

## **Influencing Factors Affecting Performance in Sustainable Manufacturing Among Malaysian Companies: A Conceptual Study**

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### **Abstract**

This research investigates the influence of sustainable manufacturing factors on the performance of manufacturing companies in Malaysia, with a specific focus on sustainable innovation, quality, cost efficiency, delivery, and operational flexibility. Grounded in the Dynamic Capabilities theory, it provides valuable insights that are pertinent to academia, policymakers, and the Malaysian manufacturing sector. The primary goal is to provide a conceptual framework for sustainable manufacturing that could improve organizational performance. Employing a qualitative approach, the study lays the foundation for a comprehensive understanding of these factors and their intricate relationships. It is important to emphasize that this research currently lacks empirical validation, necessitating further investigations to evaluate the applicability of Dynamic Capabilities, sustainable innovation, and flexibility in predicting organizational performance. Subsequent studies should consider incorporating quantitative methodologies and diverse, representative samples to bolster the generalizability of findings. This study underscores the critical significance of sustainable innovation and flexibility in molding organizational performance, highlighting the imperative need for their integration into sustainable manufacturing strategies. Furthermore, it equips manufacturing company stakeholders with valuable insights to refine their strategic communication pertaining to the advantages of sustainable manufacturing. The research not only offers substantial guidance to policymakers, industry practitioners, and the academic community but also underscores the urgency of further empirical research to confirm and expand upon these conceptual insights.

**Keyword:** organizational performance; dynamic capabilities; sustainable manufacturing factors; manufacturing companies; Malaysia

## 1. Introduction

Malaysia's manufacturing industry holds a significant position in the country's economic landscape, ranking as the second-largest contributor to both Gross Domestic Product (GDP) and Foreign Direct Investment (FDI), according to Bank Negara Malaysia (2023). In 2016, the sector attracted a substantial total capital investment of RM58.49 billion, comprising RM31.08 billion from domestic sources and RM27.42 billion from foreign investments (Economic Planning Unit, Prime Minister's Department, 2022).

This thriving manufacturing sector played a pivotal role in Malaysia's GDP growth, contributing 22.78 percent or RM253.9 billion in value for domestic goods. Employment-wise, the industry provided livelihoods for 1.05 million people, demonstrating its significance in the labor market. The Twelfth Malaysia Plan (RMK-12) set ambitious goals for the country, aiming for an annual GDP growth rate of 4 to 4.5 percent, with a primary focus on the services and manufacturing sectors (Ministry of Economy Malaysia, 2023). The growth in business establishments in Malaysia has been noteworthy, reaching a total of 920,624, with a substantial 98.5 percent being Small and Medium Enterprises (SMEs), amounting to 907,065 establishments. This has led to the creation of a robust labor market, boasting a workforce of 2.52 million dedicated to the manufacturing sector, as highlighted by the Ministry of Economy in 2023. Overall, Malaysia's manufacturing industry continues to be a driving force in economic development, contributing significantly to GDP, FDI, and employment opportunities.

The discourse on organizational performance within strategy research has been a longstanding subject, primarily concentrated on business firms (Ahuja & Khamba, 2008; Lin & Wu, 2014; Brundage, Chang, Arinez & Xiao, 2016; Chan, Ngai & Moon, 2017). Faced with heightened market competition and advancements in information technology, organizations are compelled not only to continually evaluate and enhance their performance across manufacturing operations but also to spearhead the development of new products and technologies, aiming for both financial gains and sustainable competitive advantages (Walker, 2004; Dangelico, Pujari & Pontrandolfo, 2017). Recent years have witnessed a growing interest in understanding the intricate relationships between organizational performance (Ahuja & Khamba, 2008; Lin & Wu, 2014; Brundage, Chang, Arinez & Xiao, 2016; Chan, Ngai & Moon, 2017; Dangelico, Pujari & Pontrandolfo, 2017), sustainable manufacturing factors (Hall, 2000; van Weenen, 2000; Amrina & Yusof, 2011; Hussin & Kunjuraman, 2015; Boron, Murray & Thomson, 2017), and knowledge-sharing behaviors (Epstein & Roy, 2001; Marr, Schiuma & Neely, 2004; Garetti & Taisch, 2012; Amrina & Vils, 2015) on both practical and theoretical fronts globally. However, these areas of study have often been examined in isolation, yielding inconsistent findings.

In response to this gap, this study aims to specifically investigate the impact of sustainable manufacturing factors on organizational performance within the context of manufacturing companies in Malaysia. By exploring this relationship, the research seeks to contribute to a more comprehensive understanding of the dynamics between sustainable practices, organizational performance, and knowledge-sharing behaviors in the Malaysian manufacturing sector. In the realm of sustainable manufacturing practices in Malaysia, despite governmental initiatives, there exists a notable gap in understanding the factors that influence organizational performance. The existing body of research on sustainable manufacturing factors and organizational performance has yielded inconsistent results, leaving a void in comprehending

the specific impact of these factors on Malaysia's manufacturing companies. While prior studies have offered some insights, there is a compelling need for a more thorough investigation to pinpoint the critical factors of sustainable manufacturing that affect organizational performance in this context.

Addressing this gap, this study seeks to answer the pivotal question: What factors of sustainable manufacturing contribute to organizational performance in Malaysian manufacturing companies? The identification of these factors holds paramount importance for both practitioners and policymakers, enabling them to formulate effective measures and guidelines that promote sustainable manufacturing practices within companies. This research builds upon the Dynamic Capabilities Theory, introducing the independent variable of sustainable innovation. The paper is organized into four sections. The introduction provides an overview and concise discussion of the Dynamic Capabilities Theory. The subsequent section delves into the variables under study, encompassing sustainable innovation, quality, cost, delivery, and flexibility. The third section presents the conceptual framework, outlining the interplay between sustainable manufacturing factors and organizational performance. The paper concludes with a summary, emphasizing the significance of understanding these factors for the advancement of sustainable practices and overall organizational success in Malaysia's manufacturing sector.

## **2. Literature Review**

### **2.1 Theory**

The concept of Dynamic Capabilities or the Dynamic Capabilities View (DCV) is recognized as the ability to build, synthesize, and reshape both internal and external competencies, allowing organizations to adapt efficiently and reliably to the rapid changes in their environments (Teece, 2007; Fang & Zou, 2009). Described as a set of distinct organizational processes, DCV is integral in responding to sustainable market changes (Eisenhardt & Martin, 2000). It elucidates how companies can navigate the dynamic landscape of resource and capability management within their business operations and production processes, adapting to sustainable changes (Wu et al., 2012; Lin et al., 2016; Ramanathan et al., 2017). Additionally, DCV conceptually and operationally justifies sustainable changes in organizational business strategies, operations, and cost management, ultimately contributing to long-term economic viability and sustained competitive advantage (Wu et al., 2012).

This study specifically explores the application of the Dynamic Capabilities theory to sustainable manufacturing factors. Some literature considers sustainable manufacturing factors as dynamic entities capable of developing their own dynamic capabilities (Amrina & Vilsa, 2015; Winroth, Almstrom & Andersson, 2016). With the escalating concerns about environmental restrictions and social needs, companies are increasingly compelled to integrate sustainability principles (environmental, social, and economic) into their business practices and goals. This integration is seen as essential for achieving sustainable competitive advantage across sectors and geographical regions. Scholars recommend dynamic capabilities in this context as they have the potential to create value for organizations and customers through efficient and prompt production processes, ultimately leading to higher organizational performance and sustained competitive advantage (Wu et al., 2012; Lin et al., 2016; Ramanathan et al., 2017).

## **2.2 Organizational Performance**

Organizational performance evaluation is a multifaceted process that encompasses both financial and non-financial perspectives, as highlighted by Abdel-Maksoud (2004). The consideration of both financial and non-financial measures is crucial for influencing customer satisfaction and enhancing overall profitability, a perspective supported by scholars such as Ittner & Larcker (2003), Pintelon, Pinjala & Vereecke (2006), and Ahuja & Khamba (2008). Non-financial aspects play a vital role by improving capabilities across various manufacturing processes, providing valuable insights into specific capabilities before committing to uncertain financial investments (Rosen & Kishawy, 2012; Lin & Wu, 2014). Hassan, Nordin, and Ashari (2015) also emphasize the permeation of non-financial measures in addressing specific issues within manufacturing production activities, ultimately leading to improved outcomes, including higher monetary profits (Damanpour & Evan, 1984). Thus, this study adopts a theoretical model that integrates both non-financial and financial perspectives in evaluating organizational performance, recognizing their interconnectedness and impact on organizational profitability (Ittner & Larcker, 2003).

The implementation of sustainable manufacturing factors on performance is supported by the dynamic implications of absorptive, adaptive, and innovative capabilities, as noted by Cabral (2000) and Wu et al. (2012). The contributions of sustainable manufacturing factors to organizational performance have been explored by Yang et al. (2009), Amrina and Yusof (2011), and Jain and Ahuja (2012), highlighting significant relationships with innovation, quality, cost, delivery, flexibility, time, and employee factors. Millar and Russell (2011) found that manufacturing firms in the Caribbean prioritized health, well-being, and safety of workers, engaged in community programs, and utilized social responsibility as a strategy for brand loyalty. Their efforts included improving employee morale and retention, innovating with greener alternatives, and aligning with environmental and social expectations, positioning them ahead of competitors (Millar & Russell, 2011). In summary, the synthesis underscores the intertwined nature of financial and non-financial perspectives in evaluating organizational performance and emphasizes the crucial role of sustainable manufacturing factors in driving positive outcomes for firms.

## **2.3 Sustainable Manufacturing Factors**

Sustainable manufacturing factors have emerged as a crucial asset for organizations, with widespread acknowledgment in contemporary literature (Montabon, Sroufe & Narasimhan, 2007; Henri & Journeault, 2008; Mani, Lyons & Sriram, 2010; Amrina & Yusof, 2011; Vinodh & Joy, 2012). These factors play a central role in all manufacturing processes, contributing to the improvement of skills, technologies, and work practices within manufacturing companies (Amrina & Yusof, 2011; Vinodh & Joy, 2012). The conceptual frameworks of Dynamic Capabilities and Knowledge-based Organization theories serve as influential foundations for understanding the creation and sustainability of competitive advantage, elucidating why organizations exhibit differential performance (Neches et al., 1991; Makadok, 2001; Lin & Wu, 2014; Islam, Jasimuddin & Hasan, 2017).

Sustainable manufacturing, as applicable to organizations, is visibly reflected in modern manufacturing companies. These companies must integrate processes for measuring, assessing,

and improving manufacturing performance across operations while concurrently developing new products and technologies that align with diverse social, environmental, and economic perspectives (Peet et al., 2011; Amrina & Yusof, 2011; Amrina & Vils, 2015). The definition of sustainable manufacturing involves the integration of skills fostering sustainability and mitigating various business risks into all qualifications within manufacturing operations and systems (Henri & Journeault, 2008; Mani et al., 2010). This approach ensures that manufacturing processes and products are produced sustainably, knowledgeably, and competitively across all work functions (Tocan, 2012). The synthesis underscores the integral role of sustainable manufacturing factors in enhancing organizational capabilities, fostering competitiveness, and aligning with contemporary business imperatives related to sustainability and innovation.

### **2.3.1 Sustainable Innovation**

Sustainable innovation is characterized as a process aimed at renewing or enhancing products, services, technological or organizational systems, delivering improved economic performance while concurrently enhancing environmental and social aspects (Cabral, 2010; Jorna, 2017). Another perspective, presented by Tello and Yoon (2008), defines sustainable innovation as the development of new products, processes, services, and technologies that contribute to human needs and well-being, respecting natural resources and regenerative capacity. Furthermore, Calik and Bardudeen (2016) emphasize that sustainable innovation encompasses any new or significant improvement in organizational manufacturing processes, providing not only economic benefits but also generating positive social and environmental impacts.

The growing interest in sustainable innovation is evident in the expanding body of literature, highlighting its significance as a focal point for organizations committed to the triple bottom line. The distinctive feature of sustainable innovation lies in its integration of economic, social, and environmental aspects, setting it apart from conventional innovation approaches (Cabral, 2010; Calik & Bardudeen, 2016). In a rapidly changing environmental and market landscape, sustainable innovation has been identified as a driver for achieving sustainable competitive advantage (Adams et al., 2016). In the current global scenario, manufacturers and retailers worldwide prioritize sustainable innovation in their global sourcing and supply chain strategies, aiming to attain operational excellence and cost-efficiency in their production systems (Ebrahimi, Moosavi & Chirani, 2016). The synthesis underscores the multifaceted nature of sustainable innovation, encompassing economic, social, and environmental dimensions, and its pivotal role in achieving competitive advantage and operational efficiency in the contemporary business landscape.

Studies are scarce to discuss the significant relationship between sustainable innovation and organizational performance. In Calik and Bardudeen's (2016) study, they stated sustainable process innovation would reuse, remanufacture and recycle materials in the manufacturing process to ensure higher sustainability and organizational performance. Jorna (2017) also support that sustainable innovation requires the engagement of adopters' knowledge and capabilities to integrate, build and reconfigure their organization's manufacturing processes to reduce rates of process failures and adapt to rapidly changing environments. Ultimately, it

would increase operational excellence and cost-efficiency in their production system (Ebrahimi, Moosavi & Chirani, 2016).

### **2.3.2 Quality**

Quality is defined as the capability of a product or service to meet and exceed customer expectations, with customer requirements determining quality goals (Reeves & Bednar, 1994). Initially, in the early 1970s, organizations prioritized cost and productivity over quality. However, a Japanese-led organization in the United States in the 1980s showcased the significance of focusing on all three dimensions simultaneously: quality, cost, and delivery (QCD) for gaining a competitive advantage (Tomaskovic-Devey & Lin, 2011). Quality has since evolved into a strategic approach aimed at increasing organizational profitability and maximizing customer satisfaction by preventing errors (Agus & Hajinoor, 2012).

Malaysia's manufacturing companies are facing increasing pressure to deliver quality products while grappling with challenges in improving efficiencies in their manufacturing systems (Shakir & Mohammed, 2013; Abdul-Rashid et al., 2017). Initiatives for quality and performance improvement across operations are crucial for these organizations to enhance sustainable competitive advantage and foster growth (Anuar, 2015; Anuar et al., 2016). A high-quality and reliable production system is deemed crucial for competitiveness, and achieving excellence in production quality is considered a strategic imperative for manufacturing organizations, involving improvements in manufacturing quality, customer order compliance, reduction of process defects, and minimizing customer warranty problems (Ahuja & Khamba, 2008; Agus & Hajinoor, 2012; Anuar, 2015; Anuar et al., 2016).

Research conducted by Marin and Ruiz-Olalla (2011) supports a positive relationship between manufacturing quality and overall organizational performance. Other studies, such as those by Ahuja & Khamba (2008) and Jain & Ahuja (2012), emphasize that organizations aiming for organizational performance through manufacturing quality implementation need to understand their motivations, establish objectives, and formulate implementation plans. Anuar (2015) emphasizes that the implementation of manufacturing quality should be driven by internal motivations, such as incremental improvements in customer order compliance, reducing total process defects, and minimizing customer warranty problems, to yield internal benefits for the organization. The synthesis highlights the evolving perspective of quality as a strategic imperative, emphasizing its integral role in organizational performance and competitiveness for manufacturing organizations in Malaysia.

### **2.3.3 Cost**

The economic growth dimension of sustainable manufacturing practices is delineated into two components: manufacturing cost and the cost of investment (Nordin & Adebambo, 2016). Descriptive analysis from Nordin and Adebambo's (2016) study indicates a reduction in manufacturing costs in the Malaysian manufacturing sector, evenly spread across the industry. Manufacturing cost, often used as a quantitative measure, includes direct cost reduction (such as labor, materials, and other product-specific costs) and overhead cost reduction (encompassing administrative costs, equipment costs, maintenance expenses, and plant depreciation expenses) (Sillanpaa & Kess, 2011; Beamon, 1999; Chan, 2003; Chan & Qi, 2003; Theeranuphattana & Tang, 2008).

Sustainable manufacturing factors exhibit a significant link with the cost of production in an organization (Ahuja & Khamba, 2008). Identifying these factors contributes to optimizing production costs by reducing unplanned downtime, equipment-related problems, and minimizing losses and waste in the manufacturing system (Shagluf, Longstaff & Fletcher, 2014; Paprocka, Kempa, Kalinowski & Grabowik, 2015). Previous studies indicate that sustainable manufacturing induces cost savings, enhances sales, and improves financial performance (Kasbun, Teh & Ong, 2016; Ameer & Othman, 2012). The cost of investment, according to Kasbun et al. (2016), acts as a driving force to enhance flexibility and efficiency in resource allocation, improve R&D for productivity, and strengthen organizational capabilities to seize business opportunities in the competitive market.

The competitiveness of sustainable manufacturing, particularly in cost management, involves aiming for short-term cost reduction actions (Christmann, 2000). Transforming practices into capabilities, focusing on cost efficiency, and integrating cost management in the production process can positively impact profits more effectively than relying solely on short-term cost-cutting actions. González et al. (2012) highlight the promising integration of cost management in the production process to influence positive organizational performance, contributing to broader organizational advantages and sustainable competitive advantage. This synthesis underscores the interconnectedness between sustainable manufacturing factors, cost management, and organizational performance, emphasizing the role of cost management in achieving sustained economic growth and competitiveness.

### **2.3.4 Delivery**

Delivery is a prime driver of today's knowledge-based economy (Yahya & Goh, 2002; Wong, 2005; Khosravi & Ahmad, 2014). Organizations can afford to make large investments in boosting their delivery process to move quickly in targeting new classes of customers and identifying viable emerging opportunities (Toni & Tonchia, 2001; Christiansen et al., 2003; Abdel-Maksoud, 2004; Jain & Ahuja, 2012). Organizations are increasingly adopting fast, responsive, and flexible production systems and customer services while integrating sustainable development practices (Jayal et al., 2010; Tseng, 2013; Varsei et al., 2014; Hřebíček et al., 2015). According to Tseng (2013), optimizing a production system involves a decentralized, non-bureaucratic, catalytic, results-oriented, and empowering approach. Simultaneously, organizations leverage information technologies to reengineer their delivery processes, enhance services, improve efficiency, and reduce costs (Jain & Ahuja, 2012; Amrina et al., 2016).

Katayama and Bennett's (1999) study explore the relationship between agility, adaptability, and leanness among Japanese companies, categorizing delivery measures in terms of operational processes, supply processes, order fulfillment processes, and product development processes. Sub-measures connected to delivery include on-time delivery, delivery reliability, faster delivery times, delivery service, delivery frequencies, delivery synchronization, delivery speed, order fulfillment lead time, and supplier's delivery performance. Historically, the delivery aspect in production was limited to operative activities, not fully recognized as a competitive weapon, and often seen as a high-cost investment approach (Yahya & Goh, 2002; Toni & Tonchia, 2001). However, recent literature emphasizes the strategic role of delivery, highlighting its significant positive impact on financial performance (Christiansen et al., 2003).

Delivery is considered a crucial part of the firm's value chain and a strategic decision area leading to higher organizational performance (Christiansen et al., 2003). It is viewed as a fundamental pillar for developing distinctive capabilities in the production system (Tseng, 2013) and represents a vital internal factor contributing to operations capability (Jain & Ahuja, 2012). In summary, the synthesis emphasizes the evolving role of delivery in production, recognizing its strategic importance, positive impact on financial performance, and its status as a fundamental element of sustainable competitive advantage and operations capability.

### **2.3.5 Flexibility**

Flexibility in the context of manufacturing companies is often defined by how rapidly production can respond to new customer requirements, changing production volumes, and the introduction of new products (Sharkie, 2003). It encompasses the ability to adapt to a changing or uncertain environment, responding effectively to challenges arising from changes (Beamon, 1999; Theeranuphattana & Tang, 2008). Sharkie's (2003) study emphasizes that organizations must develop capabilities to handle change, focus on skills such as agility, flexibility, and speed, and rapidly learn to access knowledge and competence.

Organizational success, according to Bernardes & Hanna (2009), Chan et al. (2017), and Braunscheidel & Suresh (2018), depends on the organization's speed in generating, capturing, and disseminating knowledge. This ability to create and continuously learn from knowledge can become a sustainable competitive advantage (Wu et al., 2012; Lin et al., 2016; Ramanathan et al., 2017).

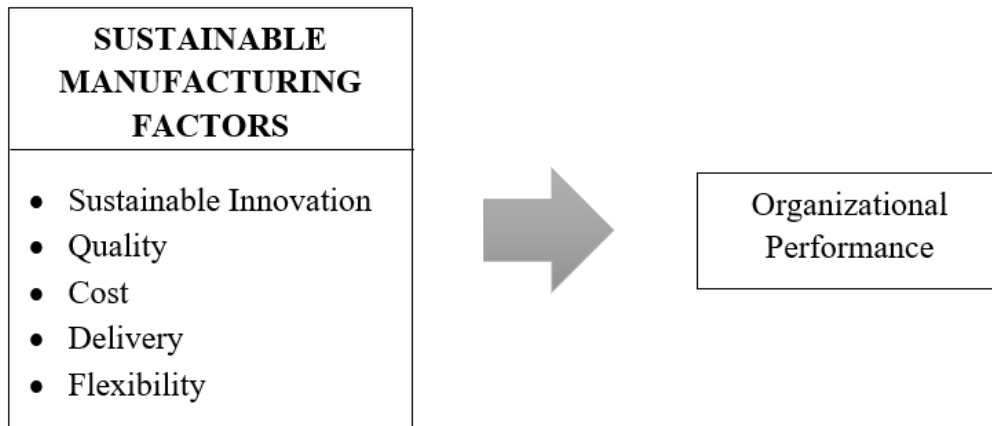
Empirical studies examining the linkage between flexibility and organizational performance have yielded inconclusive results. Some studies report a positive relationship, suggesting that factors like process flexibility, delivery reliability, cost leadership, product or process innovation, and product quality play a crucial role as intermediate performance indicators influencing overall performance (North and Kumta, 2018; Inkinen, 2015; Hung et al., 2015). On the other hand, some studies report a negative relationship between flexibility and organizational performance (Ferdows et al., 2016; Jain & Ahuja, 2012; Golec & Taskin, 2007; Yurdakul, 2002). The synthesis highlights the complexity in establishing a definitive relationship between flexibility and organizational performance, underscoring the need for further research in this area.

## **3. Conceptual Framework**

The conceptual framework depicted in Figure 1 draws upon the Dynamic Capabilities Theory, providing a solid theoretical foundation for understanding and predicting organizational performance within the context of manufacturing companies in Malaysia. The framework integrates key elements related to sustainable manufacturing factors, such as sustainable innovation, quality, cost management, delivery, and flexibility. These factors are identified as crucial components contributing to organizational performance. The synthesis emphasizes the alignment of the conceptual framework with the principles of the Dynamic Capabilities Theory, providing a comprehensive and theoretically grounded perspective for exploring the factors influencing organizational performance in the manufacturing sector in Malaysia. The integration of sustainable manufacturing factors within this theoretical



framework offers a holistic approach to understanding the dynamic and multifaceted nature of organizational performance in the evolving business landscape.



**Figure 1.** Conceptual Framework

Table 1 outlines the proposed measurement items and their sources for the study, drawing from prior research such as Ahuja & Khamba (2008), Vachon & Klassen (2008), Ramayah (2011), and Calik & Bardudeen (2021). The selected measurement items cover key constructs, including organizational performance, sustainable innovation, quality, cost, delivery, and flexibility. A five-point Likert scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree," is employed for all variables.

**Table 1.** Measurement items and source

No.	Measurement item	Source
	<b>Organizational Performance:</b>	
OP1	Number of complaints	Ramayah (2011)
OP2	Return on investment	
OP3	Financial performance	
OP4	Sales growth	
OP5	Productivity	
OP6	Customer Satisfaction	
OP7	Employee satisfaction	
	<b>Sustainable Innovation:</b>	
SI1	Over the past three years, my company has consistently increased expenditure for process innovations which provide environmental and social benefits.	Calik & Bardudeen (2021)
SI2	Over the past three years, my company has improved the manufacturing processes effectively to reduce the use of raw materials.	

SI3	Our manufacturing processes effectively reduce the emission of hazardous substances or waste more than those of our competitors.	
SI4	Over the past three years, my company has actively improved manufacturing process capability to reuse and remanufacture components.	
SI5	Over the past three years, my company has actively designed and improved our production process to reduce rates of injury, occupational diseases, and work-related fatalities.	
Q1 Q2 Q3 Q4	<b>Quality:</b> My company has improved manufacturing quality. My company has improved customer order compliance. My company has reduced in total process defects and rejections. My company has reduced in total process defects and rejections.	Ahuja & Khamba (2008)
C1 C2 C3	<b>Cost:</b> My company has reduced in additional capital investments required. My company has reduced in operating costs. My company has reduced in energy consumption and overhead expenditure.	Ahuja & Khamba (2008)
D1 D2 D3 D4	<b>Delivery:</b> My company has promptness in solving customer complaints. My company has ordered fulfilment speed. My company has manufactured throughout time. My company has met delivery due time.	Vachon & Klassen (2008)
F1 F2 F3	<b>Flexibility:</b> My company able to change delivery date. My company able to change output volume. My company able to change product mix.	Vachon & Klassen (2008)

#### 4. Conclusion, Implication, and Recommendation

This study aims to investigate the impact of sustainable manufacturing factors on organizational performance within the manufacturing sector in Malaysia. The identified factors include sustainable innovation, quality, cost, delivery, and flexibility. One of the key contributions of this research lies in providing a comprehensive set of measurement instruments, allowing manufacturing companies in Malaysia to assess the effectiveness of their sustainable manufacturing practices and their influence on organizational performance. The study adds to the existing body of research by theoretically exploring and identifying the factors within sustainable manufacturing that significantly affect organizational performance. By incorporating variables such as sustainable innovation, quality, cost, delivery, and flexibility,

the research expands the understanding of the intricate relationships underlying organizational performance.

The adoption of the Dynamic Capabilities Theory provides a solid theoretical framework, offering insights into the relationship between these variables and organizational performance. The study emphasizes the significance of Dynamic Capabilities in supporting and justifying the conceptual framework, hypotheses, and research problem. While Dynamic Capabilities Theory has been applied in various studies, this research represents a novel and comprehensive application of the theory in the specific context of sustainable manufacturing in Malaysia. The findings of this study contribute new insights to the broader literature on sustainable manufacturing factors and organizational performance, particularly in the unique context of Malaysia's manufacturing sector. The research sheds light on the relevance of sustainable innovation, quality, cost, delivery, and flexibility for manufacturing companies in Malaysia. Furthermore, the theoretical development extends the original Dynamic Capabilities theory to fit the specific context of examining the influence of sustainable manufacturing factors on organizational performance among Malaysia's manufacturing companies.

The conceptual framework proposed in this study not only advances the understanding of sustainable manufacturing in the Malaysian context but also lays the groundwork for future research. It serves as a foundation for exploring the impact of sustainable manufacturing factors on organizational performance in different sectors, regions, or countries, fostering further advancements in the field. Additionally, this research offers valuable insights for policymakers and manufacturing companies in Malaysia on the sustainable manufacturing factors that impact organizational performance. By recognizing the importance of sustainable innovation, quality, cost, delivery and flexibility, policymakers can devise specific guidelines and educational initiatives to promote sustainable manufacturing practices among Malaysia's manufacturing companies. These efforts can include awareness campaigns, sustainable manufacturing initiatives' programs, and a supportive engagement environment that encourages participation. Additionally, this study can aid manufacturing companies' owners in improving their organizational performance and sustainable manufacturing practices. Providing clear and easily accessible information about sustainable manufacturing factors, its advantages and guidelines will provide better understanding among employees and management of the manufacturing companies.

It is crucial to acknowledge the study's limitation, as it is predominantly conceptual, lacking empirical evidence to validate the application of Dynamic Capabilities and sustainable manufacturing factors in predicting organizational performance among manufacturing companies in Malaysia. Subsequent research endeavors are necessary to empirically confirm the relevance of these variables in forecasting organizational performance. Despite this limitation, the findings of the study hold significance for theoretical development, practitioners, and policymakers, offering valuable insights for guiding future research in this domain.

Future studies in this field should consider exploring additional factors that could potentially enhance organizational performance across diverse contexts. The focus could also extend to specific sub-sectors in which Malaysia exhibits strength, with an emphasis on global competitiveness. Drawing comparisons with successful manufacturing sectors in other countries, such as Guangdong, Zhejiang, and Jiangsu in China, as well as Bharuch and

Ludhiana in India, or special economic zones (SEZs) in Indonesia, could provide valuable benchmarks for further research.

To address the limitations of a purely conceptual approach, future research could employ a mixed-methods approach, integrating qualitative and quantitative techniques. This approach would enable a more comprehensive exploration of sustainable manufacturing practices and their impact on organizational performance, combining qualitative insights with statistical evidence.

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## 6. References

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