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IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT PRACTICES ON FIRM'S PERFORMANCE IN MALAYSIA MANUFACTURING INDUSTRY

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Abstract:

Sustainability is the focus of many manufacturers, yet uncertainty of competitive advantage that can be gained from sustainability causes manufacturer flinches from implementing green supply chain management. This research focuses to examine the implementation level of green supply chain management practices among manufacturing industry in Malaysia. The relationship between green supply chain management practices and operational performance also being studied in this research to show the competitive advantage that can be gained by firm. The green supply chain management that is covered in this study is internal green supply chain management, green supply chain management with suppliers and green supply chain management with customers. Furthermore, the operational performance of firm is identified through product quality, operational flexibility, delivery time and production cost. There are 111 respondents who work in manufacturing industry certified of ISO 14001, answered the questionnaire that send through email. The data is analysed through Software of IBM Statistical Package for Social Science (SPSS). The result showed that there is high implementation level of internal green supply chain management practices while for the external green supply chain management practices are having medium implementation level. Furthermore, the green supply chain management practices have significant and positive relationship with the operational performance. Therefore, implementation of green supply chain management practices helps the manufacturer obtain competitive advantage via better operational performance together with achieving sustainable development.

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Keywords:

Green Supply Chain Management Practices, Operational Performance, Competitive Advantage, Sustainability Development

Introduction

Environmental issues, climate change, and the increasing frequency of natural disasters have raised public awareness about the need for environmental protection. In response to these concerns, both communities and governments have exerted focus on companies particularly those in the manufacturing sector as they are seen as one of significant contributors to environmental degradation (Isfianadewi, Utami, & Kusumaningrum, 2025). Consequently, many firms have assumed greater environmental responsibility by acknowledging and mitigating the ecological impacts of their operations (Feng, (2025).

To reduce environmental harm while enhancing competitive advantage, companies are increasingly adopting green supply chain management (GSCM) practices (Isfianadewi, & Kusumaningrum, 2025). GSCM builds upon traditional supply chain models by incorporating environmentally friendly activities throughout the supply chain (Hartono, Siagian, & Tarigan, 2023). As societal awareness of sustainability grows, firms integrating GSCM gain benefits not only in terms of reputation but also in contributing to sustainable development (Mousa, Khalifa, & Alzubi, 2024). Previous studies have demonstrated that GSCM can positively influence firm performance by improving operational, environmental, and financial outcomes (Sakala, 2024).

The objective of implementing GSCM is to conserve natural resources, reduce waste, and minimize energy consumption. In addition to limiting the environmental impact of products, effective management of end-of-life goods is critical (Iqbal, Kang, & Jeon, 2020). For example, the waste generated in Malaysia increased from 19,000 tonnes per day in 2005 to 38,142 tonnes per day in 2018, reflecting a dire need for a greener supply chain management (Chu, 2019).

In the modern era, GSCM is no longer a niche concept but has become a mainstream practice as manufacturers integrate green principles across their supply chains. This shift is largely driven by external pressures from stakeholders, including governments, NGOs, and consumers (Singh & Trivedi, 2021). Achieving success in GSCM requires collaboration among all supply chain partners—suppliers, manufacturers, and distributors—to achieve shared sustainability goals (Alkandi et al., 2024). Research also suggests that active adoption of GSCM practices enhances a company's image and strengthens brand reputation (Tan, Ong, & Lim, 2022). Therefore, integrating GSCM not only facilitates compliance with regulatory and societal expectations but also improves supply chain performance and long-term competitiveness (Jia et al., 2019).

To remain competitive, manufacturers typically focus on enhancing product quality, reducing costs, and shortening delivery times. However, environmental considerations often receive less attention (Gandhi & Vasudevan, 2019). Increasing pollution and ecological crises have compelled governments, NGOs, and communities to pressure manufacturers into adopting environmentally responsible practices (Isfianadewi, & Kusumaningrum, 2025).

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Although firms are gradually aligning their strategies with sustainable development goals through GSCM implementation, there remains a research gap in understanding how these practices affect operational performance, particularly in terms of product quality, cost, flexibility, and delivery reliability (Kamal & Sundarakani, 2021). Most existing studies emphasize overall firm performance but overlook these operational aspects. Moreover, much of the research in this field is based on data from other countries, making their findings potentially less applicable to Malaysian manufacturers due to cultural and behavioral differences (Sakala, 2024).

As such, this research aims to investigate the implementation of GSCM across the entire supply chain from upstream partners and manufacturers to downstream stakeholders and to evaluate its impact on the operational performance of Malaysian manufacturing firms. This localized approach addresses both the academic gap and the practical need for context-specific insights.

Literature Review

In 1991, a resource-based view theory was developed by Barney to have competitive advantage through the better use of resources or assets to increase capabilities and further for competencies that improve the performance of firm (Foo, Lee, Tan, & Ooi, 2018). Through resource-based view, the firm can improve performance by competitive advantage gained from resources and capabilities (Yu, Chavez, & Feng, 2017). The resources that are unique and difficult to imitate by competitors is the competitive advantage that can be gain by firm (Eloranta & Turunen, 2015). To survive in this fierce environment, firm must have sustainable competitive advantage that valuable, rare, inimitable and no substitute (S. B. Choi et al., 2018). The sustainable competitive advantage can be achieved through the unique method to manage resource and asset that may increase competitive strength and earn high level of profit (D. Choi & Hwang, 2015).

The expand scope of resource-based view in natural environment which can improve performance of firm by greening the supply chain. Greening of supply chain show the unique and valuable knowledge and capabilities that may become competitive advantage for firm (Yu et al., 2017). Green strategies that can be implement in supply chain are pollution prevention which prevent wasting at the source and at the end, and product stewardship that relevant with the responsibilities of participant within the life cycle of product to minimise environmental impact. Furthermore, sustainable development is also an important strategy that require to minimise environment impact and prevent of pollution (D. Choi & Hwang, 2015). Actually, resources-based view theory is widely used in the field that study the impact of green supply chain management practices towards firm's performance. The important of green supply chain management practice towards firm performance had been proved by many researches. From previous research can clearly know that the environmental practices are a critical strategic asset to improve performance and gain competitive strengthen (D. Choi & Hwang, 2015). Thus, in this research the resource-based view theory will be used to identify the implement of green supply chain management practices to firm's operational performance.

Green Supply Chain Management

Green supply chain management is the implementation of greening concept within entire supply chain that include design of product, raw materials, production process delivery method and product handling at the end-of-life cycle. Furthermore, green supply chain management also considered as integration of environmental measures from the beginning to the end of

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supply chain which consist responsibilities of supplier, manufacturer and customer (J.Martinez, 2020).

Based on the concept stated by different researcher during different period, green supply chain management can be described as involvement of the green practices to the entire supply chain with the purpose of reducing waste generation and prevent pollution. Responsibility to carry out green supply chain management in supply chain is not only by firm but involve responsibilities of all participant such as supplier, customer and also government. At the stage of procurement, selection of raw materials that give less environment impact is important. During manufacturing process, the firm must ensure use of minimum of input to produce the maximum output, in the other word, it seen likes minimize produce of waste during production. At the end of product life cycle, disposal of product must give the least impact to environment and pollution will not occur. Thus, in this research, study of internal and external green supply chain management practices will be conduct to identify the impact towards firm performance.

Internal Green Supply Chain Management

Internal green supply chain management involve all department within a company or between organizations to carry out environmental management practices (Yu et al., 2014). Breakdown of functional barriers between departments is important to achieve collaboration for operational process. This is because exchange of environmental information or professional knowledge can be made through cross-functional collaboration that help in making improvement based on the available resources (Liu et al., 2018). Achieve of internal green supply chain integration may help the firm perform, track, and manage environmental management successfully based on the effective internal resources. Internal green supply chain management can be attained through integrate of environmental strategies together with organization goal (Wong et al., 2015). However, there are not easier to build an internal green supply chain integration because available of obstruct especially the issue of culture and trust. Although there are some obstructs to form integration but if a company have a strong and success internal green supply chain management integration, the performance of firm will show a significant improvement (Liu et al., 2018).

Green Supply Chain Management with Customer

Green supply chain management with customer is an external integration capability. This capability is focus on having cooperation with external partner of supply chain which is customer (Liu, Blome, Sanderson, & Paulraj, 2018). Customer green supply chain integration is the cooperation between firm and customer according to environmental issues with the purpose of achieve the environmental requirement of customer (Yu, Chavez, Feng, & Wiengarten, 2014). The collaboration occurs while sharing of information or resources between firm and customer to manage the activities within entire supply chain. This action give advantage for firm to make improvement on new product based on the condition of abandoned goods (Wong et al., 2015). Hence, having a strong and long-term relationship with customer seen as an important element to conduct green supply chain management practices within supply chain (Yu et al., 2014).

Green Supply Chain Management with Suppliers

Supplier green supply chain integration aim to reduce environmental impact by manage and sharing resources between supplier and firm (Wong et al., 2015). Supplier is the critical partner in supply chain to carry out green supply chain management because it seen as the beginning point of the process. To produce product that give least environmental impact, select of raw materials that are environmentally friendly is important (Yu et al., 2014). Furthermore, the collaboration between firm and supplier also required for accumulation and exchange of

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environmental management information to manage the resources for achieving the expect performance. Supplier green supply chain integration enable the firm obtain the capability of supplier, thus green supply chain management will not success to conduct without supplier (Wong et al., 2015). A long-term collaboration relationship will form trust between firm and supplier, that seen as a precious resource to conduct green supply chain management in organization. Based on trust, integrate of environmental information and professional skill will provide firm for sustainable development and competitive advantage (Liu et al., 2018).

Firm Performance

As the environmental requirement of consumer and environmental regulation that state by government had force the firm work out with green supply chain management practices (Zhang, Zhang, Wang, & Ma, 2020). This pressure enforces the firm emphasize in environmental problem but at the same time the firm need to pay attention on sustainability performance (Foo et al., 2018). According to previous research, sustainability performance consists of three elements which are environmental, financial and social performance (Foo et al., 2018). Operational performance is an important element that must be identify by firm to improve sustainability performance and enjoy competitive strengthen. Through previous research article, the operational performance is less to study, thus in this research the operational performance will be emphasize.

Operational Performance

Operational performance refers to the efficiency and effectiveness of firm's operation on production process (Geng et al., 2017). The operational performance also as an indicator to identify the capacity of firm to serve customer (Jabbour et al., 2015). The competitiveness of firm can be achieved through improve in operational performance that consists of those dimensions which are improve of product quality, reduce of production cost, punctual delivery and operational flexibility.

Conceptual Framework

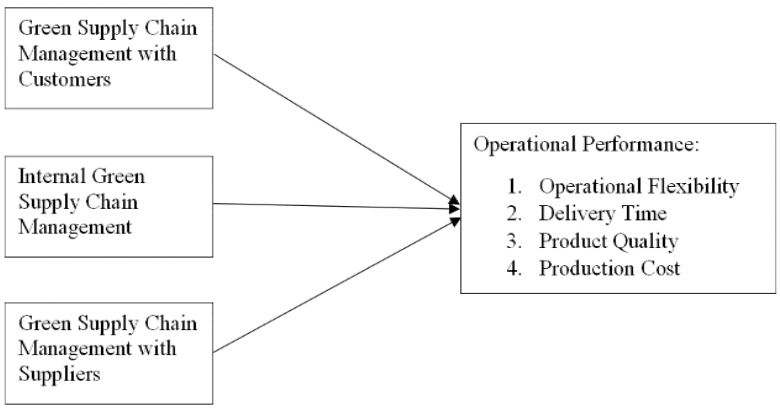

Figure 1: Conceptual Framework

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Hypothesis Development

Internal Green Supply Chain Management And Operational Performance

The proactive environmental management programs or internal environmental management that accumulate knowledge from different department will give benefit on saving cost and achieve delivery competitiveness by firm (Yang, Lin, Chan, & Sheu, 2010). Furthermore, the internal green supply chain integration will help the firm develop new design of green product that are cost saving and have great quality (Younis et al., 2016). By refer to previous research the practice of green design and reverse logistics show significant and positive impact to operational performance, thus a hypothesis can be developed which internal green supply chain management show positive impact to operational performance (Geng et al., 2017).

H1: There are positive relationship between internal green supply chain management practices and operational performance (operational flexibility, delivery, product quality, production cost).

Green Supply Chain Management With Customer And Operational Performance

According to (Yu et al., 2014), the customer green supply chain integration will improve operational performance by generate advantage in production cost, product quality, delivery time and operational flexibility. Recycle and reuse of resources show reduce of production cost by investment recovery. Regard with product quality, the firm that have green collaboration with customer will accumulated more environmental information, therefore the firm can manufacture better quality that fix with the requirement of customer (Jabbour et al., 2015). Although previous research found that the green supply chain management with customer have no significant relationship towards operational performance, but there has research that prove customer collaboration will give positive impact to operational performance (S. Abdul Rehman Khan, Jian, Yu, Golpîra, & Kumar, 2019). Hence, a hypothesis can be generated which is green supply chain management with customer provide positive impact to operational performance.

H2: There are positive relationship between green supply chain management practices with customer and operational performance (operational flexibility, delivery, product quality, production cost).

Green Supply Chain Management with Suppliers and Operational Performance

The collaboration between firm and supplier can overcome such problem which are reduce of waste, selection of substitution materials, lack of raw materials and minimize environmental impact (Yu et al., 2014). Communication is required on collaboration between firm and supplier, through communication the firm can clearly describe the requirement, thus can ensure the product quality and minimize operational cost (Wallace & Ekweny Omachar, 2016). Furthermore, supplier that conduct greening production line will help the firm to produce green product with better quality. Besides that, the green purchasing will also improve process of delivery and operational flexibility of firm to achieve competitive advantage (Famiyeh et al., 2018). Thus, a hypothesis can be generated which green supply chain management with suppliers give positive impact to operational performance.

H3: There are positive relationship between green supply chain management practices with supplier and operational performance (operational flexibility, delivery, product quality, production cost).

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Methodology

Research Design

Research design is the way to design for research project with particular purpose (Pruzan, 2016). Research design consist ability to identify the relationship between variables and it not seen as statistical technique that use for analyse data (Eisend & Kuss, 2019).

In this research, quantitative method will be used to obtain the data. Based on previous research the relationship of green supply chain management practices and firm performance can be identify through quantitative method. By using of quantitative method, the result will show in numerical and can be convert into table or graph that may give convenient for investigate and interpret. Besides that, survey method is suitable for this study because it can be conduct by phone, mail, internet and other methods. Besides that, survey method also give convenience to study a large group of samples (Jackson, 2008).

Data Collection Method

In this research, primary data collect through the primary source which is questionnaire (Kumar, 2019). Questionnaire is a written of a few question that relevant to the research and respondents will answer those questions based on their experience or knowledge (Kumar, 2019). To easier the action of collecting data from the large number of respondents in different location, online questionnaire will be use. The data from respondent collect through a questionnaire that in the form of Google Form, and it will be distribute through internet which pass to respondents by email.

Sampling Design

Population And Sample Size

The target population of this research is the manufacturing industry in Malaysia that certified MS ISO 14001. By refer to the statistics that had posted by Ministry of International Trade and Industry (MITI), the total amount of manufacturing industry that had certified ISO 14001 is around 1024 industries (Anonymous, 2020b). According to (Anonymous, 2020a), a company that require to achieve the standard of ISO 14001 must establish an environmental protective system to prevent pollution, at the same time improve their environmental performance. The implement of environmental management system is also seen as the basic to achieve green supply chain management by firm. Thus, choosing of manufacturing industry that had certified ISO 14001 as the research population is a good alternative to achieve the objective of this research. The total amount of manufacturing industries in Malaysia that had certified ISO 14001 is around 1024 (Anonymous, 2020b), and based on Morgan table the requirement of sample size is 278 respondents. Furthermore, job position of respondent will also be focus because there may have different perception on operational performance of company when the respondent is staying at different position.

Sampling Techniques

Non-random sampling also known as non-probability sampling techniques which the selection of sample is based on subjective perception of researcher (Dhivyadeepa, 2008). Apply of non-random sampling in this study is because of the large population that give difficulty to obtain response from specific respondents, thus choose of respondent are conduct based on the judgment of researcher. Furthermore, purposive sampling is finding the target group based on the consideration of research (Apostolopoulos & Liargovas, 2016). Respondent that has the

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information about green supply chain management is seen as the basic requirement for this research, thus manufacturing industry that had certified ISO 14001 are select as the target group.

Questionnaire Design

The questionnaire is divided into three section which classified into part A, B and C. Section A cover three common question that relate with the demographic of respondent and company. Section B is about the green supply chain management practice in the aspect of internal green supply chain management, green supply chain with customers and green supply chain management with suppliers. There are thirteen question that involve in this section which every independent variable will have 3 to 6 questions. In this section used of five-point Likert scale with the range from point 1 that equal with no plan to implement until point 5 which defined as full implementation. Section C is relevance with the operational performance of firm that research from the aspect of operational flexibility, delivery time, product quality and production cost. The total amount of question in this section are twelve question which every aspect will cover three questions respectively. Five-point Likert scale also use in this section to examine the level of operational performance of respondent compare to their competitor. The range of five-point Likert scale are state from point 1 that defined as much worse than competitor to point 5 that represent much better than competitor.

Construct Measurement

Two scale were used in this research which are nominal scale and interval scale. Nominal scale is the scale that function as assigned or grouping individual or object with no numerical properties (Jackson, 2008). In this research, nominal scale used in section A of questionnaire which relate with the demographic of respondent. All the questions in section A will use nominal scale to differentiate the respondent such as firm's age, number of employees, and job position.

Interval scale is a scale that each unit of measurement have equal size although it separates into different level or number (Jackson, 2008). The example of interval scale is Likert scale, which may have different range of number but each of the number have the same value. The use of interval scale are available in the section B and section C of questionnaire to identify the level implementation of green supply chain management practice with five-point Likert scale (5 = full implementation and1 = no plan to implement). Besides that, five-point Likert scale also use to investigate the operational performance of firm (5 = much better than competitor and 1= much worse than competitors).

Data Analysis

To analyse the data that gain from respondents, IBM Statistical Package for Social Science (SPSS) had been applied. SPSS Statistics have the function to analyse huge amount of data to help researcher have clear identification to the result. Beside of descriptive analysis, correlation between independent variables (green supply chain management practices) and dependent variable (operational performance) will also analyse in this research. When the result is below 0.5, it shows that there are low and positive correlation between the variables. On the other hand, the result that more than 0.5 represent the variables have strong and positive correlation.

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Result and Data Analysis

Response Rate

The total number of manufacturing industry that had certified ISO 14001 is 1024 industries. Based on Morgan table, the sample size that require to meet the need of this research is 278 respondents. Hence, 786 questionnaires had been sent to the respondents through email. There are 57 email that failed to send because of the invalid email address and reject of personal email by receiver. There are only 111 responses are success to receive after 2 months. The response rate of this research is 15.23%, which there are 111 useful response and 618 failed responses.

Pilot Testing

In this research, the first 30 of respondent have participate in the pilot testing. The 30 set of answer will be transfer into SPSS Statistics software to identify the reliability of questionnaire by using Cronbach's alpha. There are total of 24 items in the questionnaire had been tested, and the value of Cronbach's alpha is 0.921. Based on the scale of Cronbach's alpha, it shows the questionnaire have excellent reliability. Hence, the research can continue to collect data for answering the research question.

Descriptive Analysis

According to the requirement of research, all the respondents are working at manufacturing company that certified ISO 14001. Within 111 respondents, there are 35 respondent that work in manufacturing company which had operated less than ten years. Besides that, the remaining of 76 respondents are contribution in manufacturing company that had operated more than ten years. Besides that, there are 29 respondents (26.1%) work in the manufacturing industry that contain employees that less than 50 people. Furthermore, there are 40 respondents (36.0%) service in the manufacturing industry that contain 50 or less than 250 people of employees. Most of the respondents are having their work in manufacturing industry that have 250 people or more than 250 people of employees which are 42 respondents (37.8%). Furthermore, the respondent that having the job title of manager or senior manager occupy the larger percentage compare to the total respondent which are 45.9% that equal to 51 respondents. The total respondents that having the job title of general manager or director or chief executive officer (CEO) is the least which only have 22 respondents (19.8%). Besides that, there are 38 respondents (34.2%) work at the position of executive.

Implementation Level

Table 1: Data Of Implementation Level Of Green Supply Chain Management Practices

Variable	Mean	Standard Deviation	Implementation Level
Internal Green Supply Chan Management Practices	3.98	0.57216	High
Green Supply Chain Management Practices with Customer	3.38	0.89651	Medium
Green Supply Chain Management Practices with Supplier	3.52	0.74794	Medium

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Internal green supply chain management practices score the highest mean value which is 3.98, hence it reflects the implementation of internal green supply chain management practices by the manufacturing industry is high. Besides that, the mean value of green supply chain management practices with customer and green supply chain management practices with supplier is in the range of medium implementation level which achieve 3.38 and 3.52 respectively.

Hypothesis Testing

Table 2: Relationship Between Green Supply Chain Management Practices And Operational Performance

Variable		Operational Flexibility	Delivery	Product Quality	Production Cost
Internal Green Supply Chain Management Practices	Correlation Coefficient	0.659	0.660	0.538	0.594
	P-value	0.000	0.000	0.000	0.000
Green Supply Chain Management Practices with Customer	Correlation Coefficient	0.701	0.539	0.525	0.630
	P-Value	0.000	0.000	0.000	0.000
Green Supply Chain Management Practices with Supplier	Correlation Coefficient	0.658	0.520	0.467	0.607
	P-Value	0.000	0.000	0.000	0.000

The correlation coefficient that results in Table 2 had showed the relationship between internal green supply chain management practices and the four items under operational performance is higher than 0.5, which are 0.659, 0.660, 0.538, and 0.594 respectively. It can be indicated that there are strong, positive relationship between internal green supply chain management practices and operational performance. Besides that, as the P-value is lower than 0.05, thus there are significant relationship between internal green supply chain management practices and operational performance (operational flexibility, delivery, product quality, production cost).

The relationship between green supply chain management practices with customer and operational performance (operational flexibility, delivery, product quality, and production cost) had been identify through correlation coefficient. The value of correlation coefficient of green supply chain management practices with customer towards the four elements in operational performance is higher than 0.5 which are 0.701, 0.539, 0.525, and 0.630 respectively. It can be concluded that green supply chain management practices with customer and operational performance have strong, positive relationship. Furthermore, as the P-value is lower than 0.05, thus there are significant relationship between green supply chain management practices with customer and operational performance (operational flexibility, delivery, product quality, production cost).

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The value of correlation coefficient between green supply chain management practices with supplier and operational flexibility, delivery, and production cost is higher than 0.5 which are 0.658, 0.520, and 0.607. Hence there are strong, positive relationship between those variables. Furthermore, the correlation coefficient between green supply chain management practices with supplier and product quality is place in the range of 0.3 to 0.5, which only achieve of 0.467. Thus, there are moderate, positive relationship between green supply chain management practices with supplier and product quality. As green supply chain management practices with supplier have positive relationship with those four elements under operational performance, therefore it can be concluded as green supply chain management practices have positive relationship with operational performance. Besides that, as the P-value is lower than 0.05, thus there are significant relationship between green supply chain management practices with supplier and operational performance (operational flexibility, delivery, product quality, production cost).

Result of Major Findings

Internal Green Supply Chain Management Practices and Operational Performance

H1: There are positive relationship between internal green supply chain management practices and operational performance (operational flexibility, delivery, product quality, production cost)

H0: There are no significant relationship between internal green supply chain management practices and operational performance (operational flexibility, delivery, product quality, production cost)

As the P-value is lower than 0.05, hence null hypothesis will be rejected. There are significant and positive relationship between internal green supply chain management practices and operational performance.

Green Supply Chain Management Practices with Customer and Operational Performance

H2: There are positive relationship between green supply chain management practices with customer and operational performance (operational flexibility, delivery, product quality, production cost)

H0: There are no significant relationship between green supply chain management practices with customer and operational performance (operational flexibility, delivery, product quality, production cost)

As the P-value is lower than 0.05, hence reject the null hypothesis. It shows significant and positive relationship between green supply chain management practices with customer and operational performance.

Green Supply Chain Management Practices with Supplier and Operational Performance

H3: There are positive relationship between green supply chain management practices with supplier and operational performance (operational flexibility, delivery, product quality, production cost)

H0: There are no significant relationship between green supply chain management practices with supplier and operational performance (operational flexibility, delivery, product quality, production cost)

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As the P-value is lower than 0.05, hence reject the null hypothesis and result show there are significant and positive relationship between green supply chain management practices with customer and operational performance.

Discussion and Conclusion

Implementation Level of Internal Green Supply Chain Management Practices

There is high implementation level of internal green supply chain management practices among the 111 respondents. The implementation of internal green supply chain management is high mainly because of all the respondents are working in the manufacturing industry that had certified ISO 14001, and built of environmental management system is necessary for those industry to get the certification of ISO 14001. Furthermore, the example of green activities that can be carry out within industry is such as eco-design, internal environmental management and reverse logistics. Those activities are seen as the normal operation that require to follow by all the employee, and only need to integrate the environment thinking while complete the task. Furthermore, the implement of internal green supply chain management practices can be done easily based on the proper management and good cooperation between employees. Internal green supply chain management practices are highly implemented by manufacturing industry because it can be practiced early and may only involve with small changes about the requirement but will not have dramatically change for the form of green activities. Therefore, the progress of implement internal green supply chain management practices can be done smoothly and less of risk.

Implementation Level of Green Supply Chain Management Practices with Customer

The medium level of implement of green supply chain management practices with customer is because there is difficulty to identify and fulfil the requirement of all customer. Cooperate with customer for using the less energy during product transportation is seen as one green activity that can conduct by manufacturer. To support the customer using the less energy method, the firm provide lower price for those method, but this may contrary to the desire of consumer to receive the product immediately. Furthermore, collaboration with customer also hard to achieve, because it is difficult to identify the actual potential customer for the company. If the firm receive the opinion from the consumer who are not a potential customer may give wrong information to the company, thus mistake will be occur on eco-design and green packaging. In addition, investment recovery seen as one type of green supply chain management practices with customer, which the firm can collect the abandon product from customer and recycle it by adding new value or reuse the part that are in good condition. Much of the firm had push the program of giving rebate for those customers that resell abandon product and at the same time purchase the new product from the firm. Actually, the feasibility to fully implement of green supply chain management practices with customer is high and it will give different benefits to the firm in the performance, but the time period to execute is longer. Therefore, it seen as the reason that the implementation level of manufacturing industry is place at medium range.

Implementation Level of Green Supply Chain Management Practices with Supplier

The implement of green supply chain management practices with supplier are place in medium level. The implement of green supply chain management practices with supplier only achieves on medium level because the main requirement of choosing a supplier is based on the price that provide, quality of resources, and speed of delivery. Furthermore, the environmental issue will only consider after those requirements had been achieve. The implement of green supply chain management practices with supplier is easier to progress because it is related to the requirement

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of product that decide to be produce. However, the firm that emphasize the profit will focus on the three primary requirement which is cost, quality and speed of delivery. Besides that, manufacturing industry that having their own factory to produce product will less on focus on the environmental criteria of supplier, because they have the competency to produce the product meet with environmental requirement. The implement of green supply chain management practices is located closely to the high level because the green practices is related with the main operation of manufacturing industry, but it is not an essential requirement for manufacturing industry to produce the product.

Relationship Between Internal Green Supply Chain Management Practices and Operational Performance

There are significant and positive relationship between internal green supply chain management practices and operational performance. This implicates that implement of internal green supply chain management practices can improve operational performance through the increase of operational flexibility, delivery, product quality and production cost.

Implement of green supply chain management practices within the industry can increase the operational flexibility and performance of delivery, adopt of environmental management system is necessary for a manufacturing industry that decide to certificate ISO 14001. After conduct the environmental management system within the company the operational flexibility and performance of delivery can be improved. Quality of product can also be improved through implement of internal green supply chain management practices. With the eco-design, the production planning for each step need to be identify to ensure the product meet with the requirement from different specification. Furthermore, implement of green supply chain management practices within company can reduce the production cost. The firm can reuse the failure product to make innovation or improvement testing that help to create new product. Besides that, the employee also can take out the component of failure product that are in good condition, and reuse it for creating new product. For the point of reduce, the firm can less of using paper to document the file, and practice to fully use of electronic documentation method in the company. It is clearly described that, practice of green activities within company can help the firm to minimize the cost.

Relationship Between Green Supply Chain Management Practices With Customer And Operational Performance

There are significant and positive relationship between green supply chain management practices with customer and operational performance. It indicates that implement of green supply chain management practices with customer will directly increase the operational flexibility, delivery, product quality and production cost, hence improve the operational performance of firm.

The operational flexibility of firm can be improved through cooperate with customer. To identify the requirement or demand of market, the proper way to collect information is cooperate with customer. By using the available of information that gain from customer, the company can plan and make preparation to face with the change of market demand. Green design of product can be carried out based on the information that provide by customer, hence when the market demand had change, the firm can directly push the product into market and it will increase the competitive advantage of firm. Besides that, adopt of green supply chain management practices with customer can improve the performance of delivery. To support the use of less energy transportation method, the firm can reduce the delivery fee to overcome the

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problem of long period of delivery time. This type of transportation mode will only be carried out after achieve agreement between firm and customer, to avoid dissatisfaction of customer. The quality of product can be improve based on the cooperation with customer. The firm can collect the requirement of customer according to the aspect of environmental, hence the employee can use the information as a guideline to produce the product that meet with the environmental need of customer. The green practices that can be carry out by firm to minimise the cost with participate of customer is investment recovery. The firm can collect the abandon product from customer by giving some rebate or giving help to disposal those products. The firm can take out the component that are in good condition from the abandon product and reuse it to produce other new products.

Green Supply Chain Management Practices with Supplier and Operational Performance

The green supply chain management practices with supplier have significant and positive relationship with the operational performance. In the other words, through adopt of green supply chain management practices with supplier can improve operational performance of firm based on the operational flexibility, delivery, product quality and production cost.

Implement of green supply chain management practices with supplier can increase operational flexibility, this is because supplier that produce the basic component will also concern with the change of market demand. With the information that receive from supplier, the firm can prepare themselves with the expect changes such as different environmental requirement of consumer. Therefore, the firm that make early preparation will seize the market successfully. The firm can achieve high product quality through the green supply chain management practices with supplier. Green purchasing is integrating the environmental thinking during purchase of raw materials. The select of raw material must achieve the requirement that can be reuse, renew, and recycle. Besides that, the production cost can be reduce by reduce the price of resources. Select of supplier with the same environmental criteria must refer to the minimum price of raw material that can provide by each supplier. Select of supplier that achieve specific environmental requirement is not only can improve product quality and reduce production cost, but also can increase the performance of delivery.

Limitation

In this research, there are some limitations that may give effect to this research. First the rate of response of this research are low relatively, which only achieve of 15.23%. The number of respondents that participate in this research is not enough to represent the opinion of all manufacturing industry that had certified ISO 14001.According to the requirement 278 respondents is need to conduct this research, but only receive of 111 response, which has less of 167 set of data to analyse the result. As there are major different between the actual and expectation number of respondents, hence it may show a different result for this research if achieve of 278 respondents.

The final limitation of this research is the respondents is come from different type of manufacturing industry such as food and beverage, textiles, paper, rubber, machinery, and other industries. The different manufacturing industries that use to research may have different perception to the same question or issue. This is because the nature of industries is different, thus the information that provide by the respondent with different type of manufacturing industry will be different. Therefore, it will give impact to the final result of research.

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Recommendation

After this research had been conducted, some of the limitation had been found and there are a few recommendations that can be take note for future research. First, the method to conduct the survey need to be consider, because the response rate of sending questionnaire through email is extremely low. If there are no better alternative, the suggestion for increase the response rate is trace the condition of response frequently. Besides that, if possible, to call the respondent will also increase the response rate of research. Successfully calling the respondent can increase the effectiveness of sending questionnaire through email. This is because, through communication with respondent, the researcher can check the successfulness of sending email and request the respondent to answer the question.

The second suggestion is restricting the type of manufacturing industry that involve in the research. As mentioned in the limitation, respondent from different type of industry may have different perception on the same thing, hence the result that had collected may not accurate or not suitable to explain the actual condition of green supply chain management practices within manufacturing industry in Malaysia. Therefore, in the future research, limit of the type of manufacturing industry will increase the reliability of result. Besides that, the result that obtain also can defined the actual situation and more useful to be refer by the relevance manufacturing industry to make improvement in green supply chain management practices.

Conclusion

Adoption of green technology seen as a driver to improve national economy and achieve sustainability development. Therefore, green supply chain management as the green technology that can be implemented by manufacturing industry also may help the firm obtain competitive advantage and sustainability development.

In this research the green supply chain management practice with three different dimensions had been studied which are internal green supply chain management practices, green supply chain management practices with customer and green supply chain management practices with supplier. As a general knowledge green supply chain management is integrate of environmental thinking to the entire supply chain, minimize generation of waste and the most important is to prevent pollution. The adoption of those green supply chain management practices by the manufacturing industry is to achieve the competitive advantage and obtain sustainability development.

Through this research, result about implementation level had been obtained, which internal green supply chain management practices have high level of implementation by manufacturing industry in Malaysia. Besides that, the implementation level of green supply chain management practices with customer and green supply chain management practices with supplier are both place in medium level. Furthermore, the result of analysis shows that internal green supply chain management practices, green supplier chain management practices with customer and green supply chain management practices with supplier have significant and positive relationship with the operational performance. Determine of operational performance is based on the four elements which are operational flexibility, delivery, product quality, and production cost. In the other words, the implement of internal and external green supply chain management practices can increase operational flexibility, improve delivery performance, increase product quality, and reduce production cost.

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Through this research can prove that implementation of green supply chain management practices can increase the operational performance of firm. In addition, it also can help the company to achieve competitive advantage, at the same time obtain sustainability development. Therefore, the manufacturing industry in Malaysia can accelerate the progress of implementation of green supply chain management practices. If the manufacturing industry in Malaysia had implemented the green supply chain management practices in the entire supply chain, the volume waste generates each year surely will decrease. As generation of waste decreases, the issue of pollution will also decrease. Therefore, implementation of green supply chain management practices by manufacturing industry seen as a good method to overcome the environmental issue that increase severely thus improved operational performance.

Implication of the Research

The findings of this research offer several important implications for theory, practice, and policy.

Theoretical Implications

This research contributes to the body of knowledge on green supply chain management by empirically validating the positive relationship between internal GSCM practices, customer-oriented GSCM practices, supplier-related GSCM practices, and operational performance. The results reinforce the view that integrating environmental considerations into supply chain management not only enhances sustainability outcomes but also delivers operational benefits such as improved flexibility, product quality, cost reduction, and delivery performance. Furthermore, this research provides evidence from the Malaysian manufacturing sector, enriching the understanding of GSCM implementation in emerging economies where regulatory, cultural, and market contexts differ from developed nations.

Managerial Implications

From a managerial perspective, the findings highlight that internal GSCM practices are easier to implement and yield significant operational benefits with relatively low risk. Managers should therefore prioritize strengthening internal practices such as eco-design, environmental management systems, reverse logistics, and digital documentation, as these activities can be seamlessly integrated into daily operations and deliver immediate performance improvements. However, the medium level of adoption of GSCM practices with customers and suppliers suggests that external collaboration remains a challenge. Managers should invest in building stronger partnerships with suppliers by integrating environmental criteria into supplier selection and evaluation. Similarly, closer collaboration with customers in areas such as eco-design feedback, green packaging preferences, and investment recovery schemes can generate long-term competitive advantages, even though such initiatives may require more time and resources to fully implement.

Policy Implications

The research also provides implications for policymakers. Since ISO 14001 certification appears to be a major driver of internal GSCM implementation, policymakers and regulators may consider strengthening environmental certification programs, providing incentives for firms to adopt green standards, and ensuring consistent monitoring of compliance. Furthermore, policies that encourage collaborative practices across the supply chain, such as rebate programs for product returns, tax incentives for using renewable materials, or subsidies for energy-efficient logistics, could accelerate the adoption of customer- and supplier-focused GSCM practices. By doing so, the manufacturing sector in Malaysia could not only reduce

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waste and pollution but also improve its competitiveness in global markets that increasingly demand sustainable products and practices.

Societal Implications

On a broader scale, the implementation of GSCM practices contributes to national and global sustainability goals. By reducing waste generation and pollution, GSCM adoption in manufacturing industries helps mitigate environmental issues such as climate change and resource depletion. As firms integrate more environmentally responsible practices, society benefits from cleaner production systems, more sustainable consumption patterns, and an overall reduction in environmental degradation.

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References

Al-Ghwayeen, W. S., & Abdallah, A. B. (2018). Green supply chain management and export performance: The mediating role of environmental performance. *Journal of Manufacturing Technology Management*, *29*(7), 1233–1252. https://doi.org/10.1108/JMTM-03-2018-0079

Alkandi, Ibrahim & Alhajri, Nouf & Alnajim, Abdulrhman. (2024). Green Supply Chain Management, Business Performance, and Future Challenges: Evidence from Emerging Industrial Sector. Sustainability. 17. 29. 10.3390/su17010029.

Anonymous. (2020a). MS ISO 14001: 2015 – Environmental Management Systems - JSM Portal. Retrieved June 4, 2020, from Ministry of International Trade and Industry (MITI) website: http://www.jsm.gov.my/ms-iso-14001#.Xth4fDozZPZ

Anonymous. (2020b). Statistics - JSM Portal. Retrieved June 4, 2020, from Ministry of International Trade and Industry (MITI) website: http://www.jsm.gov.my/statistics#.Xth4YzozZPZ

Apostolopoulos, N., & Liargovas, P. (2016). Regional parameters and solar energy enterprises: Purposive sampling and group AHP approach. *International Journal of Energy Sector Management*, *10*(1), 19–37. https://doi.org/10.1108/IJESM-11-2014-0009

Bakdash, J. Z., & Marusich, L. R. (2017). Repeated Measures Correlation. *Frontiers in Psychology*, *8*(MAR), 456. https://doi.org/10.3389/fpsyg.2017.00456

Boutkhoum, O., Hanine, M., Boukhriss, H., Agouti, T., & Tikniouine, A. (2016). Multi-criteria decision support framework for sustainable implementation of effective green supply chain management practices. *SpringerPlus*, *5*(1), 1–24. https://doi.org/10.1186/s40064-016-2233-2

Brownlee, J. (2018). How to Calculate Nonparametric Rank Correlation in Python. Retrieved December 15, 2020, from Machine Learning Mastery website: https://machinelearningmastery.com/how-to-calculate-nonparametric-rank-correlation-in-python/

Burki, U. (2018). Green supply chain management, green innovations, and green practices. In *Understanding Complex Systems* (pp. 81–109). https://doi.org/10.1007/978-3-319-94322-0_4

Chiang, I.-C. A., Jhangiani, R. S., & Price, P. C. (2015). Reliability and Validity of Measurement. In *Research Methods in Psychology* (p. 34). BCcampus.

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 8 Issue 31 (September 2025) PP. 556-577
DOI: 10.35631/IJEMP.831037
Choi, D., & Hwang, T. (2015). The impact of green supply chain management practices on firm performance: the role of collaborative capability. *Operations Management Research*, *8*(3–4), 69–83. https://doi.org/10.1007/s12063-015-0100-x

Choi, S. B., Min, H., & Joo, H. Y. (2018). Examining the inter-relationship among competitive market environments, green supply chain practices, and firm performance. *International Journal of Logistics Management*, *29*(3), 1025–1048. https://doi.org/10.1108/IJLM-02-2017-0050

Chu. (2019). Generating more waste than ever | The Star. *The Star Online*. Retrieved from https://www.thestar.com.my/news/nation/2019/07/30/generating-more-waste-than-ever

Dalati, S. (2018). Measurement and Measurement Scales. In *Modernizing the Academic Teaching and Reserach Environment* (pp. 79–96). https://doi.org/10.1007/978-3-319-74173-4_5

Deshmukh, A., Deshmukh, A. J., & Vasudevan, H. (2014). Emerging Supplier Selection Criteria in The Context of Traditional VS Green Supply Chain Management. *International Journal of Managing Value and Supply Chains (IJMVSC)*, *5*(1). https://doi.org/10.5121/ijmvsc.2014.5103

Dikko, M. (2016). Establishing Construct Validity and Reliability: Pilot Testing of a Qualitative Interview for Research in Takaful (Islamic Insurance). *The Qualitative Report*, *21*(3). Retrieved from https://nsuworks.nova.edu/tqr/vol21/iss3/6

Dr. E. Dhivyadeepa. (2015). *Sampling Techniques in Educational Research*. Retrieved from https://books.google.com.my/books?hl=en&lr=&id=JgPYCgAAQBAJ&oi=fnd&pg=PA3&dq=Sampling+Techniques+in+Educational+Research&ots=e2Oec-YP-r&sig=GMgUE2tHA-fV61KMQdYwY7ik6Z4&redir_esc=y#v=onepage&q=Sampling Techniques in Educational Research&f=false

Ebert, J. F., Huibers, L., Christensen, B., & Christensen, M. B. (2018). Paper-or web-based questionnaire invitations as a method for data collection: Cross-sectional comparative study of differences in response rate, completeness of data, and financial cost. *Journal of Medical Internet Research*, *20*(1), e24. https://doi.org/10.2196/jmir.8353

Eisend, M., & Kuss, A. (2019). Research Methodology in Marketing. In *Research Methodology in Marketing*. https://doi.org/10.1007/978-3-030-10794-9

Eloranta, V., & Turunen, T. (2015). Seeking competitive advantage with service infusion: A systematic literature review. *Journal of Service Management*, *26*(3), 394–425. https://doi.org/10.1108/JOSM-12-2013-0359

Engin, B. E., Martens, M., & Paksoy, T. (2019). Lean and green supply chain management: A comprehensive review. In *International Series in Operations Research and Management Science* (Vol. 273, pp. 1–38). https://doi.org/10.1007/978-3-319-97511-5_1

Famiyeh, S., Kwarteng, A., Asante-Darko, D., & Dadzie, S. A. (2018). Green supply chain management initiatives and operational competitive performance. *Benchmarking*, *25*(2), 607–631. https://doi.org/10.1108/BIJ-10-2016-0165

Feng Kaitai. (2025). Research on Green Supply Chain Performance Evaluation of Manufacturing Enterprises. Research in Economics and Management. 10. p26. 10.22158/rem.v10n1p26.

Foo, P. Y., Lee, V. H., Tan, G. W. H., & Ooi, K. B. (2018). A gateway to realising sustainability performance via green supply chain management practices: A PLS–ANN approach. *Expert Systems with Applications*, *107*, 1–14. https://doi.org/10.1016/j.eswa.2018.04.013

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 8 Issue 31 (September 2025) PP. 556-577
DOI: 10.35631/IJEMP.831037
Gandhi, M., & Vasudevan, H. (2019). Green supply chain management practices and its impact on business performance. *Lecture Notes in Mechanical Engineering*, 601–611. https://doi.org/10.1007/978-981-13-2490-1_56

Geng, R., Mansouri, S. A., & Aktas, E. (2017). The relationship between green supply chain management and performance: A meta-analysis of empirical evidences in Asian emerging economies. *International Journal of Production Economics*, *183*, 245–258. https://doi.org/10.1016/j.ijpe.2016.10.008

Govindan, K., Khodaverdi, R., & Vafadarnikjoo, A. (2015). Intuitionistic fuzzy based DEMATEL method for developing green practices and performances in a green supply chain. *Expert Systems with Applications*, *42*(20), 7207–7220. https://doi.org/10.1016/j.eswa.2015.04.030

Green, K. W., Zelbst, P. J., Meacham, J., & Bhadauria, V. S. (2012). Green supply chain management practices: Impact on performance. *Supply Chain Management*, *17*(3), 290–305. https://doi.org/10.1108/13598541211227126

Grisi, R. M., Guerra, L., & Naviglio, G. (2010). Supplier performance evaluation for green supply chain management. In *Business Performance Measurement and Management: New Contexts, Themes and Challenges* (pp. 149–163). https://doi.org/10.1007/978-3-642-04800-5_10

Hartono, B. Y., Siagian, H., & Tarigan, Z. J. (2023). The effect of knowledge management on firm performance. mediating role of Production Technology, Supply Chain Integration, and Green Supply Chain. Uncertain Supply Chain Management, 11(3), 1133–1148. https://doi.org/10.5267/j.uscm.2023.4.009

Iqbal, M. W., Kang, Y., & Jeon, H. W. (2020). Zero waste strategy for green supply chain management with minimization of energy consumption. *Journal of Cleaner Production*, *245*, 118827. https://doi.org/10.1016/j.jclepro.2019.118827

Isfianadewi, D., Utami, T. L., & Kusumaningrum, S. D. (2025). The role of Green Supply Chain Management and Green Innovation towards the sustainable firm performance of eco-print businesses in Indonesia. International Journal of Sustainable Development and Planning, 20(2). https://doi.org/10.18280/ijsdp.200221

J.Martinez, K. M. (2020). *Green Supply Chain Management: Evolution of the Concept, Practices and Trends* (H. Kumar & P. K. Jain, Eds.). https://doi.org/10.1007/978-981-15-1071-7

Jabbour, A. B. L. D. S., Frascareli, F. C. D. O., & Jabbour, C. J. C. (2015). Green supply chain management and firms' performance: Understanding potential relationships and the role of green sourcing and some other green practices. *Resources, Conservation and Recycling*, *104*, 366–374. https://doi.org/10.1016/j.resconrec.2015.07.017

Jackson, S. (2008). *Research Methods: A Modular Approach - Sherri Jackson - Google Books*. Retrieved from https://books.google.com.my/books?id=j09b2rTVRsAC&pg=PA17&dq=descriptive+method&hl=en&sa=X&ved=0ahUKEwi1h9Ln_czpAhXP8HMBHTnZBa4Q6AEIMDAB#v=onepage&q=descriptive method&f=false

Jia, X., & Wang, M. (2019). The Impact of Green Supply Chain Management Practices on Competitive Advantages and Firm Performance. In *Environmental Sustainability in Asian Logistics and Supply Chains* (pp. 121–134). https://doi.org/10.1007/978-981-13-0451-4_7

Jingjing, L., & Yingchao, Z. (2011). A study of enterprise green supply chain management in cyclic economy model. *Communications in Computer and Information Science*, *227 CCIS*(PART 4), 671–677. https://doi.org/10.1007/978-3-642-23226-8_87

International Journal of Entrepreneurship and Management Practices
IJEMP
EISSN : 2600-8750
Volume 8 Issue 31 (September 2025) PP. 556-577
DOI: 10.35631/IJEMP.831037
Kamal, M. M., & Sundarakani, B. (2021). Green supply chain performance: The role of resources, capabilities and performance measurement systems. Sustainability, 13(7), 3921. https://doi.org/10.3390/su13073921

Kesejahteraan Bandar, K., Dan, P., Tempatan, K., Pengurusan, J., Negara, S. P., Pepejal, S., … Kerajaan Tempatan, D. (2013). *Existing Practice of Solid Waste Recycling in Malaysia MAIN REPORT Survey on SW Composition, Characteristics & Existing Practice of SW Recycling in Malaysia Final Report*.

Khan, S. Abdul Rehman, Jian, C., Yu, Z., Golpîra, H., & Kumar, A. (2019). *Impact of Green Practices on Pakistani Manufacturing Firm Performance: A Path Analysis Using Structural Equation Modeling*. https://doi.org/10.1007/978-3-030-02674-5_6

Khan, Syed Abdul Rehman, & Qianli, D. (2017). Impact of green supply chain management practices on firms' performance: an empirical study from the perspective of Pakistan. *Environmental Science and Pollution Research*, *24*(20), 16829–16844. https://doi.org/10.1007/s11356-017-9172-5

Kirchoff, J. F., Tate, W. L., & Mollenkopf, D. A. (2016). The impact of strategic organizational orientations on green supply chain management and firm performance. *International Journal of Physical Distribution and Logistics Management*, *46*(3), 269–292. https://doi.org/10.1108/IJPDLM-03-2015-0055

Kuhre, W. L., & Francisco, S. T. U. of S. (2018). *ISO 14001 Certification: Environmental Management System*. Retrieved from https://modps71.lib.kmutt.ac.th/xmlui//handle/123456789/125

Liu, Y., Blome, C., Sanderson, J., & Paulraj, A. (2018). Supply chain integration capabilities, green design strategy and performance: a comparative study in the auto industry. *Supply Chain Management*, *23*(5), 431–443. https://doi.org/10.1108/SCM-03-2018-0095

Mat Nawi, F. A., Abdul Malek A.Tambi, Muhammad Faizal Samat, & Wan Masnieza Wan Mustapha. (2020). a Review on the Internal Consistency of a Scale: the Empirical Example of the Influence of Human Capital Investment on Malcom Baldridge Quality Principles in Tvet Institutions. *Asian People Journal (APJ)*, *3*(1), 19–29. https://doi.org/10.37231/apj.2020.3.1.121

Meglio, O. (2020). Construct measurement in strategic management: Key issues and debate. In *Mergers and Acquisitions: Rethinking Key Umbrella Constructs* (pp. 3–26). https://doi.org/10.1007/978-3-030-40459-8_1

Middleton, F. (2016). Reliability vs Validity in Research | Differences, Types and Examples. Retrieved December 14, 2020, from Scribbr website: https://www.scribbr.com/methodology/reliability-vs-validity/

Ministry Of Energy, G. T. A. W. M. (2009). *National Green Technology Policy* (1st ed.). Ministry Of Energy, Green Technology And Water Malaysia.

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of Cardiac Anaesthesia*, *22*(1), 67–72. https://doi.org/10.4103/aca.ACA_157_18

Mohamed, Z., Hassan, N. A., & Abidin, R. Z. (2021). Environmental regulations and green supply chain management in Malaysia: A review. Asian Journal of Business and Accounting, 14(2), 137–162.

Mousa, H., Khalifa, W., & Alzubi, A. (2024). Green Supply Chain Practices and environmental performance: A moderated role of adaptive green culture and mediated role of competitive pressure. Sustainability, 17(1), 12. https://doi.org/10.3390/su17010012

Mutingi, M., Mapfaira, H., & Monageng, R. (2014). Developing performance management systems for the green supply chain. *Journal of Remanufacturing*, *4*(1), 1–20. https://doi.org/10.1186/s13243-014-0006-z

Volume 8 Issue 31 (September 2025) PP. 556-577
DOI: 10.35631/IJEMP.831037
Namagembe, S., Ryan, S., & Sridharan, R. (2019). Green supply chain practice adoption and firm performance: manufacturing SMEs in Uganda. *Management of Environmental Quality: An International Journal*, *30*(1), 5–35. https://doi.org/10.1108/MEQ-10-2017-0119

Nikolaou, I. E., & Zervas, A. (2017). How Environmental Knowledge of Managers Plays a Critical Role in Implementing Green Supply Chain Management. In *Operational Research in Business and Economics* (pp. 17–33). https://doi.org/10.1007/978-3-319-33003-7_2

Pan, X., Pan, X., Song, M., & Guo, R. (2020). The influence of green supply chain management on manufacturing enterprise performance: moderating effect of collaborative communication. *Production Planning and Control*, *31*(2–3), 245–258. https://doi.org/10.1080/09537287.2019.1631457

Pruzan, P. (2016). Research methodology: The aims, practices and ethics of science. In *Research Methodology: The Aims, Practices and Ethics of Science*. https://doi.org/10.1007/978-3-319-27167-5

Qin, J. J., & Peng, X. (2013). Green supply chain management in construction enterprise. *Lecture Notes in Electrical Engineering*, *163 LNEE*, 105–110. https://doi.org/10.1007/978-1-4614-3872-4_14

Qorri, A., Mujkić, Z., Gashi, S., & Kraslawski, A. (2018). Green Supply Chain Management Practices and Company Performance: A Meta-analysis approach. *Procedia Manufacturing*, *17*, 317–325. https://doi.org/10.1016/j.promfg.2018.10.052

Saeed Shahbaz, M., Zulfikar, S., Bhutto, A., Zuraidah, R., Rasi, R. M., Sohu, S., & Ahmad, F. Bin. (2018). The impact of supply chain collaboration on operational performance: Empirical evidence from manufacturing of Malaysia. *Article in International Journal of ADVANCED AND APPLIED SCIENCES*, *5*(8), 64–71. https://doi.org/10.21833/ijaas.2018.08.009

Sakala, K. (2024). The Impact of Green Supply Chain Management Practices on Consumer Behaviour: An Amazon Ltd Case Study in France (thesis). The Graduate School of Business University of Cape Town

Schober, P., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. *Anesthesia and Analgesia*, *126*(5), 1763–1768. https://doi.org/10.1213/ANE.0000000000002864

Sharma, B. (2016). A focus on reliability in developmental research through Cronbach's Alpha among medical, dental and paramedical professionals. *Asian Pacific Journal of Health Sciences*, *3*(4), 271–278. https://doi.org/10.21276/apjhs.2016.3.4.43

Shi, X. (2015). Green supply chain management system of modern enterprise construction strategy. *Lecture Notes in Electrical Engineering*, *286*, 105–114. https://doi.org/10.1007/978-3-662-44674-4_10

Singh, A., & Trivedi, A. (2021). Green supply chain management: A critical review and research directions. Environmental Science and Pollution Research, 28, 1275–1290.

Syed Kamaruzaman Syed Ali. (2013). Teachers' Planning and Preparation for Lesson Plan in the Implementation of Form 4 Physical Education Curriculum for the Physical Fitness Strand. *The Malaysian Online Journal of Educational Science*, *1*(4), 38–47. Retrieved from https://www.researchgate.net/publication/257924650

Tan, C. L., Ong, L. L., & Lim, W. Y. (2022). Corporate environmental reputation through green supply chain practices. Journal of Environmental Management, 307, 114499.

Trochim, P. W. M. K. (2020). Descriptive Statistics | Research Methods Knowledge Base. Retrieved December 13, 2020, from Conjoint.ly website: https://conjointly.com/kb/descriptive-statistics/

International Journal of Entrepreneurship and Management Practices
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Volume 8 Issue 31 (September 2025) PP. 556-577
DOI: 10.35631/IJEMP.831037
Vijayvargy, L., Thakkar, J., & Agarwal, G. (2017). Green supply chain management practices and performance. *Journal of Manufacturing Technology Management*, *28*(3), 299–323. https://doi.org/10.1108/jmtm-09-2016-0123

Wallace, A., & Ekweny Omachar, A. (2016). Effects of Green Procurement Practices on Operational Efficiency at Kenya Airways Limited, Kenya. *Imperial Journal of Interdisciplinary Research (IJIR*, *2*(7).

Wong, C. Y., Wong, C. W. Y., & Boon-itt, S. (2015). Integrating environmental management into supply chains: A systematic literature review and theoretical framework. *International Journal of Physical Distribution and Logistics Management*, *45*, 43–68. https://doi.org/10.1108/IJPDLM-05-2013-0110

Yang, C. L., Lin, S. P., Chan, Y. hui, & Sheu, C. (2010). Mediated effect of environmental management on manufacturing competitiveness: An empirical study. *International Journal of Production Economics*, *123*(1), 210–220. https://doi.org/10.1016/j.ijpe.2009.08.017

Yildiz Çankaya, S., & Sezen, B. (2019). Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management*, *30*(1), 98–121. https://doi.org/10.1108/JMTM-03-2018-0099

Younis, H., Sundarakani, B., & Vel, P. (2016). The impact of implementing green supply chain management practices on corporate performance. *Competitiveness Review*, *26*(3), 216–245. https://doi.org/10.1108/CR-04-2015-0024

Yu, W., Chavez, R., & Feng, M. (2017). Green supply management and performance: a resource-based view. *Production Planning and Control*, *28*(6–8), 659–670. https://doi.org/10.1080/09537287.2017.1309708

Yu, W., Chavez, R., Feng, M., & Wiengarten, F. (2014). Integrated green supply chain management and operational performance. *Supply Chain Management*, *19*, 683–696. https://doi.org/10.1108/SCM-07-2013-0225

Yu, Y., Zhang, M., & Huo, B. (2019). The impact of supply chain quality integration on green supply chain management and environmental performance. *Total Quality Management and Business Excellence*, *30*(9–10), 1110–1125. https://doi.org/10.1080/14783363.2017.1356684

Zalma, A. R., Safiah, M. Y., Ajau, D., & Khairil Anuar, M. I. (2015). Reliability and validity of television food advertising questionnaire in Malaysia. *Health Promotion International*, *30*(3), 523–530. https://doi.org/10.1093/heapro/dat072

Zhang, J., Zhang, X., Wang, Q., & Ma, Z. (2020). Relationship between institutional pressures, green supply chain management practices and business performance: An empirical research on automobile industry. *Advances in Intelligent Systems and Computing*, *1002*, 430–449. https://doi.org/10.1007/978-3-030-21255-1_33