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Factors Influencing Company Performance during COVID-19: Case Study of a Semiconductor Company in Malaysia

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Abstract

The latest global disaster, the Coronavirus outbreak, has impacted all areas of the economy. Some of the preventative measures governments take to protect public health are lockdowns, limited movement orders, and social isolation. While acknowledging the necessity of the national order in limiting the virus's massive spread, the authors argue that the control order strategy has unintended consequences for all economic sectors in Malaysia, such as Semiconductor Manufacturing Industry. With the present supply chain interruptions brought on by the Covid-19 pandemic, global chip scarcity will potentially last for a few more years. It is becoming a significant problem in the current manufacturing industries worldwide. The key issues generating chaos in the semiconductor industry included global shutdowns, misreading the demand for electronics, underestimating client demand for the automobile industry, and the Internet of Things (Galia & Aida, 2021). This paper aims to determine the factors that influence semiconductor company performance in Malaysia during COVID-19. This cross-sectional study is based on descriptive research that employs quantitative approaches. Questionnaires are being created and distributed via the Internet. 200 employees of semiconductor companies with job titles senior executive and above (not including HR personnel) who were affected during COVID-19 in Malaysia would be the intended sample size. Data will be gathered and analyzed based on reliability tests, factor analysis, and multiple regression analysis

Keywords: *Company Performance, Technology Adaptability, Organization Skills & Competency, Process Management, Employee Engagementz*

1. INTRODUCTION

In the 21st century, semiconductors have grown in popularity as they are necessary for almost all electronic gadgets. Semiconductors can be assembled into the form of diodes, transistors, and integrated circuits, which are all the building blocks of wide-reaching applications in almost every industry (Rumbaugh et al., 2020). As such, we can expect semiconductors to be consistently utilized at a high frequency since it is a crucial element in electronic systems (Batra et al., 2018).

Silicon is the most often utilized material because it is simple to obtain in the form of sand and has the potential to produce an electric current through a process known as doping. The wafer fabrication process converts silicon wafer crystals into semiconductor chips, which is a series of sophisticated and crucial steps in the manufacturing process. (Semiconductor,

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

2020). Integrated circuits (I.C.) made up of countless billions of capacitors and resistors, are the most common final products of wafers. The entire cycle time from Silicon preparation to the product's final step might range from 4 to 16 weeks because the chips need to be handled with the utmost care and go through rigorous testing. This processing step of the supply chain can frequently cause delays and disruptions for producers and customers up the ladder due to its lengthy and variable production process (Kohls et al., 2020). This is because American companies rely heavily on outsourcing due to the lower manufacturing cost.

China and East Asia account for almost 75% of the world's capacity for semiconductor production, placing them at a huge geopolitical risk. Additionally, Taiwan (92%) and South Korea (8%), two countries, currently house 100% of the world's most sophisticated (below 10 nanometers) semiconductor production capacity. The American economy, national security, and key infrastructure all depend on these cutting-edge processors (Semiconductor Industry Association, 2022). However, in the 2010s, cutting-edge businesses from South Korea, Taiwan, and China gradually expanded their technological skills and took the lead in the production of semiconductors (Yeung, 2022). As a result, Taiwan's TSMC and South Korea's Samsung have supplanted American semiconductor manufacturers as the industry's technology and sales volume leaders, respectively (WiCht, 2021).

The ongoing Covid-19 pandemic has ushered in a new age, and many businesses are still cognizant of the devastating consequences it has on numerous facets of their everyday operations today (Do et al., 2021). A substantial economic crisis decreased sales, and interruptions in the supply chain (SC) system were caused by events marked by unprecedented unpredictability, as this virus indicated (Parast and Subramanian, 2021; Kumar and Abdin, 2021). The fundamentals of the industry, including consumer behavior, commercial revenue, and several other key areas of corporate operations, have been drastically changed by COVID-19. Prospects for many businesses are murky, and others might not make it out of the crisis. Depending on prospective government initiatives and other currently difficult factors to anticipate, various recovery scenarios are feasible (McKinsey, 2020).

Our lives have drastically changed since the COVID-19 pandemic began at the end of 2019. People are less inclined to go out, and when they do, they prefer private cars over public transportation (Bauer et al. 2020), while telecommuting and online classes are increasing. As a result, there is now an imbalance between the supply and demand for semiconductors, one of the most crucial parts and components of such products. As such, the demand for electronic devices and cars required for remote work and other purposes has risen (Bauer et al. 2020). Major changes are anticipated in the international mobility of engineers, particularly with the United States and Japan luring factories of Taiwanese businesses. COVID-19 has increased competition for semiconductor experts and caused a rise in demand for that industry in particular (Sekiguchi and Okada, 2021)

However, Malaysia has proved resilient to the effects of semiconductor shortages. Over 1,700 semiconductor companies are established in Malaysia, which has drawn more than US$35 billion in foreign direct investment over the past 50 years (Ernst & Young, 2022). The semiconductor subsector had a 2021 GDP contribution of 6.85%, or RM95 billion. Additionally, the country's exports were dominated by the E&E subsector, accounting for 36.8% of total exports or RM455.73 billion in 2021. Malaysia targets an RM120 billion contribution to GDP from the E&E subsector by 2025, focusing on accelerating the development of strategic and high-impact industries in 12MP. For comparison, in 1972, E&E exported only RM230 million.

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

Due to Malaysia's significant role in the global semiconductor value chain and the fact that 7% of all semiconductor commerce passes through the country, it is crucial to determine how the chip shortage would affect Malaysia's Semiconductor production (Bank Negara Malaysia, 2021). Semiconductor production activity has shown a significant resurgence from the peak of containment efforts internationally in April 2020 and has continued to register noticeably high levels. In particular, since June 2020, production has exceeded pre-pandemic levels (Dept of Statistics Malaysia, 2021)

2. REVIEW OF THE LITERATURE

The long-term effects of COVID-19 disruptive effects are still unknown, but it is already being felt in the short term. The supply chain, market demand, and personnel are three areas where the semiconductor business must promptly assess and respond to consequences. No industry is immune. Although the 2020 semiconductor revenue prediction has been cut by $55.0 billion to $415.4 billion, and the annual growth for 2020 has dropped from 12.5% to 0.9%, semiconductor companies have proven resilient in prior economic downturns (Accenture, 2020). Through videoconferencing and other technology, individuals worldwide have been experimenting with new methods of working, studying, and communicating during the past few months. Such developments might have a long-term effect on semiconductor demand and present fresh opportunities for current goods and services. For instance, as online collaboration expands, demand for semiconductors that enable servers, connection, and cloud usage may rise (McKinsey, 2020).

2.1 Company performance

Company performance is a general image of the organization that features its outcomes and achievements by utilizing the assets accessible in its tasks (Alrowwad et.al., 2017). Over the long run, an organization's ability to create high income, great item quality, capture market share, and strong monetary outcomes are alluded to as its exhibition (Silitonga and Widodo, 2020). Issor and Taouab (2019) agree that corporate performance can be viewed as an evaluation of whether the company can meet the needs or goals of its stakeholders to remain competitive in the market. Employees' skills and expertise, technology, equipment, working environment, strategic setting, and the company's human interaction process all influence the efficacy of the company's performance (Pramajaya and Widarti, 2018). Furthermore, Silitonga and Widodo (2020) repeat that company performance can be defined as the performance or quality of work by a person or group of individuals who perform work obligations in a company and achieve higher company success, regardless of tangible or intangible returns.

The organization's performance is essential, and it's presently a first concern for the organization to sort out some way to develop it further (Ali, 2020). Any organization's current objective is to endure, yet in addition to saving its reality to accomplish better execution to contend in the present market. The success of a company's performance is determined by three main performance elements: efficiency, human resource relations, and modernization and adaptation (Hashim, 2019). Efficiency is defined as a company's capacity to carry out all major job functions while minimizing costs incurred by people and resources to increase net operating margins and achieve competitive advantages (Capella, 2016). The next elements of company performance are human resource relations among employees in being integrated, trust, and commitment to contribute a common and shared interest for the organization (Gordon, Taber, and Yukl, 2002). Capella (2016) further stated that innovation adaptation is one of the characteristics of firm performance, which includes increasing sales and customer growth,

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

increasing market share, retaining customers, and meeting targets. There are several approaches to understanding a company's marketing, financial, and managerial performance, all of which can lead to positive financial consequences (Narkuniene and Ulbinaite, 2018).

Organizational performance is a thought where the organization's administration is centred around doing jobs to get yield throughout some period (Huo, Yu, and Zhang, 2020). According to Narkuniene and Ulbinaite (2018), the theoretical importance of company performance is a crucial element of company administration that allows for determining the impact of business and board decisions on exhibition outcomes. The correlation between negligible and effective expense in the economy, yield, and accomplished result to accomplish adequacy, and viable expense and acknowledged yield to accomplish productivity are completely analyzed (Fujianti, 2018). Organizations can accomplish superior execution when they utilize legitimate techniques and activity plans. This shows the organization's ability to arrive at the objective, which prompted benefits and a strong monetary result (Ali and Islam, 2020). According to Kuzmanovic et al. (2018), company performance is a constant process that includes innovation and advancement, as well as the firm's growth, which necessitates the participation of all levels of management and personnel.

2.2 Technology Adaptability

Since technology has grown more than ever, businesses can now create goods and interior solutions that were unimaginable a decade ago (Urbinati, Bogers, Chiesa & Frattini, 2019). It is possible that the markets for the manufacturing sector lagged in adopting all those advancements. However, leaders must now acknowledge the advancements being made by the fourth commercial revolution (Koizumi, 2019).

Organizations must develop employees' flexibility, versatility, and tolerance of uncertainty capabilities to boost or enhance their performance to maintain the dynamic working condition. Theoretically, the research contributes to its topic by studying the effectiveness of the companies in Malaysia, with the inclusion of flexibility as a moderating factor inside a resource-based perspective which is offered by IT knowledge (Kheng & Burkina Faso, 2018). According to Bakar et al. (2020), technology adaptability is encouraged as the Malaysian government created the Malaysian Industrial Development Authority MIDA for the implementation of subsidies allocation to enterprises while sustainable technologies are encouraged via tariffs, which have been demonstrated to be Malaysia's most efficient and economical method for promoting sustainable technologies.

Modifications to the industrial value chain process are called the Fourth Industrial Revolution or Industry 4.0. Emerging technology and improved methods for organizing and managing routine processes (prototyping, advancement, production, coordination, supply, etc.) within the manufacturing industry have strengthened these adjustments (Culot, Orzes, Sartor & Nassimbeni, 2020). Industry 4.0, the fusion of traditional production with internet technologies and growing device intelligence, is the most significant market development now affecting industrial manufacturers (Howells, 2014). All processes involving substantial data exchange along the whole value chain must be digitalized and automated. Adopting Industry 4.0 necessitates a significant transition that touches practically every part of the organization (Ostdick, 2017). However, the new digital systems, which are a result of Industry 4.0, instrument data for both physical and digital resources using newly developed Industrial IoT tools, robotics resources, autonomous robots, big data analytics devices, artificial intelligence, and cognitive systems, and augmented reality (Zheng et al., 2018).

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

Industry 4.0 generates a definite commercial advantage over rivals in the context of semiconductor firms. The entire manufacturing process may be tracked and optimized more quickly, from wafer cutting through chip testing (Thu L.H, 2020). The semiconductor industry's high yield and high cost make reliable and constant monitoring of key parameters necessary for economic and productive conditions. Operations of the packaging process steps—such as wafer back grinding, wafer dicing, die-attach, wire bonding, chip moulding, and electrical test—more thoroughly thanks to data monitoring and the use of AI approaches (Gabriel et al., 2020). Moreover, continuous monitoring of the number of particles and the air's humidity is necessary in clean rooms where these various production phases take place.

Some research has already been done in the area of IoT technologies for Industry 4.0. The study's authors (Illa et al., 2018) examined how to apply IoT strategies in a smart factory setting. They contrasted various approaches and methods, offering a reference design for the actual application of intelligent manufacturing. Additionally, the research looked at the relationship between automating the factory and the production process while considering real-time analysis and information system design.

Using Industry 4.0 principles to change a legacy factory into a smart one completely is no simple undertaking (Nikhil, 2020). It was described as an implementation plan with several phases and several years. New technologies are introduced to the factory every year or phase, starting with ERP (Enterprise Resource Planning), MES (Manufacturing Execution System), etc., in the first phase, moving through automation and seamless integration in the middle stages, and finally achieving IoT and real-time analytics in the final stage.

H1: Technology adaptability has a significant positive influence on company performance

2.3 Organization Skills & Competency

The term competency was originally used by McClelland in 1973, who defined it as "A personal trait that results in a high quality or more effective performance." Competency is a group of abilities, skills, and knowledge that enables a person to carry out a task properly. Competencies are the knowledge, skills, and abilities that every person requires to execute a work, according to a business perspective (Jerman, Peji Bach & Aleksi, 2020; Oberländer, Beinicke & Bipp, 2020). Competence is a person's capacity to handle a certain situation or carry out a task correctly. According to Jerman, Peji Bach, et al. (2020), this ability may be influenced by cognitive factors (such as different types of knowledge), perceptual and intellectual leadership skills (such as dexterity), efficient factors (such as behaviors, values, motivation, etc.), personality traits (such as confidence), and social skills (such as communicative and participating skills).

Competencies and skills are two of the fundamental building elements of any learning process. Skills are particular learning activities that call for aptitudes or proficiency developed through practice (Sanghi, 2016). A skill in the business world is a physical ability that is used to carry out one or more job responsibilities. Skills make applying information and using proficiency to complete clearly defined tasks possible. It generally acknowledges that a person can perform in a particular situation (Ala-Mutka, 2011; Sanghi, 2016). (Mäkiö-Marusik, 2017; Mäkiö-Marusik, Ahmad, Harrison, Mäkiö & Walter, 2018) Skills can be either intellectual (including the application of thinking patterns) or practical (requiring physical dexterity and using materials, techniques, and instruments).

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

Today's manufacturing industry is sustaining success for both the company and its employees by turning occupations into professions (Bakhshi, Downing, Osborne & Schneider, 2017). Manufacturing occupations are changing due to new technologies, moving away from regular and repetitive labor and toward more skilled, varied professions. Companies must ensure they can find, keep, and develop individuals with the required skills for these new roles as they continue to assess how technology fits into factories (Sihlongonyane, Ndabeni & Ntuli, 2020).

As a result, methods, content adaptations for training and delivery systems must be devised (Bakhshi et al., 2017). A manufacturing strategy emphasising digital business and extended production should also be considered (Camarinha-Matos, Fornasiero & Afsarmanesh, 2017). On the other hand, to support the global environment and important manufacturing-oriented players, there is a growing need to synchronize technical advances and skill sets globally (Camarinha-Matos et al., 2017).

The European Digital Competence Framework for Citizens (DigComp), first proposed in 2013, was updated in 2016 by the European Commission's science department, the Joint Research Center (JRC) (Vuorikari et al. 2016). Five areas of digital competencies were developed based on input from expert working groups from the European Commission, national ministries, external reviewers, and stakeholders: information and data literacy (e.g., evaluating and managing data), communication and collaboration, digital content creation (among others: copyright and licenses, as well as programming), safety (e.g., protecting personal data and privacy or health and well-being), and problem-solving (e.g., protecting personal data and privacy or health and well-being).

According to the literature, the technical, methodological, social, and personal abilities are the four aggregated categories of necessary core competencies that Hecklau et al. (2016) determine based on identified issues occurring with Industry 4.0. Technical talents include things like media literacy, coding expertise, and up-to-date knowledge. Along with other methodological competencies, it is also required to have creative, problem-solving, analytical, or research skills. Due to digital and networked working environments, extra social and personal competency requirements exist. These include the capacity to share knowledge, leadership abilities, adaptability, and the will to learn continuously.

H2: Organization skills and competency has a significant positive influence on company performance

2.4 Process Management

Process management must be continually improved to maintain the product and process quality at the required level. According to Mandava and Bach (2015), creating a process management group that will keep an eye on the consistency of the process is where the quality attention should be placed rather than on the processes or system. Manufacturing process management can be divided into four categories, Man, Machine, Material, and Method.

Many social scientists and economists describe human capital as the workforce's knowledge and skills, which act as crucial resources for firms (Al-Shamsi et al., 2018). When the working environment is uncertain, the employees are crucial in helping the organization accomplish its goals and objectives (Johnson, 1999). Tacit knowledge is thought to be difficult to generate or convey, is the most valuable knowledge asset that organizations can have, according to winter (1987). According to Nonaka, von Krogh, and Voelpel (2006), individuals can share their tacit knowledge with their organization and communities, which in turn can link

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

and connect their knowledge. Skills are the expertise that results from honed ability and provision of facilities in the accomplishment of an assignment, according to Glendon & McKenna (2016). A person needs information in addition to competence since they need more capacity and ability with it.

Similar to other industries, the semiconductor industry also seeks to maintain productivity and quality, so numerous studies have been conducted over time to improve these important objectives, which include how to most effectively manage and control the complex and varied semiconductor process equipment and to maximize its productivity and quality (Park & Hur, 2020). According to Ng and Chong (2017), the primary goals for increasing productivity are to enhance and practice manufacturing processes and perspectives that lead to steady, compliant operations that cost less money while keeping high standards of quality. Overall equipment effectiveness (OEE), as Ng and Chong (2017) noted, is a medium for assessing the machine's performance and efficiency because it has a reduced cost of ownership (COO). Since it allows process or equipment engineers to keep track of the current condition of process equipment and semiconductor product quality, the overall equipment effectiveness (OEE) is a crucial indicator of equipment productivity and product quality (Bamber et al., 2003). Huang et al. offered a clearer definition of OEE after Nakajima (1988) introduced the overall idea and Ames (1995) developed application recommendations for OEE in the semiconductor production process (2003). Ljungberg (1998) demonstrated that equipment setups and breakdowns impact availability, while production speed, minor equipment stops, and equipment idle time impact performance.

Material management is a crucial component of the organization. Effective and well-organized material management has a significant impact on the business's overall performance. According to Akindipe, managing materials in a manufacturing organization must be done quickly to maintain consistent output performance (2014). Additionally, Akindipe (2014) said that maintaining an acceptable level of supply is a consideration that must be taken into account to guarantee that production lines do not stop due to a lack of material supply, as this could impact productivity and the delivery of goods to customers.

Siregar, Arif Nasution, Prasetion, and Fadilah (2017) claim that maintaining superior product quality management and shorter cycle times are the key elements that help firms gain a competitive advantage over their rivals. To maximize production performance with fewer operational tasks, the organization must continuously endeavor to improve the production process. While Jovanovic, Milanovic, and Djukic (2014) noted that the cycle time is defined as the sum of the time needed to complete the process, the time it takes to prepare the components for the next cycle, and the time it takes to pack the items.

H3: Process Management has a significant positive influence on company performance

2.5 Employee Engagement

The global COVID-19 epidemic is transforming the way business is conducted today. In this challenging time, human resource managers consistently develop new, original, and efficient ways to engage the workforce. Employee engagement is a workplace mindset that encourages all members of an organization to consistently contribute their best efforts in support of the mission and core values of the company. Organizations always remember that productive personnel will increase workplace productivity, increasing customer happiness and unquestionably leading to sales and profit growth (Chanana & Sangeeta, 2020).

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

The lack of a universal definition of employee engagement presents the biggest problem in academic literature when discussing the term "engagement." In his study (Kahn, 1990), engagement denotes the physiological and bodily actuality of carrying out an organizational duty. The three constructs that aid in the development of involvement in an organization is the psychological qualities of meaningfulness, safety, and availability. According to more research, people express themselves physically, mentally, and emotionally while they are engaged in role-playing.

Most nations impose certain restrictions on the general populace, such as lockdowns, social withdrawal, and donning a face mask when leaving the house. Most businesses have started working online and implementing a work-from-home (WFH) policy in response to the current situation and allowing their workers to work remotely due to the lockout. However, working from home can be challenging for employees since they need to experience the office environment, struggle to focus because family members frequently drop by, and work-life conflicts result from these factors.

The majority of workers experience stress as a result of the increase in COVID-19 cases worldwide. Both their job stability and their pay are still being determined to them. Employee engagement is necessary because, as a result, workers are unable to concentrate or focus on their work. The organization's main duty is to look out for the well-being of its personnel and effectively involve them. Employees who are highly engaged provide 100% of their effort. In addition to boosting employee morale and providing a safe, open environment where they may voice any concerns they may have, leaders should deliver some motivational talks and lectures. Transparent policies are essential if you want staff to work without anxiety and with good manners.

Bedarkar and Pandita (2014) projected employee engagement using an integrated approach. According to the study's findings, work-life balance, leadership, and communication are the three main factors influencing employee engagement. The four elements that greatly contribute to employee engagement on Facebook are groups, perceived presence, simplicity of use, and reputation of Facebook features (Abd Latib, Bolong, & Ghazali, 2014). Employee engagement has a strong beneficial effect on organizational commitment, according to Jalal's (2016) research, and it was also identified as a key factor of organizational commitment.

H4: Employee Engagement has a significant positive influence on company performance

2.6 Underlying Theory

The independent variables in this research are supported by the Deming’s Theory of Management. Deming (1986) stated that satisfying client expectations is the key to maintaining the quality standard, which Alghamdi quoted (2016). Additionally, the organisation’s top management has the power to run the business and is cited by Alghamdi as the primary driver of that approach (2016). As indicated by Alghamdi (2016), Deming (1986) designed a rule that consists of fourteen components that tend to be a direction for an organization to deliver greater quality; Ngambi and Nkemkiafu (2015) also discuss this rule.

Deming articulated what he discovered to be the managerial changes required to increase quality in his system-based management philosophy framework, which is known as Deming's Theory, according to The W. Edwards Deming Institute. Four key areas and a list of 14 principles that are meant to direct improvements in organizational structure and behaviour are used to show these changes. In a nutshell, the framework fosters continual improvement in people and organizations when it is implemented. Instead of concentrating on issues with or

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

the behaviours of the individuals working within silos, it provides leaders with a path for dealing with teams and organizations as systems.

Deming's Theory has four (4) main parts:

I: Appreciation for a system

Anyone who does not comprehend a system cannot manage or enhance it. A leader must comprehend every element and improve the system as a whole.

II: Knowledge about variation

Accidents or causes of variation are brought on by the system and standardised procedures, not by persons or people. Understanding variance shifts responsibility away from the individual and focuses on the system to spot inefficiencies in training, workflow, or enhancement possibilities.

III: Theory of knowledge

Knowledge is more than just following examples; it includes information and experience. Improvement requires leadership, training, ongoing analysis, questioning, and problem-solving. The PDSA demonstrates this theory (Plan, Do, Study, Act) cycle, which Deming also developed.

IV: Knowledge of psychology

Although this paradigm focuses on the system, the system also includes humans. Leaders who have a thorough understanding of psychology can better manage and motivate their teams while also maximising the effectiveness of the system in which they operate.

Research Framework

Based on the hypothesis development above the conceptual framework for this research can be described as follows:

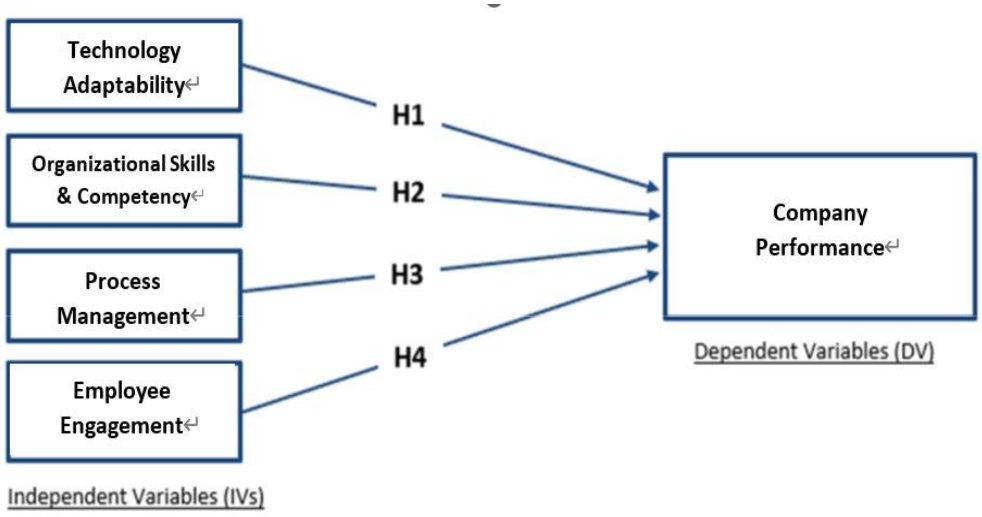

Figure 1: Conceptual Framework on the Factors that Influence Company Performance during COVID-19: Case Study of Semiconductor Company in Malaysia

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

3. METHODOLOGY

This research aims to determine the factors that influence semiconductor company performance in Malaysia during COVID-19. This study's analysis used a quantitative-based correlation approach to determine whether there is a relationship between IVs and DV (Hussami, Hammad, and Alsoleihat, 2017). The DV is company performance. This research employs a descriptive studies strategy, whereby descriptive research aims to complement current practice and assess the development of theories (Hoe et. al., 2018). The IV of the proposed study is technological adaptability, organizational skills & competency, process management, and employee engagement.

This study used quantitative research, and respondents were given questionnaires physically copy and electronically (Thanaraju et al., 2019). This investigation used as little tampering with the primary sources of data collection as possible (Chong and Dastane, 2017). A structured survey questionnaire is used to gather data and test hypotheses to analyze the relationship between the variables (Hoe et al., 2018). The absence of environmental influences and any manipulation of the environment or variables makes the research environment non-contrived (Lim and Naysary, 2022). Since survey data are only ever collected once at a certain period from respondents from different backgrounds, this study has a cross-sectional temporal horizon (Chung et. al., 2018). Individuals are the unit of analysis in this study, which aims to identify the variables influencing semiconductor company performance (Hiver, Hoorie, and Freeman, 2022).

In this research, Malaysia was chosen as the demographic area to conduct the study on factors influencing semiconductor company performance in Malaysia during COVID-19. The total target population of the labour force in the said semiconductor company is 500. Therefore, a total of 200 questionnaires will be distributed, and we expect to receive a minimum of 132 valid data by the 5% margin of error as proposed by Taherdoost, 2017.

The data analysis is used to evaluate and analyze all of the data, whereas the description analysis is used to describe the information. To construct a visual representation of the variables, descriptive analysis is performed. It is also used to determine the median to evaluate the central tendency, the mean average, and the standard deviation to evaluate the dispersion of the variables (Aldahwan and Ramzan, 2022). The data are regularly distributed if the standard deviation is close to the mean; otherwise, the data are skewed between -1 and 1. (Zairul, 2019).

The associations between independent factors and the dependent variable will be examined using multiple regression analysis. By analyzing numerous regressions, you can find out how the values of the dependent and independent variables vary (Khazaei, 2019). The coefficient of multiple determination (R2) for the calculated multiple regression equation indicates the degree of goodness of fit (Saunders, 2020). The R-Square statistic in a regression determines the percentage of variance in a dependent variable that is explained by one or more independent variables. R-squared values vary from 0 to 1, and the closer they are to 1, the better (Khaing, Yee, and Aung, 2019).

A standardized beta coefficient (Std. beta) was used to measure the strength of each independent variable's influence on the dependent variable. The greater the absolute value of the beta coefficient, the stronger the effect; if the beta coefficient is close to 1, it means that the IVs have a significant influence on the DV in this study; otherwise, a value of zero means that there is no influence on the DV. When the beta coefficient is negative, the outcome variable

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

will decrease for every unit rises in the predictor variable, which is also known as the inverse relationship between IVs and DV (Cawley, Takemoto, Boissiere et. al., 2021).

4. RESULTS

The totals of 139 respondents' demographic profiles in this research will be divided into five categories consisting of gender, age, work experience, position, education, and department in an organization. The respondents are senior employees in a semiconductor company in Malaysia, and the summary of the respondent's demographic profile is presented.

Table 1: Respondents' Demographic Profile

Respondents Demographic Profile			
		Count	Column N %
Gender	Male	65	46.8%
	Female	74	53.2%
Age	20-30 years old	27	19.4%
	31-40 years old	46	33.1%
	41-50 years old	35	25.2%
	51-60 years old	31	22.3%
Work Experience	More than 5 years	47	33.8%
	10-15 years	39	28.1%
	More than 15 years	53	38.1%
Position	Senior Engineer/Executive	80	57.6%
	Manager	32	23.0%
	Senior Manager	18	12.9%
	Director	9	6.5%
Education	Undergraduate	21	15.1%
	University Diploma	10	7.2%
	University Degree	76	54.7%
	Postgraduate	32	23.0%
Department	Process	38	27.3%
	Planning	14	10.1%
	Procurement&Finance	21	15.1%
	Equipment&Maintenance	14	10.1%
	Manufacturing	40	28.8%
	Product&RnD	12	8.6%

The data from 139 respondents will be used for analysis to conduct several statistical analyses in SPSS software to ensure the data is acceptable for hypothesis testing. According to Table 2, the KMO value for dependent variables is 0.845, and the independent variable is 0.895; both KMO values are greater than 0.6, indicating adequate sampling. In addition, the significance level for Bartlett's test for both variables was below 0.05; this proves that the factor analysis is feasible and has a significant correlation for the whole data set.

Table 2: KMO and Bartlett's Test

KMO & Bartlett's Test for Dependent Variable		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		
Bartlett's Test of Sphericity	Approx. Chi-Square	0.845
	df	447.882
	Sig.	0
KMO & Bartlett's Test for Independent Variable		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		
Bartlett's Test of Sphericity	Approx. Chi-Square	0.895
	df	1738.695
	Sig.	0

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

Table 3 shows the summary of Cronbach's Alpha value for dependent and independent variables, the purpose of conducted reliability test is to ascertain whether the questionnaire's items are internally consistent, and a reliability test was done. More than 0.8 on Cronbach's Alpha scale suggest very high reliability. The dependent and independent variables in this study are therefore trustworthy in terms of internal consistency and regarded as suitable for the study's objectives.

Table 3: Reliability Test

Variables	Cronbach's Alpha	Number of items
Company Performance (DV)	0.896	5
Technology Adaptability (IV)	0.869	5
Organizational Skills & Competency (IV)	0.841	5
Process Management (IV)	0.874	5
Employee Engagement (IV)	0.865	5

The variance inflation factor ("VIF") tests for multicollinearity and determines how well the independent variable may be used. VIF values for each independent variable range from 1.6 to 2.3. According to Shrestha (2020), a VIF score of 1 to 5 suggests that independent variables have only little influence on one another and that multicollinearity is not a problem.

Table 4: Coefficients and Collinearity Result

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.042	0.218		4.781	0		
	Technology adaptability	0.413	0.098	0.413	4.227	0	0.611	1.638
	Organizational Skills & Competency	0.303	0.138	0.228	2.204	0.029	0.545	1.836
	Process Management	0.127	0.152	0.097	0.837	0.404	0.432	2.316
	Employee Engagement	-0.269	0.128	-0.247	-2.11	0.037	0.423	2.363

Greater influences of the independent variables on the dependent variable are indicated by Beta coefficient values that are nearer to 1. From Table 4 above, technology adaptability has a statistically significant positive regression weight, with a t-value of 4.227 (greater than 1.96) and p-value of 0.000, less than 0.05 significance level. Beta value of 0.413 there is a correlation between technology adaptability and company performance. Organization skills & competency also have a significant positive regression weight, with a t-value of 2.204 (greater than 1.96) and a p-value of 0.029 which is lesser than the significance value of 0.05. A beta value of 0.228 revealed there is a positive relationship between organizational skills & competency in the company's performance. Process management has no significant correlation towards the dependent variable since the t-value is 0.837 (less than 1.96) and the p-value of 0.404 (more than 0.05 significance level). In addition, the beta value of 0.097 indicates that process management only has a very weak positive correlation with the company's performance. Employee engagement also shows a significant relationship with company performance, having a p-value of 0.037 which is lesser than the significance value of 0.05. A negative t-value of -2.11 still shows that it is a significant correlation with company

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

performance (more than 1.96). Although a negative t-value shows a reversal in the directionality of the effect being studied, it has no impact on the significance of the difference between groups of data, and the significance is gauged from the p-value, which is 0.037 in this case thus confirming employee engagement has a significant relationship with company performance.

Table 5: Hypothesis result

Hypothesis	t-Value	Beta Coefficient	Significance Value (p<0.05)	Results
H1: Technology adaptability has a significant positive influence on company performance	4.781	0.413	P= 0.000	Accepted
H2: Organization skills and competency has a significant positive influence on company performance	2.204	0.228	P= 0.029	Accepted
H3: Process Management has a significant positive influence on company performance	0.097	0.097	P= 0.404	Rejected
H4: Employee Engagement has a significant positive influence on company performance	-2.11	-0.247	P= 0.037	Rejected

All the hypotheses in this research are reliable and the result summary is shown in Table 5. The findings can be concluded that the factors of technology adaptability, organization skills & competency, and employee engagement are statistically significant and is acceptable to fit the research. The summary of the findings is tabulated in table 6 below.

Table 6: Summary of Findings

Test	Sample Size	Type of tests	Outcome	Findings
Preliminary Test	139	Factor Analysis	KMO > 0.6	Fit for research
			Bartlett's test Sig. = 0.00, <0.05	Fit for research
		Reliability Test	Cronbach's Alpha >0.8	High reliability
Hypotheses test	139	Multiple Regression	R square = 0.221	Fit for research
		ANOVA	P < 0.01	Fit for research
		Multicollinearity	VIF (technology adaptability) = 1.638	No multicollinearity between variables. Fit for research
			VIF (organization skills & competency) = 1.836	
			VIF (process management) = 2.316	
			VIF (employee engagement) = 2.363	
		Beta coefficient	B-value (technology adaptability) = 0.413	The highest influence on the DV is technology adaptability with a B-value of 0.413
			B-value (organization skills & competency) = 0.228	
			B-value (process management) = 0.097	
			B-value (employee engagement) = -0.247	
		Hypothesis results	H1 P-value = .000	H1 and H2 have p-value <0.05 and are accepted. H3 has a p-value of 0.05 and is rejected. H4 was rejected due to negative t-value
			H2 P-value = 0.029	
			H3 P-value = 0.404	
			H4 P-value = 0.037	

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

5. DISCUSSION

Objective 1: To investigate the influence of Technological Adaptability on Semiconductor Company Performance in Malaysia during COVID19

A country's Gross Domestic Product (GDP) growth depends critically on effective production performance. To improve performance, most firms have been practising integrating new technologies into their workflow. Abri and Mahmoudzadeh (2014) claim that incorporating new technology into an organization has helped it cut down on wasteful production losses, including time-consuming production processes caused by using machines with incorporated technological limitations. De Wet, Koekemoer, and Nel (2016) claim that integrating technology into business processes has become crucial for improving efficiency, reducing operating expenses, and gaining an advantage over rivals.

RO2: To investigate the influence of Organizational Skills & Competency on Semiconductor Company Performance in Malaysia during COVID19

The findings demonstrated that all employees must adjust to behavioural competences, including decision-making and cooperation. This suggests that individuals will need to bring greater behavioural competencies in the future, independent of their position, to succeed working in Industry 4.0. Only competencies in the "Applying Expertise and Technology" dimension have three different advanced technology-based components divided into three categories: information systems, computer science, and engineering, which are primarily geared toward manufacturing businesses. The knowledge domain is represented by this dimension. As a result, depending on the domain, each employee should offer a variety of competencies. This demonstrates how networked activities will be under Industry 4.0. Interdisciplinary work, collaboration, communication, and teamwork will therefore be crucial. (Hussain et al., 2021)

RO 3: To investigate the influence of Process Management on Semiconductor Company Performance in Malaysia during COVID19

According to Ooi, operation management is a systematic strategy in which all an organization's resources are employed most effectively and efficiently to accomplish the intended performance (2014). Operational focus emphasizes actions like proactive and preventative quality control methods. Ooi and Lee (2014). To eliminate variation and increase product quality throughout the production stage, Bouranta, Psomas, and Pantouvakis mention establishing foolproof and stable production plans and work distribution (2017). The relationship between process management and performance has been examined in empirical studies, including Mehralian, Nazari, Nooriparto, and Rasekh (2017), which found a positive association between the two. The image below was built using the principle above.

RO 4: To investigate the influence of Employee Engagement on Semiconductor Company Performance in Malaysia during COVID-19

According to Sabella, Kashou, and Omran, employees are the company's most valuable asset since they ensure the manufacturing line runs smoothly and per the plan for shipping the products to customers (2014). The management must give adequate training to enhance employee abilities and good compensation, such as bonuses, pay increases, and promotions, to maintain the employees' commitment to the business. According to other studies by Psomas, Vouzas, and Kafetzopoulos (2014) and Valmohammadi and Roshanzamir (2015), an

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

employee's involvement in their organisations helps them perform significantly better. In light of these findings, the following hypothesis was developed.

6. RECOMMENDATION

As the survey results prove, technology adaptability is crucial to the company's performance in the semiconductor industry. Technology advancement in the manufacturing industry has been coined around the term 'Industry 4.0' and 'Smart Factories'. Industry 4.0 creates a contemporary, better manufacturing model by integrating novel developments that are now available. Improvement of the manufacturing processing chain through system integration, tying together physical and cyber capabilities and utilizing information, including the development of big data. The phrase refers to a setting where tools and machinery can enhance operations through automation and self-optimization. The advantages also apply to activities like planning, logistics in the supply chain, and even product development, which go beyond only the actual manufacture of items. Companies should take advantage of the evolution of technology and start incorporating these into their current modus operandi. The cost of Smart Manufacturing can be broken down into smaller chunks, and all it takes is to get the ball rolling. Companies should organize 'Kaizen' and 'Gemba Walks' activities to identify the processing steps that can be automated instead of relying on humans. This will not only reduce the occurrence of human-related errors, which could lead to quality escalations but also free up time for employees to focus on upskilling themselves to serve the company better. While automation takes over repeatable, routine, or currently labour-short jobs, employees will take on more complex roles. Simple automation of a process will be able to increase the throughput of products per unit of time, thus improving the factory's productivity. As such, companies should seriously consider developing a focused team solely focusing on Factory Automation to use technology to ease production, instead of relying on manual data input and repeated non-value-added manual labor.

Another important aspect of technology that companies should put more emphasis on is 'Big Data Analytics'. Big Data and advanced analytics are also significant components of Industry 4.0 due to the hundreds of devices and processing steps that are constantly producing information. Simply gathering more data would not boost a factory's efficiency. The ability to turn structured and unstructured data into intelligent, useable information and advanced analytical software is required. With such a large amount of data, this effective software may also be utilized to forecast production scenarios, increasing efficiency and enhancing production strategy. Another important area in manufacturing where big data analytics can be incorporated is within the Statistical Process Control (SPC) implementation. SPC is crucial to locate errors in your production process and guarantee that the finished product falls within the range of acceptable quality.

The next recommendation falls within the employee skills and competency domain, where the upskilling of employees should be the main focus. Companies should restructure the current training methods to increase employees' skill sets and close any gaps in their knowledge. Companies must first determine the existing skill gaps within their business before implementing an upskilling strategy. By taking this step, firms can ensure that their efforts to upskill their personnel align with those needs. The method in which upskilling can be done is through engaging sessions such as 'Lunch & Learn', where employees are fed with knowledge over meals. Besides that, companies should also develop mentorship programs where employees are assigned to more senior colleagues to allow the transfer of knowledge from

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

within the same company at a minimal cost. Throughout this phase of the upskilling strategy, it is crucial to engage with managers to ensure they regularly have frank discussions with each employee to learn about their requirements and preferences. This also sends a firm message to the employees that management prioritizes their growth within the company, thus kickstarting the desire to push themselves to greater heights.

Lastly, companies should place significant importance on employee engagement simply because employees are the workhorses that drive the company's performance. The level to which employees are satisfied with their jobs and their workplace is a key indicator of engagement. As the survey results showed, employee engagement is a key factor contributing to company performance. Companies of all sizes struggle with several workforce issues, such as a high absenteeism rate and low staff retention, which can be resolved by concentrating on boosting employee engagement. On the contrary, higher productivity and creativity are advantages of strong staff engagement, which propels company performance. Methods to boost employee engagement can be as simple as ensuring clear and concise information is passed down from management to shop floor personnel. This can be done by developing an interactive application solely built for company information exchange between employees and management. This has been successfully implemented by several companies to increase employee engagement. With this, information regarding the company is readily accessible by the employee via the specific application on their mobile phones. Communication is key for establishing engagement, and therefore companies should adopt 'Focus Groups' where 15-20 employees are invited per session to provide feedback and have dialogues with the management team. Besides that, routine employee recognition programs should be held to ensure employees feel appreciated. Simple expressions of appreciation and thanks can go a long way toward fostering a sense of engagement among employees. Employees that receive positive feedback are motivated to work harder to achieve their objectives.

7. LIMITATION AND CONCLUSION

This research is to be used as a baseline for other research and studies to be done on the factors that influence company performance based on a case study of a semiconductor company. This study has several limitations that the following future researchers should be aware of: Since time was a limiting factor for this study, the number of factors studied here was limited to only four (4) independent variables. Based on the R square analysis, this only accounts for 21% of the model for company performance, meaning the remaining 79% are factors yet to be studied. In the subsequent studies, more variables might be examined to understand the current one better. This survey was conducted fully in the English language, and therefore the respondents were those who are competent in the English language. A bilingual survey to include 'Bahasa Malaysia', the national language of Malaysia, would be better suited to gather feedback from the vast majority of the population and perhaps increase the understanding of the survey questions and weightage to it. The sample size for this survey was limited to the senior employees within one (1) Semiconductor Company. Thus, the number of respondents could have been higher and may not be able to represent the reality of the semiconductor company's performance in Malaysia. This research managed to achieve the objectives that were set at the beginning of this research, which is to determine the factors that influence company performance, a case study of a semiconductor company in Malaysia. Based on the results from this study, three independent variables (technology adaptability, organization skills & competency, and employee engagement) are found to have a significant relationship with company performance and the independent variable (process management)

Volume 62 | Issue 6 | June 2023
DOI 10.17605/OSF.IO/RA5DS

was rejected, as it does not have a significant relationship with company performance. The sample size for this research was 139 respondents that were senior employees in a semiconductor company in Malaysia. The data collected was analyzed via SPSS software. Future research on this subject should include factors such as corporate strategies, company financial strength, and the factory's location. Besides that, the researcher should expand the focus area from within one (1) company to within a region in Malaysia to gather data from more respondents to better represent the reality.

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Volume 62 | Issue 6 | June 2023
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