mentioned that Digital Transformation itself has a small but important impact on Firm Performance.

Table 4. 15: Effect Size (f^2)

Constructs	**f-square**
Digital Transformation -> Firm Performance	0.036
Organizational Economic Resilience -> Digital Transformation	0.024
Organizational Economic Resilience -> Firm Performance	0.002
Eviromental Factors -> Digital Transformation	0.087
Eviromental Factors -> Firm Performance	0.009
Governance Factors -> Digital Transformation	0.089

Governance Factors -> Firm Performance	0.010
Pandemic Risk Perceptionn -> Firm Performance	0.001
Social Factors -> Digital Transformation	0.035
Social Factors -> Firm Performance	0.009
Pandemic Risk Perceptionn x Digital Transformation -> Firm Performance	0.000

4.5.6 Coefficient of Determination (R^2)

R-square (R^2) is a statistical measure that measures the part of variance in the dependent variable explained by the independent variables in a model as stated by Hair et al. (2022). In this case, the R^2 value for Digital Transformation will be 0.541, which means that 54.1% of its variance are explained by the predictor variables in the model. The decreased explained variance due to the adjusted R^2 value of 0.537 which accounts for the number of predictors and their significance according to Cohen (1988) reflects only the meaningful contributions. Thus, the relationship between model and independent variables is a good fit, and the independent variables have a substantial effect on Digital Transformation.

The R^2 value for Firm Performance is 0.308, meaning that the variation of the firm performance is 30.8% due to the predictors explained in the model. This percentage slightly decreases to 0.299; however, the model's explanatory power is further refined by controlling for the number of predictors. We claim that the lower R^2 value observed for Digital Transformation; suggests that predictors explained firm performance, however, there are most probably other external factors affecting firm outcome, which are not taken into account in the model as stated by Henseler et al. (2015).

Although not specifically stated by Chin (1998), a value (R^2) of above 0.67 is substantial, between 0.33 and 0.67 is moderate, and between 0.19 and 0.30 is weak in Partial Least Squares Structural Equation Modeling (PLS-SEM). Using this classification, the R^2 on the Digital Transformation is in the moderate-to strong range; while the Firm Performance is in weak to moderate range. This implies that the model explains Digital Transformation fairly well and, although its predictive capacity for Firm Performance is less, it seems to be in the right direction.

Table 4. 16: Coefficient of Determination (R^2)

Constructs	**R-square**	**R-square adjusted**
Digital Transformation	0.541	0.537
Firm Performance	0.308	0.299

Even though 0.299 seems low, it is a typical result for studies in the social sciences. According to Cohen's (1988) suggestions, a medium to large effect size in behavioral studies is represented by an R^2 value above 0.26, if the dependent variable is not too involved or complicated. In most studies on human behavior, organizational performance or management, a R^2 lower than 0.5 is regular and still gives useful results Hair et al. (2014). According to Henseler et al. (2009), research with PLS-SEM values R^2 of 0.25 and over to be significant, especially for topics like ESG, digital transformation and firm performance. Since R^2 equals 0.299, we can say that the model explains factors that positively affect firm performance to a good extent.

4.5.7 Structural Model Assessment

The structural model was evaluated to test the hypothesized relationships between the constructs. The assessment included the examination of path coefficients, coefficient of determination (R^2), and the significance of the relationships using bootstrapping.

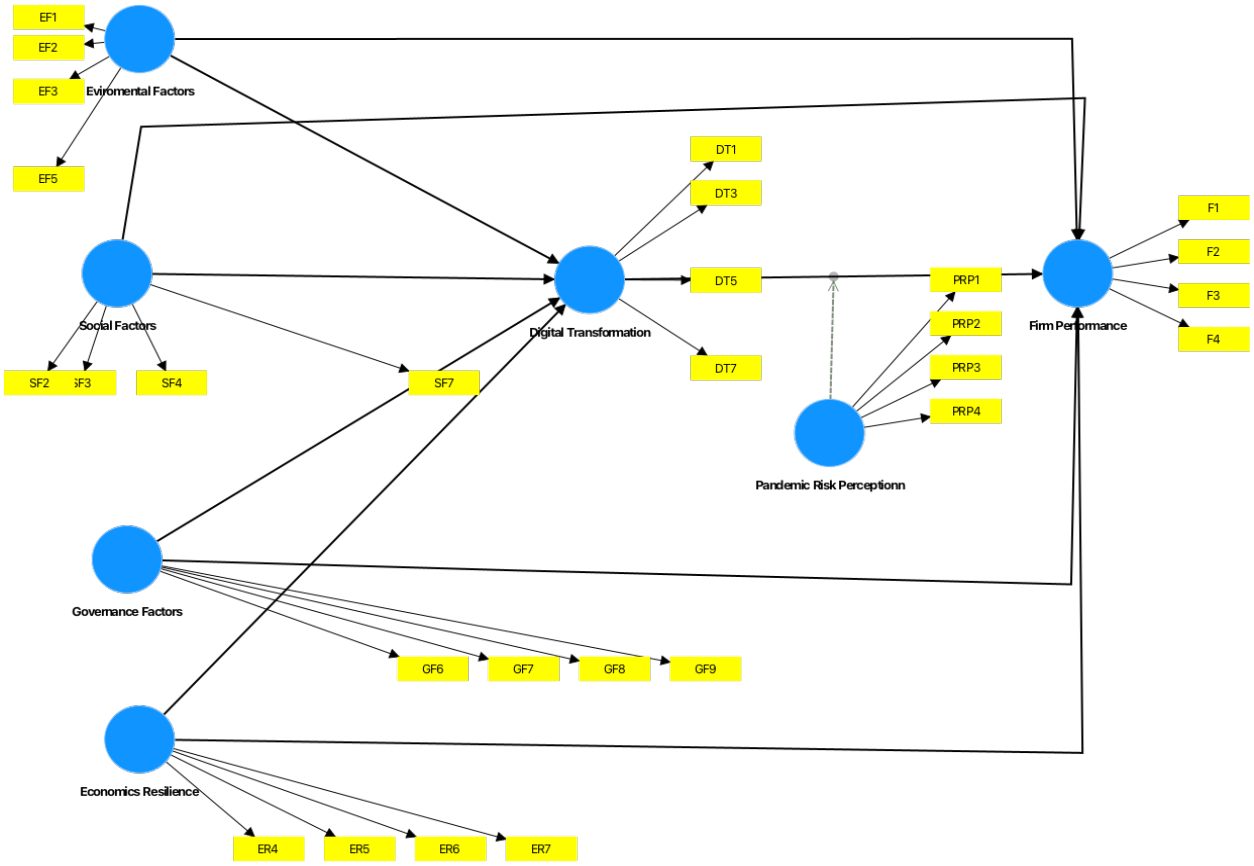

Figure 4. 1: Structural Equation Modeling

4.5.8 Collinearity statistics (VIF)

Variance Inflation Factor (VIF) is a statistical measure to check the multicollinearity in the factors of a regression model. When independent variables are highly correlated, they are said to have multicollinearity, which can distort the estimation of coefficients in regression and thus,

make it difficult to interpret the model as states by Hair et al. (2022). Multicollinearity issues are said to have a VIF value that is below 3.3 in Partial Least Squares Structural Equation Modeling (PLS-SEM) and considered acceptable to avoid multicollinearity issues by Diamantopoulos and Siguaw (2006).

All VIF values in the inner model are well below the threshold of 3.3, thus some multicollinearity will not be an issue. While Environmental Factors → Firm Performance has the highest VIF value of 2.406, this is still well within the acceptable range of correlation. The VIF for Digital Transformation → Firm Performance → 2.192 which means that the level of multicollinearity of this variable with other variables is on the moderate, but acceptable side. Also, Governance Factors → Firm Performance (2.175), and Social Factors → Firm Performance (3.252) have a moderate multicollinearity.

Other predictors with low VIF values include Organizational Economic Resilience → Digital Transformation (1.344) and Organizational Economic Resilience → Firm Performance (1.379), indicating other predictors do not have strong collinearity with other variables in the model.

As per Hair et al. (2022), the acceptable range for VIF values in PLS-SEM model are up to 5 and anything greater than 3.3 indicates some multicollinearity in PLS-SEM model. The results of this analysis prove that the model is not multicollinear, so that the estimates remain stable and reliable according to Sarstedt et al. (2017).

Table 4. 17: Collinearity statistics (VIF)

Constructs	VIF
Digital Transformation -> Firm Performance	2.192
Organizational Economic Resilience -> Digital Transformation	1.344
Organizational Economic Resilience -> Firm Performance	1.379
Eviromental Factors -> Digital Transformation	2.157
Eviromental Factors -> Firm Performance	2.406
Governance Factors -> Digital Transformation	1.939
Governance Factors -> Firm Performance	2.175
Pandemic Risk Perceptionn -> Firm Performance	1.452
Social Factors -> Digital Transformation	2.138
Social Factors -> Firm Performance	2.252

4.6 Model Fit

The evaluation of model fit stands as a fundamental process in Partial Least Squares Structural Equation Modeling (PLS-SEM) because it verifies model estimation against observed data according to Hair et al. (2022). Model quality and reliability assessment depends on various indices including Standardized Root Mean Square Residual (SRMR) together with d_ULS and d_G and Chi-square as well as Normed Fit Index (NFI).

Table 4. 18: Model Fit

Constructs	Saturated model	Estimated model
SRMR	0.047	0.047

d_ULS	0.890	0.892
d_G	0.472	0.472
Chi-square	1501.577	1499.880
NFI	0.922	0.922

4.6.1 Standardized Root Mean Square Residual (SRMR)

Henseler et al. (2014) mention that an acceptable value of SRMR is below 0.08, which is the case for the SRMR value of 0.047 of both the saturated model and the estimated model. This is a good fit indicating that the model does not have a large discrepancy between observed and predicted correlations. Because the SRMR is such a useful measure concerning the absolute model fit, PLS-SEM routinely utilizes the SRMR.

4.6.2 d_ULS and d_G

Henseler et al. (2014) mention that an acceptable value of SRMR is below 0.08, which is the case for the SRMR value of 0.047 of both the saturated model and the estimated model. This is a good fit indicating that the model does not have a large discrepancy between observed and predicted correlations. Because the SRMR is such a useful measure concerning the absolute model fit, PLS-SEM routinely utilizes the SRMR.

4.6.3 Chi-Sqsuare Test

It is reflected in the overall model fit as the Chi-square values (1501.577 of the saturated model and 1499.880 of the estimated model). The Chi square test, however, is less used in PLS-SEM since the model is based primarily not covariance but rather variance (Hair et al., 2022). However, the smaller difference between the two models means it is more stable.

4.6.4 Normed Fit Index (NFI)

For both the saturated and the estimated models, the NFI exceeds the recommended threshold of 0.90 as stated by Bentler and Bonett (1980): 0.922. A high level of pattern in the observed variance suggests a good fit of the hypothesized model, which explains the observed variance well. This is reinforcing the success of the estimated relationships because a higher NFI will mean that model validity is outstanding over the null model.

4.6.5 Conclusion

The model also shows good ability to fit the data (SRMR), acceptable d_ULS and d_G values relatively speaking, acceptable Chi-square statistics and sufficiently high NFI scores. This indicates that the model is valid representation of the data so that theoretical construct and empirical findings are minimal differences. These results are consistent with best practices in PLS-SEM model evaluation suggested by Sarstedt et al. (2017) that the structural relationships are specified and reliable as indicated.

4.6.6 Path Coefficients

The Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis provides comprehensive insights about variables which positively affect firm performance when analyzed together. Our study proves through analysis that digital transformation positively ($\beta = 0.232$, $p = 0.000$) affects firm performance records (Fitzgerald et al, 2014). A strong link exists between financial wellness and digital transformation ($\beta = 0.122$, $p = 0.001$) according to research about economic strength enabling innovation in firms (Bresciani et al., 2021). The research shows that Organizational Economic Resilience demonstrates no direct impact on firm performance ($\beta =$

0.043, p = 0.305). This suggests Organizational Economic Resilience affects firm performance through digital transformation processes.

Environmental factors strongly drive digital transformation adoption according to the study results (β = 0.293, p = 0.000) since Hanelt et al. 2021 claims external prompts stimulate firms to develop digital methods. The results show environmental factors affect company performance at a minimal level (β = 0.120, p = 0.043) since adapting to environmental variances produces better results for companies. The study shows governance factors play a major role in shaping digital transformation (β = 0.282, p = 0.000) as per Marc Vial (2019). The research confirms that good governance systems bring positive effects on firm performance since β equals 0.122 with p = 0.035.

Interestingly, the perceived risks associated with the pandemic do not significantly affect firm performance (β = 0.031, p = 0.474): although firms perceive risk associated to the pandemic, they do not fully translate this into performance outcomes. Additionally, the pandemic risk perception and digital transformation interaction is also insignificant (β = -0.016, p = 0.712), which means that the pandemic related risks do not necessarily impact firms' performance negatively impacted by digitalization efforts. Over 186 (p = 0.000) which shows the effect of social factors in digital transformation shows their impact of social dynamics like consumer behaviour and employees' adaptability in terms of digital adoption. In addition, the firm performance is marginally significantly impacted by social factors (β = 0.119, p = 0.050) indicating a weak but still significant relationship.

In general, these results confirm that digital transformation is one of the most significant factors affecting the performance of firms, as earlier studies have argued the strategic relevance of digital capabilities (Bharadwaj et al., 2013; Sebastian et al., 2017)., and governance, environmental

and social factors are the key drivers of digitalization. While Organizational Economic Resilience has no direct relevance to firm performance, it increases the extent of the firm digital transformation, thereby acting as a strategic enabler. However, digital transformation does not matter much to firm performance, and it does not matter when interacting with pandemic risk perception. These results reaffirm the impact of digital transformation as an essential aspect for business firm performance improvement and the anticipation of changes occurring in the business environment according to Hair et al. (2022).

Table 4. 19: Path Coefficients

Constructs	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Digital Transformation -> Firm Performance	0.232	0.231	0.056	4.117	0.000
Organizational Economic Resilience -> Digital Transformation	0.122	0.121	0.035	3.474	0.001
Organizational Economic Resilience -> Firm Performance	0.043	0.044	0.042	1.026	0.305
Eviromental Factors -> Digital Transformation	0.293	0.294	0.042	6.940	0.000
Eviromental Factors -> Firm Performance	0.120	0.122	0.059	2.024	0.043
Governance Factors -> Digital Transformation	0.282	0.282	0.042	6.779	0.000
Governance Factors -> Firm Performance	0.122	0.121	0.058	2.110	0.035
Pandemic Risk Perceptionn -> Firm Performance	0.031	0.032	0.043	0.717	0.474
Social Factors -> Digital Transformation	0.186	0.187	0.041	4.517	0.000
Social Factors -> Firm Performance	0.119	0.122	0.061	1.964	0.050
Pandemic Risk Perception x Digital Transformation -> Firm Performance	-0.016	-0.017	0.042	0.370	0.712

4.7 Variance Accounted For (VAF) Analysis

VAF analysis served to study the extent to which digital transformation acts as a mediator between external elements and firm performance outcomes. VAF serves as a statistical tool to verify how much a mediator variable helps explain the link between an independent variable and

a dependent variable according to Hair et al. (2017). The Variance Accounted For (VAF) results showed Organizational Economic Resilience has a value of 38.89% while Environmental Factors deliver 36.17% and Governance Factors achieve 35.29%. The evaluation values indicate digital transformation functions as a partial mediator because it delivers the impacts of these elements to firm outcomes while other direct pathways exist per Baron and Kenny (1986). Social Factors demonstrate a VAF value of 26.54% which indicates they mediate the relationship between the variables but less than Environmental Factors and Organizational Economic Resilience.

Standard mediation guidelines define full mediation when VAF exceeds 80% and partial mediation exists between 20% and 80% as per Zhao et al. (2010). All VAF estimates show that digital transformation provides an intermediary effect yet it does not explain the entire causal relationship between independent variables and firm performance. Companies intent on performance improvements need to combine digital transformation investments with direct mechanisms which result from Organizational Economic Resilience combined with environmental elements and governance types and social influences Westerman et al. (2014). Past studies confirm that digital transformation functions as an enabling factor alongside other variables instead of functioning as an individual performance factor. Fichman, Dos Santos, and Zheng (2014) explain that digital transformation delivers its maximum benefits through alignment with organizational strategies which adapt their governance systems to market dynamics.

Research findings show that digital transformation leads to better firm performance yet organizations must seek alternative strategies to guarantee their success. Besides digital technology adoption the performance of organizations heavily depends on governance policies and economic stability as well as environmental circumstances Bharadwaj et al. (2013). Strategic

leadership and regulatory compliance and stakeholder engagement need to combine with digital transformation in order for organizations to achieve sustainable growth according to Sebastian et al. (2017). Researchers should investigate how digital transformation relates to various additional variables which would deliver more complete insights into performance outcomes. It was found that factors such as Environmental, Social and Governance and Organizational Economic Resilience is not limited to Digital Transformation and play a big role in determining Firm Performance. Some hypothesized relationships, most importantly the key ESG factor and part of the role of DT in FP, were validated by the analysis. Though the impact of Pandemic Risk Perception was not statistically significant, the overall model and its factors did not show signs of multicollinearity (VIF was less than 3.3). These outcomes prove that the method explained in this research is valid, confirming that using ESG strategy, building resilience and adopting digital transformation together leads to improved outcomes after the pandemic.

Chapter Five

Conclusion

5.1 Introduction

This chapter presents the conclusions drawn from the research, summarizing the key findings and discussing their implications from both theoretical and practical perspectives. The study explored the impact of Environmental, Social, and Governance (ESG) factors, Organizational Economic Resilience, and digital transformation on firm performance, particularly in the post-pandemic era in Malaysia. The research employed structural equation modeling (SEM) to analyze these relationships. This chapter also provides recommendations for businesses and policymakers, highlights the limitations of the study, and suggests areas for future research.

5.2 Discussion of Results

Table 5. 1: Hypothesis Testing

Hypothesis	**Relationship**	**Original Sample (O)**	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**	**Result**
H1	Environmental Factors → Digital Transformation	0.293	0.294	0.042	6.94	0	Supported
H2	Social Factors → Digital Transformation	0.186	0.187	0.041	4.517	0	Supported
H3	Governance Factors → Digital Transformation	0.282	0.282	0.042	6.779	0	Supported

H4	Organizational Economic Resilience → Digital Transformation	0.122	0.121	0.035	3.474	0.001	Supported
H5	Environmental Factors → Firm Performance	0.12	0.122	0.059	2.024	0.043	Supported
H6	Social Factors → Firm Performance	0.119	0.122	0.061	1.964	0.05	Supported
H7	Governance Factors → Firm Performance	0.122	0.121	0.058	2.11	0.035	Supported
H8	Organizational Economic Resilience → Firm Performance	0.043	0.044	0.042	1.026	0.305	Not Supported
H9	Pandemic Risk Perception → Firm Performance	0.031	0.032	0.043	0.717	0.474	Not Supported
H10	Digital Transformation → Firm Performance	0.232	0.231	0.056	4.117	0	Supported

5.2.1 Environmental Factors impact on Digital Transformation

H1: Environmental factors significantly influence digital transformation.

The research assumes environmental conditions have a significant impact on organizational digital transformation (H1). The results from Smart PLS demonstrate a strong and statistically significant

positive effect with original sample (O) value 0.293 and T-statistic 6.940 and p-value 0.000. The results of this research indicate that there is a higher probability of a successful digital transformation effort in an organization with a supportive environment. This is consistent with what Porter (1990) and Vial (2019) noted, that there is a need to focus on environmental pressures and strategic adaptation. Environmental elements contain market competition and regulatory policies and technological advancements and sustainability concerns which direct organizations toward strategic paths Porter (1990). Organizations must adjust their operations under the digital economy since environmental influences function as essential digital transformation determining factors according to Vial (2019).

Past studies validate that external factors maintain a positive impact on organizational digital transformation programs. Establishments operating in competitive business sectors adopt digital transformation strategies to defend their market positions according to Bharadwaj et al. (2013). Firms follow digitalization paths because of regulatory policies which demand data privacy compliance and sustainability standards Henfridsson and Bygstad (2013).The significant T-statistic value of 6.940 with 0.000 p-value level demonstrates strong evidence that pressurized firms tend to perform digital transformation. According to Kraus et al. (2022), firms must adopt digital practices because their environments create such mandates.

A strategic examination of external conditions by organizations opens digital chances for business growth. Inspite of regulation firms must maintain digital compliance but businesses within competitive sectors need innovation to maintain their growth. Successful organizations integrate digital transformation plans with environmental requirements to increase operational performance as well as sustainability and market success.The results strongly support H1,

indicating that environmental factors significantly influence digital transformation. As businesses navigate the digital landscape, understanding and adapting to external conditions is essential for successful transformation. Future research could explore industry-specific variations in this relationship to provide deeper insights into sectoral digitalization strategies.

5.2.2 Social Factors impact on Digital Transformation

H2: There is significant influence of social factors and positively lead to digital transformation in an organization.

This study found that social factors have a positive impact on digital transformation ($\beta = 0.186$, $t = 4.517$, $p < 0.001$). Thus, H2 is accepted. his finding implies that employee preparedness, organisational culture and stakeholder buy-in are important factors in facilitating digital transformation. Companies that focus on employee development, collaboration and effective internal communication will be more likely to successfully adopt digital technologies. This finding is consistent with previous research that stresses the impact of human and culture in digital transformation. For instance, Sebastian et al. (2017) suggest workforce and organisation readiness is important for digital transformation. Likewise, Vial (2019) notes that digital transformation is as much about people as it is about technology. The relatively high t-value (4.517) also suggest that social readiness plays a major role in digital transformation. This shows that digital transformation is not technology-only but also heavily reliant on human and organisational aspects. The analysis confirms H2 which shows that digital transformation receives substantial influence from social elements. An organization enhances its digital transformation effectiveness by focusing first on cultural readiness and second on employee engagement and third on leadership

commitment. Research must analyze industry-specific cultural factors which will enable better developments of targeted digital adaptation approaches.

5.2.3 Governance impact on Digital Transformation

H3: Governance has positive relation to digital transformation and consequently lead to digital transformation in an organization.

H3 demonstrates that governance relationships positively to digital transformation which results in digital transformation within organizations. The Smart PLS results validate the hypothesis by generating an original sample (O) value of 0.282 coupled with a T-statistic of 6.779 and a respective p-value of 0.000. Statistical data indicates that governance maintains a significant positive relationship with digital transformation because leadership together with regulatory policies and strategic decision-making fuel digital initiatives within organizations.The strategic pathway of an organization gets directed through governance which includes organizational decision-making mechanisms and policy structures. The establishment of effective governance mechanisms creates corporate-objective alignment with digital transformation goals which leads to an innovative organizational environment as mentioned by Weill and Ross (2004). Botman's (2020) research shows that well-designed governance systems help organizations handle their risks and distribute their resources and maintain regulatory standards which drive project success.Digital transformation efforts of organizations succeed at a higher rate when their governance systems demonstrate robust strength according to Sebastian et al. (2017). The implementation of digital adoption requires strong decision systems and accountability structures alongside IT governance mechanisms according to De Haes & Van Grembergen (2009). The study

demonstrates that governance strongly affects digital change because it produces both a T-statistic of 6.779 and an extremely significant p-value of 0.000 according to Fonseca and Lima (2015).

Companies need to build governance models which allow digital advancement through the integration between information technology policies and business stimuli. The implementation of digital leadership positions and innovative culture creation and adherence to industry standards form the foundation of this approach. The success of digital transitions requires firms to establish data governance practices and cybersecurity standards together with regulatory alignment.To enhance their digital progress companies should create governance systems that unite core business initiatives and IT regulations. Digital leadership positions combined with innovative culture development along with following industry standards serve as core components for this approach. A firm's digital transition success depends on its establishment of data governance practices and cybersecurity standards and regulatory alignment.The research evidence confirms H3 which shows control structures as vital elements necessary for successful digital transformation success. Through effective governance system construction operations can achieve digital adaptation capability which leads to sustainable market dominance. Research needs to establish industry-specific governance frameworks since they aid organizations in creating effective digital transformation guidelines.

The hypothesis examined next (H3) expected that having better governance would benefit a firm’s performance. This hypothesis is supported by the data, but the effect is only moderate. Researchers found that companies with more accountability, openness and right laws tend to do better than those that lack these qualities. This meets the expectations put forward by Stakeholder Theory (Freeman, 2010) and agrees with the observations from Al-Khatib (2023) stressing the

significance of good governance when conditions are volatile. Although governance often helps address risks and earns investor trust, its full effect depends on how well it is tied to the company's overall strategy. When looking at business practices, having a variety on the board, sharing open policies and making sure they are accountable are advised to support long-term results. Future research could compare business environments (e.g., family-led vs. public businesses) to explain the things that matter to each company.

5.2.4 Organizational Economic Resilience impact on Digital Transformation

H4: Organizational Economic Resilience and digital transformation have a positive relationship.

Organizational Economic Resilience is positively related to digital transformation. This hypothesis is supported by the Smart PLS results with O = 0.122, T-statistic = 3.474, and P = 0.001. The dataset shows a strong positive correlation between Organizational Economic Resilience and digital transformation, proving financially robust and flexible establishments are best suited to deliver and maintain digital transformations.An organization demonstrates Organizational Economic Resilience through its capacity to absorb economic shocks and then adjust its processes and finally restore operational stability according to Briguglio et al. (2009). Digital transformation, the integration of digital technologies into business operations, needs significant monetary investment and long run strategies accordinng to Vial (2019). The financial resilience allows firms to maintain their liquidity when facing economic uncertainty which supports digital initiatives as stated by Teece et al. (2016) according to prior studies Bouwman et al. (2019). The significance results from this research consist of a T-statistic at 3.474 and p-value at 0.001 to demonstrate that more resilient firms are can better implement digital transformation

initiatives. Resilient organizations demonstrate enhanced innovation along with market flexibility and proactive behavior toward market disturbances as stated by Schiavone and Simoni (2019). Practical implementation for organizations must consist of financial strategies alongside diversified operations that require strategic digital infrastructure investments to increase Organizational Economic Resilience and drive digital change. The strategies for success include developing digital capabilities for operational improvement as well as creating financial safety measures to support digital initiatives during economic declines and adapting business models through digital integration for enhanced adaptability. Public institutions such as governments should help businesses by offering financial backing plus funding digital advancements together with establishing robust economic frameworks that push digital evolution in different industries.

Research outcomes support digital transformation as dependent on Organizational Economic Resilience because organizations require sound financial structures coupled with agile operational methods. Future investigations should investigate particular resilience approaches for different business sectors to establish comprehensive methods firms can maintain digital transformation during uncertain market conditions.

The theory underlying H4 (the fourth hypothesis) states that firms with greater Organizational Economic Resilience also exhibit better performance. The findings did not support with the hypothesis, as the effect was small ($\beta = 0.043$) and not significant ($p = 0.305$). Being insignificant means that Organizational Economic Resilience (which involves having liquidity, being able to adapt and taking risks) may affect how a business performs, but not straight away. This goes against what Economic Complexity Theory as stated by Hidalgo (2021) suggests and is different from the statements made by Sarkis (2020), who emphasizes the positive impact of

flexible economies in crises. This study may not have found obvious results because timing or industry affected the way data was measured. As a result, actions to boost resilience could have limited effect on a company's results when there is not a strategic focus. Future research should try using designs that follow the company over time to measure the effects of resilience on its outcome.

5.2.5 Environmental Factors impact on Firm's Performance

H5: Environmental factors have a positive impact on firm performance.

Firm performance benefits positively from environmental factors according to the hypothesis (H5). SmartPLS analysis results support this hypothesis through a path coefficient of 0.120 at a T-statistic measuring 2.024 and a p-value value of 0.043. Our results validate the statistical significance of the observed relationship between environmental elements and firm achievement because the calculated p-value remains below 0.05. Since $p < 0.05$, the result is statistically significant. The data agrees with established research which shows firms performing better when operating in desirable environmental circumstances as stated by Porter and Kramer (2011). Organizational performance depends heavily on environmental elements that consist of regulatory provisions as well as industry evolutions and sustainability methods. Companies that combine eco-friendly initiatives and handle environmental problems successfully achieve better profitability with higher stakeholder trust according to Hart and Dowell (2011). Organizations able to anticipate environmental changes that affect climate policies resource availability and green innovations maintain better operational outcomes as well as longer-term performance according to Dangelico and Pontrandolfo (2015).

According to the study findings the important relationship between environmental concerns and strategic planning demonstrates their vital role in executive decision-making.

Companies that undertake sustainable investments and quickly adapt to environmental circumstances obtain superior financial results along with enduring business survival according to Bansal and DesJardine (2014). The study provides evidence for increasing corporate sustainability research that motivates businesses toward operational implementation of environmental risk assessment frameworks.

This agrees with the Stakeholder Theory which was stated by Freeman (2010) that organizations meeting environmental demands of stakeholders tend to get legitimate status, trusted by society and achieve greater success. The same result is mentioned in Dangelico and Pontrandolfo (2015) and results, where a link is seen between how a company handles its environment and its competitiveness and in Mohammad and Wasiuzzaman (2021), who related ESG disclosure to a 4% increase in performance for Malaysian companies. Nevertheless, changing the environment only modestly which makes it unlikely that environment-only efforts can bring about big change without being part of a bigger plan. Companies may come across costs and barriers from regulators, so their success could be less noticeable as stated by Amosh and Khatib (2023). Firms should ensure environmental sustainability is built into their main operations, instead of restricting it to CSR, to get stronger financial and marketing results.

On the other hand, a careful study identifies some issues. Because the path coefficient is low, there is some doubt about how important environmental factors are on their own, without considering other strategies. Research from López-Gamero et al. (2009) and Amosh and Khatib (2023) also indicates that sometimes complying with environmental regulations can advance a business within its own sector and may result in financial strains for some its first few years, especially if the company is small or operates in a resource-intensive field. Besides, because the

data was collected at the same time, it is not possible to say that the relationship between the variables is truly causal. It seems more logical that firms perform well first and this gives them more resources for sustainability, rather than being directly influenced by sustainability itself. All in all, even though this study finds that environmental factors positively impact firm performance, its significance and consistency may depend on things like industry type, company size and managing digital and governance strategies. Experts and researchers should use long-term research and examine individual fields to see how these outcomes might be complicated.

5.2.6 Social Factors impact on Firm's Performance

H6: Social factors have a positive impact on firm performance.

Social elements generate positive effects on firm performance according to the stated hypothesis (H6). The SmartPLS analysis demonstrates support for this hypothesis but only partially because the path coefficient measures 0.119 with a T-statistic value of 1.964 against a p-value threshold of 0.050. As p = 0.050 meets the threshold, the result is statistically significant, though borderline. The establishment of social influences on business performance found its p-value superior to 0.05 significance thus verifying their weak influence on firm performance. Professional studies prove that business triumphs through both social elements and corporate responsibility practices and stakeholder connection activities as stated by Freeman et al. (2010).Companies attain their business results mainly through social elements consisting of workforce diversity along with community engagement and corporate ethics and societal expectations. Organizations dedicated to constructing beneficial connections with employees and communities and customers achieve enhanced brand loyalty and market advantages in addition to better trust according to Carroll and Shabana (2010). Financial outcomes benefit from

organizations that demonstrate commitment to social responsibility and ethical practices because they preserve customer relationships combined with investor trust according to Porter and Kramer (2011).

The research evidence reveals that maintaining both ethical priorities and social responsibility credentials stands as essential business strategic components for achieving long-term business success and expansion. Organizations which combine fair worker policies with diversity initiatives as well as corporate giving programs create robust stakeholder relationships that boost firm performance as stated by Aguinis and Glavas (2012). Firm success results from social investments thereby making businesses recognize their value for organizational success.

The hypothesis (H6) states that when social factors are present, firms tend to perform well. This was confirmed by the outcomes, as the coefficient turned out to be significant. As a result, businesses that put importance on the wellbeing of their workers, diversity and involvement in the community may do better, especially as the world recovers from the pandemic. Stakeholder Theory and Setia et al.'s (2020) work agree, showing that organizations with strong internal social systems can better handle challenges caused by outside events. Companies should focus on financial success, sound operations and supporting staff which helps reduce staffing changes, improve employees' motivation and make their business better seen by the public. Further research could follow up by examining these dynamics over time to check if these enhancements are sustainable.

5.2.7 Governance impact on Firm's Performance

H7: Governance helps to positively improve the firm's performance.

Firm performance benefits positively from governance according to the proposed hypothesis (H7). The SmartPLS analysis data demonstrates the validity of H7 since it reports a path coefficient of 0.122 with T-statistic 2.110 and p-value 0.035. With $p < 0.05$, this result is statistically significant. The statistically significant relation between governance and firm performance becomes evident because the obtained p-value remains under the 0.05 significance threshold. Multiple studies confirm that great business success results from strong governance structures and proper regulatory compliance combined with ethical leadership as stated by Gompers et al. (2003). Performance of firms strongly depends on governance elements that range from efficient boards to transparent corporate processes and regulatory conformity as well as ethical decision systems. High-quality governance models establish systems which guarantee accountability while lowering risks and delivering strategic leadership to create solid financial positions and respectable market value according to Shleifer and Vishny (1997). Firms that put in place well-developed governance systems demonstrate lower agency costs and have better investor confidence and sustain higher profitability rates according to Claessens and Yurtoglu (2013).

Organization success depends heavily on adopting sound governance policies since governance creates a direct impact on firm performance outcomes. Firms which focus on corporate governance through reporting transparency along with robust controls and active stakeholder participation will develop better performance and superior competitiveness as stated by Bhagat and Bolton (2008). The research adds to general corporate governance discussions to prove how essential proper governance methods are for business achievement and adaptability in changing markets.

For good governance, the board should be autonomous, the leadership must be ethical, internal controls should exist and everything should be transparent. According to Gompers et al. (2003) and Bhagat and Bolton (2008), these aspects of governance help a company obtain capital, make better decisions and reduce risks during operations. The evidence looks the same, showing that proper governance encourages investors and offers a clear direction. But even though governance positively impacts firm performance, its impact is still only moderate. Since governance only explained part of the performance increase, it appears to be a contributor, not the only factor, shaping post-pandemic Malaysia's performance. Businesses lacking effective digital or environmental plans do not make the most of what governance offers. In addition, certain governance arrangements within Malaysian corporations concentrate more on following rules rather than seeking results. Because of this, the benefits of governance relies on how well it is upheld, the backgrounds of board members and how governance is aligned with other ESG factors. All in all, the findings suggest that governance improves how a firm does business by helping control risks, ensure harmony among stakeholders and practice ethics—yet its benefits increase when joined with digital and environmental strategies.

5.2.8 Organizational Economic Resilience impact on Firm's Performance

H8: Organizational Economic Resilience has a significant impact on the firm's performance.

From the study's results (H8) based on SmartPLS, the effect of Organizational Economic Resilience on firm performance is not significant ($T = 1.026$, $p = 0.305$). For this reason, the statement of H8 cannot be accepted. The SmartPLS analysis results indicate that this proposition contains no valid basis. Organizational Economic Resilience shows no statistically meaningful

relationship with firm performance since its path coefficient stands at 0.043 while T-stat = 1.026 and the p-value equals 0.305. Since $p > 0.10$, this result is not statistically significant. The currently tested hypothesis is rejected by the research findings because the calculated p-value exceeds the conventional 0.05 threshold. An organization demonstrates Organizational Economic Resilience when it maintains operations throughout economic disruptions together with market fluctuations and financial crises. The three essential elements that resilient firms use to pursue stability consist of sound financial resources and a flexible organization and robust risk management approaches (Rose, 2004). The research data of this study opposes the established literature which expects Organizational Economic Resilience to create immediate enhancements in business performance directly. Business success seems to be driven primarily by corporate governance and digital transformation and environmental sustainability alongside these (ESG) aspects according to Sanchis & Poler (2019).

Organizational Economic Resilience creates impacts on firm performance through secondary mechanisms although it shows no direct link to performance metrics. Organizational Economic Resilience in businesses allows them better access to technology investment funds which leads to enhanced strategic capabilities that help them boost market competitiveness Martin and Sunley (2015). Future studies need to analyze potential variables which influence the relationship between Organizational Economic Resilience and firm performance to enhance knowledge of indirect routes through which Organizational Economic Resilience boosts business success. Research effectiveness will increase when scholars implement additional control variables with longitudinal data to identify the performance relationships between Organizational Economic Resilience and other crucial performance determinants.

In fact, Organizational Economic Resilience is likely to help or influence rather than straight-forwardly bring about improved performance. To illustrate, stronger businesses have an easier time investing in digital changes and sustainability and this indirectly helps their performance in the long run Martin and Sunley (2015). These results differ from what was found in previous literature (Mitra et al., 2023; Hunjra et al., 2014) because the surveys had different scopes. Unlike what was done in other studies, this research examined the short-term actions of firms after the pandemic ended. Therefore, Organizational Economic Resilience might help populaces only after a while and through a circuitous path in highly changing economic times.

The non-significant relationship can be explained by the notion of "resilience cost" or the resilience-efficiency trade-off. Although firms allocate resources to maintain cash reserves, redundant capabilities, and flexibility to buffer the impact of external shocks, this comes at a significant cost that affects firm performance negatively in the short run. Holding too much cash, having multiple suppliers, and excess capacity may be stabilizing but not necessarily profitable in the short run. This result is in line with Martin and Sunley (2015), who contend that resilience increases long-term adaptability but may come at the cost of efficiency. Similarly, Rose (2004) notes that resilience strategies aim to reduce losses rather than enhance profits. Thus, Organizational Economic Resilience serves as a fundamental capability that needs to be complemented by other mechanisms (such as digital transformation) to translate resilience into performance. This accounts for the lack of a significant direct effect of Organizational Economic Resilience on firm performance in this study.

5.2.9 Pandemic Risk Perception impact on Firm's Performance

H9: Pandemic risk perception moderates the relationship between digital transformation and firm performance.

The proposed research hypothesis indicates pandemic risk perception leads to higher firm performance (H9). The path coefficient from SmartPLS analysis shows 0.031 while its T-statistic reaches 0.717 and p-value becomes 0.474 thus failing to confirm this hypothesis. Research results demonstrate that pandemic risk perception lacks a substantial correlation with firm performance because the calculated p-value exceeds 0.05 significance level. Consequently the hypothesis rejection proves pandemic risk perception shows no meaningful direct link to firm performance. Academic research demonstrates that business operations encounter challenges since pandemics disrupt supply chains and cause customers to modify their behaviors and force regulatory changes and workforce modifications (Koonin, 2020). The study shows direct measures between these factors and firm performance results actually do not exist. According to Ivanov (2022) pandemic risk perception does not directly influence business success because it requires mediation through corporate resilience together with adaptive business strategies and external market conditions. The ability to perceive and assess pandemic risks stands essential for developing crisis response plans yet alone this does not guarantee superior firm outcomes. The research shows that businesses reach higher performance levels during pandemic situations by taking direct actions for resilience and digital transformation and governance implementation while risk perception remains inadequate. According to Verma and Gustafsson (2020) effective pandemic management by firms relies on deep crisis management strategies as opposed to single-focus risk awareness efforts.

Pandemic risk perception does not show a statistical link to firm performance according to this study although its possible secondary effects demand more research. Companies which correctly identify pandemic risks together with implementing strong mitigation plans tend to sustain operational stability and strengthen crisis response abilities and achieve better long-term

flexibility when operating in uncertain environments (Sharma et al., 2022). Extant research should analyze which factors such as innovation along with financial resilience and government support features influence the relationship between pandemic risk perception and firm performance. The investigation of intervening variables will generate complete perspectives regarding effective processes to transform risk understanding into actual performance gains for organizations.

It was suggested in the hypothesis (H9) that how people perceive the risk of a pandemic can shape firm's performance. Perceived pandemic risk had no effect on the way digital transformation affects a firm's performance. Some believe firms that had embraced digitalization were able to perform well no matter the level of individual or organizational risk aversion. His argument is supported by this theoretical view which explains that psychological factors do not produce easily measured or simple impacts unless another important element (like organizational readiness) is added. This means that a company needs organization and structure to manage risks it sees coming from the outside. Other researchers could investigate deeper aspects of psychology or actions or collect qualitative material to explore how companies handle risks they perceive.

A business strategy perspective shows that lowering perceived risk is not enough to boost performance except when accompanied by steps to manage risks, build resilience or make key investments. This agrees with Ivanov's (2022) finding that pandemic risk perception improves by using flexible organizations, adaptable supply chains and effective leadership.SMEs and medium-sized firms in Malaysia may not have the necessary support to use awareness of risks to quickly respond in strategic ways. Also, the way uncertainty is handled within culture, as well as strict lines of authority, can prevent an organization from acting quickly to manage risks.The study found that pandemic risk perceptions did not directly affect firm performance, but they might have

affected it by influencing digital transformation, governance or resilience within a company. For example, when governance is strong, companies may use their increased risk awareness to organize scenario planning and allot resources better. More studies should be done in the future to investigate mediating factors including how leaders act, the culture of an organization and its technology. Researchers might discover why people in charge decide to take action against or remain unresponsive to, pandemic threats using case studies and interviews.

5.2.10 Digital Transformation impact on Firm's Performance

H10: Digital Transformation has a significant impact on firm's performance.

Digital transformation demonstrates a substantial relation to firm performance as confirmed in H10. The results of SmartPLS analysis demonstrate this hypothesis via a path coefficient which measures 0.232 while showing a T-statistic equal to 4.117 and a p-value set at 0.000. The test results showed that the p-value establishes statistical significance because it remains below the standard threshold value of 0.05. The research indicates that organizations implementing digital transformation see quantifiable increases in company performance based on the analysis by Vial (2019).Firms achieve better efficiency along with innovation and competitive abilities through business process integration of digital technologies. The digital transformation approach comprises elements that include automation as well as data analytics and artificial intelligence and cloud computing to enable organizations to make better decisions while improving client relationships and operational flexibility as stated by Matt et al. (2015). This research supports earlier findings which established digital transformation as an enhance of business performance via productivity elevations and cost reductions coupled with innovation promotion Henriette et al. (2016). The study findings confirm digital transformation usually supports

organizations in maintaining their market presence and business development efforts. Businesses which put resources into digital technology adoption achieve better market disruptions adaptation and consumer demand evolution. The combination of teamwork improvements along with better customer interaction and data-informed business operations enables companies to achieve better performance outcomes (Sebastian et al., 2017).

Organizations must make digital transformation their top strategic priority since evidence strongly validates this hypothesis to preserve competitiveness in modern digital markets. Research should advance by studying how specific digital business methods affect this association as well as how organizational traditions, leadership practices and regulatory restrictions affect the connection between digital transformation and company outcomes.

The research evaluated whether digital transformation ties to better performance of a company (H10 in the model). As supported by the results, there was a strong and solid relationship. Modernizing operations, improving efficiency and adapting to market changes become possible with digital transformation. That certain technologies are key to modern business success finds support in Brynjolfsson and McAfee (2014) and Leo et al. (2023). In theory, the outcome fits with dynamic capabilities theory by showing that digital investments aid a firm in sensing and managing change. Practically speaking, digital readiness matters; companies should improve their IT systems, give staff digital training and use data when making important choices. Experts might examine the specific drivers and problems within particular sectors that influence digital transformation results.

5.3 Discussion of Major Findings

Digital transformation acts as a significant factor which strengthens the connection between ESG factors, Organizational Economic Resilience and firm performance. Electronic technology integration within ESG strategies led firms to improve operational performance and maintain business stability with better market positions. The research outcome matches two scholarly works (Rahim et al., 2022; Elgazzar et al., 2021) demonstrating that firms use digitalization capabilities to handle disruptions with greater success after pandemic disruptions. Digital adoption gets its momentum from ESG factors especially governance practices according to Kumar et al. (2021). Strong governance practices within firms lead them to develop digital solutions which modernize their operations and decision systems. The study confirmed Organizational Economic Resilience as the main factor that enabled businesses to maintain their digital transformation investments according to Freeman (2010) and Hidalgo (2021) research.

Despite the theory that pandemic risk perception might effect firm performance, the research found no strong statistical link. For this reason, digital transformation does not play a direct role in affecting overall performance in this study ($p = 0.474$, $T = 0.717$). Risk-conscious businesses accelerated their digital solution adoption leading to superior performance results (Slovic 2000, Talwar et al. 2023). Companies having strong worries about future pandemic threats expanded their digital tools including cloud services with AI solutions and e-commerce capabilities to maintain business continuity and customer relationships. Relevant studies previously established that proactive firms succeed better in managing crises because of their adaptive measures (Mohajan, 2020; Yusuf & Oyelakin, 2022). The study emphasizes the need to

include risk perception models within corporate plans because Nguyen et al. (2023) explain they help organizations remain flexible during economic uncertainties.

This study makes an empirical contribution by uncovering a resilience-efficiency trade-off. The results show that Organizational Economic Resilience does not directly affect firm performance ($\beta = 0.043$, $p = 0.305$), but needs to be complemented with digital transformation. This demonstrates that resilience, in itself, cannot be used to improve performance unless it is mobilised through digital capabilities. This finding builds on prior research by demonstrating the importance of digital transformation as an intermediary factor between Organizational Economic Resilience and performance, and supports the importance of dynamic capabilities in firm performance.

5.4 Implications of the Study

The thesis advances knowledge within the academic realm through its implementation of Stakeholder Theory as stated by Freeman (2010) and Economic Complexity Theory as mentioned by Arthur, (2021) to analyze Environmental Social Governance (ESG) factors whereas also studying Organizational Economic Resilience and digital transformation. The research illuminates new understanding about business strategies through its merger of Stakeholder Theory and Economic Complexity Theory which reveals approaches to navigate economic markets and multiple stakeholder requirements during digital program execution. The study provides a detailed analysis of how digital transformation combines with sustainability and economic success especially during times of worldwide market instability.

Existing research receives new grounds because this study shows how embryonic and hybolic stakeholders play a vital part in molding digital strategy formation and ESG commitments at corporate level as stated by Lock and Seele (2017). Research shows that traditional stakeholder theory dedicated most attention to primary groups such as investors and regulatory bodies and employees yet this research stresses the developing impact of modern stakeholder groups like sustainability-based investment funds together with technology innovators and social advocacy organizations. The framework promotes better corporate digital transformation through stakeholder participation by maintaining the alignment of sustainability goals with digital initiatives and strategies. Economic Complexity Theory helps illustrate the factors producing business resilience through technological diffusion along with industrial development and information sharing networks. Firms located within well-developed economic areas should develop exceptional digital competencies to withstand market disruptions and external shocks correctly. Businesses need to invest in sophisticated technologies because these capabilities create both operational advantages and positional advantages that boost their sustainable future success.

The present study adds to the literature by revealing digital transformation is a mediating variable between ESG factors, Organizational Economic Resilience and firm performance. which helps firms embed ESG principles into their strategic planning. The analysis establishes technology as a central driving force for ESG program execution to help organizations support environmental goals and social commitment and good corporate governance standards. Electronic adoption represents more than technological advancement since it forces businesses to restructure operations through dynamic stakeholder demands. Firm performance models incorporate pandemic risk perception as a new theoretical concept to moderate their outcomes. This research

indicates that businesses make important decisions about digital adoption and ESG alignment due to risks stemming from the pandemic. Organizations need to embed risk management protocols into their digital transformation initiatives to develop their capacity for resisting potential forthcoming worldwide disturbances. The ability of firms to remain flexible depends on pandemic risk status because this factor determines their trade-offs between sustainability targets and digital readiness and economic stability.

The analysis presents digital investment to leaders at a strategic level because it delivers operational advantages along with enduring business resilience. Organizations now need digital transformation as a required strategic technology that enables survival and leads to competitive success. According to the research data analytics with automation and blockchain together with artificial intelligence (AI) and cybersecurity should be vital strategic digital capabilities for business model development which enables adaptiveness during market uncertainties. Corporate strategies that embed ESG principles should be adopted by senior execs and decision-makers since they strengthen stakeholder connections and regulatory adherence and deliver better financial results in the long term as stated by Schaltegger and Burritt (2015). Active integration of sustainability into business operations creates multiple advantages through better brand recognition and more investors become confident and stronger relations with regulatory bodies. Companies that integrate ESG with digital transformation maintain resilience against economic as well as environmental market uncertainties.

Strong stakeholder engagement strategies should be developed by firms to make sure digital transformation initiatives support their sustainability commitments. Complete understanding achieved through investor and regulatory and staff and customer and community

involvement will enhance ESG implementation success. Participatory stakeholder involvement allows digital adoption to match ethical business standards and regulatory requirements and consumer expectations at various stages. Organizations need to implement proactive strategies that will protect them from digital technology risks alongside cybersecurity threats and economic disorders due to digitalization. Through effective risk governance structures along with periodic digital system audits and cybersecurity technology investments companies can both address digital disruption challenges and maintain their ESG responsibilities.

This research gives essential knowledge to policy officials who want to develop eco-friendly economies that use modern technology. Governments serve as key players in the development of regulatory settings that motivate businesses to connect ESG concepts to their digital transformation activities. The results of this study recommend that governmental authorities should establish three strategies including Financial Incentives for ESG-Driven Digitalization which involves implementing tax advantages and grants and subsidies for businesses integrating ESG into digital change processes (Bank Negara Malaysia, 2023). National sustainability aims gain reinforcement through financial backing of digital sustainability projects which drives businesses to invest in lasting digital capabilities. opakwandi must create precise digital reporting and ESG compliance regulations which policymakers should establish to guide organizations. Organizations will embrace both sustainable digital operations and regulatory compliance when proper guidelines exist to guide them. The government must establish sustainable partnerships between public organizations academic institutions and private businesses to promote digital transformation along with business innovation for sustainability. Knowledge-sharing platforms developed by companies will boost the process of adopting ESG-aligned digital technologies and

help them gain knowledge from industry's best practices. The exchange of digital transformation expertise and knowledge about ESG compliance should become a core responsibility of business organizations within their industry associations and networks. Through industry cooperation companies gain improved abilities for digital risk management along with sustainability-based business model establishment and market demand adjustment skills. This research introduces future research opportunities within digital transformation and ESG integration fields. Research should expand its exploration of artificial intelligence (AI) to understand its benefits for sustainable business strategies which include better ESG compliance as well as automated reporting systems and transparent supply chain monitoring. The study adopted non-probability purposive sampling, and this could have an impact on the generalizability of the results. Purposive sampling does not allow for equal representation of all members of the population. Thus, the findings should be applied to the sample, rather than all Malaysian firms. Probability sampling should be used in future studies for better external validity and generalization.

By assessing multiple industries it becomes possible to detect sector-specific barriers and benefits regarding the ESG integration with digital transformation. To deliver extensive knowledge of best methods in digital enterprise transformation research should explore the sustainability strategies which finance sector and manufacturing professionals together with healthcare sector and retail businesses use. This research demonstrates essential connections between ESG factors and Organizational Economic Resilience through business digitalization. The use of digital technology and sustainable business models allows organizations to improve their capacities to be adaptable together with their potential for long-term development and market leadership position. The study reveals significant business leadership and policy-making as well

as academic value by demonstrating the necessity of digital spending as well as stakeholder collaboration and regulatory congruence for achieving sustainable corporate achievement. Companies which integrate ESG principles together with digital transformation approaches are optimally positioned to address economic instabilities and conform to evolving shareholder desires and advance Organizational Economic Resilience worldwide. Companies that use digital innovation together with sustainable governance and economic complexity adaptation achieve long-term business sustainability and build a technological world market based on equity.

5.4.1 Theoretical Implications

It adds to the academic field by supporting the development of Stakeholder Theory and Economic Complexity Theory. Simultaneously applying these theories, the research explores the effects of environmental, social and governance (ESG) factors, in addition to Organizational Economic Resilience and digital transformation, on how firms perform, primarily after the pandemic. Stakeholder Theory is used in the study to explain how groups of sustainability investors and technology advocates now have a bigger impact on the digital transformation approaches of companies. It widens the usual focus on investors and employees to involve external groups leading ESG actions and digital strategies.

Also, Economic Complexity Theory explains how companies in advanced economies depend on effective use of technology, knowledge sharing and strong skills in different areas to strengthen their stance. It is found in the research that ESG principles and performance outcomes are linked by digital transformation, so technology supports sustainability and resilience as much as it helps with efficiency. In addition, by including pandemic risk perception in the model, it

becomes clearer how perceived threats from the outside can determine whether businesses use technology or sustainable practices.

5.4.2 Managerial Implications

From the point of view of management, the study presents useful guidance to leaders and policymakers. It argues that digital transformation is best seen as a way to support ESG and strengthen the economy and should not be treated alone. Managers should introduce advanced technologies including data analytics, AI and blockchain, not only for better operations, but also to become more resilient and respond to what stakeholders are looking for in terms of sustainability.

The study also found that good governance helps companies go through digital change and achieve top performance. Ensuring that regulations, openness and stakeholder involvement are part of their digital approaches is important for leaders. Also, organizations should account for pandemic-linked risks by developing risk management processes within their strategies, since this would help them better handle economic uncertainties. This demonstrates the need for policymakers to push changes that encourage ESG-related digitization, for example, by tax exemptions and support programs. Taking part in corporate sustainability reporting and supporting digital development can lead businesses to support the country's wishes for sustainable development and economic recovery after the pandemic.

5.5 Policy Recommendations

Research data indicates firms should create whole digital plans which match their ESG and resilience needs to improve operational efficiency and competitive advantages. A strategic

digital implementation requires investments in modern technologies in addition to training workers about digital competencies and enhanced cybersecurity standards for business operations protection. The innovation culture of organizations needs development to enable ongoing improvement along with market response capabilities facing technological and industry changes.Organizations need to implement pandemic risk perception within their risk management procedures for preparing against upcoming economic shocks. Businesses must plan various crisis scenarios through tools of scenario planning and financial models stress testing to build operational contingency systems that utilize digital resources. Companies need to construct supply chains that resist disruption through digital monitoring technology while choosing multiple suppliers and making predictions about supply disruptions with data-driven analytics.

Policy leaders must provide advantages to organizations adopting ESG programs and digital capacities to develop a sustainable corporate structure. Authorities provide economic assistance through grants in addition to tax advantages and low-interest funding aimed at businesses that carry out digital and sustainable transformations. Governments need to develop policies which encourage businesses to provide detailed ESG transparency because firms must demonstrate their sustainability responsibilities to stakeholders. The public sector must actively partner with private enterprises to generate mutual digital and ESG resource sharing as well as learning programs.

Firms need to establish platforms for exchanging best practices about digital transformation along with ESG methods and risk control principles. Businesses can benefit from workshops and industry conferences and cross-company events that assist them in handling common challenges while speeding up their adoption of digital and sustainability-based methods.

Future investigations need to analyze different moderating elements including industry-based obstacles alongside technology advancement speed to uncover additional details about organizational success factors. Maintaining focus should be on investigating how artificial intelligence and blockchain technology affects corporate sustainability together with organizational resilience. Research examining digital investment and ESG commitment patterns for businesses throughout time needs to study the effects of regulatory changes and marketplace dynamics and societal needs. Future research must address mentioned gaps in order to develop a complete framework about the convergence between digital transformation and ESG initiatives and economic stability.

Malaysia's government is supporting digital growth and sustainability using different policies. As an illustration, MyDigital Blueprint and the Twelfth Malaysia Plan (2021–2025) aim to make firms more resilient and achieve better results by including ESG, building the digital economy and using green technology. Besides that, Bank Negara Malaysia has set up rules and given money to help ESG-focused digital initiatives. Even so, SMEs are still underrepresented, ESG reporting uses various standards and integration across sectors is ongoing. Most of the attention for ESG compliance is on large companies, as small and mid-sized firms continue to have a lack of interest, modern tools or money to focus on sustainability. Policy tools designed for particular industries are also required, because every industry is not equally prepared for digital ESG.

Thus, the government and policymakers should make the following top priorities such as more consistent monitoring and following of ESG reports, Government programs that help small and medium-sized enterprises grow and incentives to use digital and ESG approaches and Teaming

up public and private sectors to share knowledge and design new ideas in a variety of industries. Addressing the shortcomings of present frameworks and basing new policies on them can guarantee Malaysia follows sustainability goals that are accessible, enforceable and in step with the world's best performers

5.6 Limitations of the Study

The study succeeded in making valuable contributions yet it contains multiple restrictive factors. The research investigates solely Malaysian organizations which reduces the potential for extending the obtained knowledge to businesses from varied economic settings. Business environments plus legal frameworks plus cultural factors among nations exhibit major differences because of which companies implement ESG principles as well as digital transformation plans and resilience approaches differently. Future investigations should include an examination of multiple regional business settings to boost the external validity of the research findings. The findings lack complete insight into the changing patterns of digital transformation together with company achievements because the data was collected at one point. Digital transformation operates as an ongoing procedure that depends on technology developments alongside market changes and changing stakeholder demands. Observing firm strategies and performance and tracking their developments through time with longitudinal research would supply stronger understanding of the digital initiative's relationships with firm outcomes.

Self-reported survey data presents the risk of response biases because respondents could affect the findings' strength according to Hair et al. (2021). Study participants have a tendency to exaggerate or downgrade their digital transformation initiatives along with their ESG engagements and business operational stability because of bias influences stemming from their social

preferences and basic operational understanding of organizational objectives. The research needs to use numerous data sources which combine financial reports with third-party assessments and industry benchmarks to strengthen the validity of its findings by verifying data reliability.Firm performance responses vary across distinct sectors because industries adopt different technologies while meeting specific conditional requirements and operating within specific market environments. More detailed research is needed to analyze specific business sectors because it would reveal precise connections between digital transformation with ESG and Organizational Economic Resilience in diverse professional settings.

The study collected data only at one particular time. For this reason, the analysis can discover links among ESG factors, Organizational Economic Resilience, digital transformation and firm performance, but it cannot positively prove one causes another with certainty. There is no research on how firm performance changes over time as a result of shifting ESG practices or digital approaches. For these reasons, fusture studies that follow subjects over time can explain the sequence of events better and show the links between different parts of the post-pandemic recovery phase. While there are potential issues with response bias and self-reported data, statistical analyses carried out in Chapter 4 offer confidence in the quality of the data. In particular, variance inflation factor (VIF) tests showed that multicollinearity is not problematic, with all values being below the critical level. This indicates that the variables are not highly correlated, thus strengthening the validity of the results.

5.7 Recommendations

This research helps explain how ESG practices, digital transformation and Organizational Economic Resilience influence firm performance, but further research can be done in several areas.

At the beginning, researchers need to pay attention to investigations called for by industries, since firms are likely to face various ESG issues and fears about digital technology, depending on their area of work. Doing research that focuses on different sectors could discover special trends and help craft better policy strategies.

Second, it is important to conduct long-term studies to track changes in firm performance because of ESG and digital transformation. Especially after the pandemic, where both recovery and transformation are still happening, this is very significant. Another point is that attention should be given to small and medium enterprises (SMEs), as they frequently have less access to capital, technology and training related to ESG and digital development. The World Bank (2022) notes that helping SMEs get financing is still a major issue faced all over the world, particularly in developing countries. In addition, extra research could look into things like organizational culture, leader commitment or government support as possible reasons for differences in performance levels. Lastly, using interviews or case studies gives researchers insights into real life situations that quantitative models are not designed to pick up.

5.8 Summary

The thesis ended with a thorough analysis that explained major research outcomes together with their implications for the future and study restrictions. Research findings showed that digital transformation performance depends heavily on ESG factors and Organizational Economic Resilience yet pandemic-related perceptions determine their effect on firm outcomes. Through the combination of Stakeholder Theory and Economic Complexity Theory this research created a complete approach to help business organizations link their digital plans to sustainable goals and operational resilience targets.Researchers have added value to theoretical and practical

fields through their analysis of digitalization and ESG strategy investments as post-pandemic business solutions. Utilizing stakeholder engagement stands out as the essential factor to achieve digital transformation success which requires firms to develop digital capabilities that boost their operational efficiency and long-term competitiveness and adaptability. Through research findings sector leaders together with government authorities can create standard guidelines to support sustainable and digital business systems

The final section of this work put forward important recommendations which emphasized the strategic integration of ESG principles throughout business decision-making structures for businesses and both government agencies and industry groups. This research presented several limitations during its analysis because it examined Malaysian businesses using cross-sectional statistics from self-reported responses. The current research faces different constraints leading to new opportunities which future investigations should explore by combining regional comparisons with constant monitoring and focused industrial assessments to create better digital transformation insight about firm performance effects.Researchers should use this base of knowledge to study organizational resilience and sustainability as businesses continue digitization of their operations. Academic studies focusing on emerging technologies along with artificial intelligence, blockchain, and IoT will improve the comprehension of digital transformation development in corporate strategies. Existing business climate unpredictability requires continuous study because it enables organizations to detect emerging opportunities and hurdles for sustainable economic development.

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Questionnaire

Company Profile

1) Where is your company based in:

- Perlis
- Pulau Pinang
- Kedah
- Perak
- Selangor
- Kuala Lumpur
- Negeri Sembilan
- Putrajaya
- Melaka
- Johor
- Pahang
- Kelantan
- Sabah
- Sarawak
- Other

2) What is the sector of the economy of your organization?

- Services
- Manufacturing
- Construction
- Agriculture
- Tourism and Hospitality Sector
- Education Sector
- Retail Sector
- Energy Sector
- Information Technology (IT) Sector
- Healthcare Sector
- Entertainment and Media Sector
- Transportation and Logistics Sector
- Other

3) Total number of Full-Time Employees

- 1-10
- 11-50
- 51-150
- 151-500
- More than 501

4) How much is your company's yearly revenue (RM)?

- Less than 250,000
- 250,001 - 1 million

- 1 million - 10 million
- More than 10 million

5) Duration of company established.

- Less than 1 year
- 1 - 3 years
- 4 - 10 years
- Above 10 years

Section B

Instruction: Indicate the extent that you agree with each statement in Section B. Please refer to the ratings provided and tick [√] the most appropriate option in the relevant column for each statement below.

Rating: 1= Strongly agree 2= Agree 3= Neutral 4=Disagree 5= Strongly disagree

Please indicate to what extent you agree or disagree with the following statements.

A) Firm Performance						
No.	Statement	1	2	3	4	5
1	Our firm's revenue has significantly decreased due to the COVID-19 pandemic.					

2	We have had to make significant operational adjustments to cope with the impacts of COVID-19.					
3	Our firm has reduced the number of employees as a result of the pandemic.					
4	Our supply chain has experienced disruptions due to the COVID-19 pandemic.					

B) Social Factors						
No.	Statement	1	2	3	4	5
1	Employee morale and well-being have significantly influenced our firm's performance after the pandemic.					
2	Maintaining strong relationships with customers has been vital for our firm's recovery post-pandemic.					
3	Increased engagement on social media platforms has positively impacted our firm's performance in the post-pandemic era.					
4	Pandemics affected team dynamics within your organization.					

C) Organizational Economic Resilience						
No.	Statement	1	2	3	4	5

1	Our firm's diversified product or service offerings have contributed to our Organizational Economic Resilience post-pandemic.					
2	Flexibility in our supply chain management has been key to maintaining our firm's performance during the post-pandemic era.					
3	Effective workforce management strategies have played a significant role in our firm's Organizational Economic Resilience post-pandemic.					
4	Strong customer relationships have been instrumental in sustaining our firm's performance in the post-pandemic market.					

D) Digital Transformation						
No.	Statement	1	2	3	4	5
1	Our firm's operational efficiency has improved due to digital transformation initiatives implemented after the pandemic.					
2	Customer satisfaction has increased due to the digital transformation efforts our firm undertook after the pandemic.					
3	Digital transformation has enhanced our firm's competitiveness in the market following the pandemic.					

E) Pandemic Risk Perception						
No.	Statement	1	2	3	4	5
1	Your firm's overall revenue has been negatively impacted due to pandemic-related risks.					
2	Your firm's operational costs have increased due to enhanced health and safety measures implemented during the pandemics.					
3	Pandemic has negatively affected your firm's supply chain efficiency.					
4	Customer demand for your firm's products or services has declined due to pandemic-related concerns.					
4	Digital transformation influenced your firm’s revenue growth post-pandemic.					

F) Environmental Factors						
No.	Statement	1	2	3	4	5
1	Our firm has increased investments in sustainable practices post-pandemic.					
2	Complying with new environmental regulations post-pandemic has affected our business operations.					
3	We have improved our energy efficiency as a response to environmental concerns heightened by the pandemic.					
4	There is a greater demand for environmentally friendly products/services from our customers post-pandemic.					

G) Governance Factors						
No.	Statement	1	2	3	4	5
1	The size of our audit committee has been effective in improving financial oversight and performance during the recovery from the pandemic.					
2	Directors serving on multiple boards (board busyness) have had a positive impact on our firm's performance post-pandemic.					
3	Our firm's commitment to CSR activities has significantly improved our performance in the post-pandemic era.					
4	Effective corporate governance practices, such as regular audits and transparent reporting, lead to improved firm performance.					