Contents lists available at GrowingScience

Journal of Future Sustainability

homepage: www.GrowingScience.com/jfs

The influence of top management commitment on the operational performance through the mediating role of the green purchasing and iso 14000 implementation

Whenama Ghea Setyo Nugroho[a], Zeplin Jiwa Husada Tarigan[a*] and Hotlan Siagian[a]

[a]*Petra Christian University, Indonesia*

C H R O N I C L E

Article history:
Received: January 2, 2023
Received in revised format: March 2, 2023
Accepted: April 12, 2023
Available online: April 12, 2023

Keywords:
Green supply chain management
Operational performance
Green purchasing
ISO 14000

A B S T R A C T

This research aims to examine the influence of top management commitment on the operational performance through the mediating role of the green purchasing and ISO 14000 implementation. This study used a quantitative approach and collected data by distributing 70 questionnaires to textile companies located in the Central Java region, Indonesia. One respondent from the top management level, a manager or general manager represented each company. Off the 70, 48 questionnaires were returned and completed correctly. Data analysis used a partial least square (PLS) technique with SmartPLS software version 3.0. The results show that top management commitment has a significant influence on green purchasing, ISO 14000 implementation, and operational performance directly. The results also show that top management commitment also influences the operational performance through the mediating role of the green purchasing and the ISO 14000 implementation. Additional findings indicate that top management commitment contributes more influence on the operational performance through the mediating role of the green purchasing and the ISO1400 implementation than its direct influence. This study contributes to the current theory on supply chain management and paves the way for the practitioner in enhancing the operational performance of the textile industry.

1. Introduction

Development in the Supply Chain Management (SCM) sees the advantages when collaborative relationships are developed among the parties within the supply chain. It is essential to synchronize SCM strategies with the company business strategy, and some best practices have been offered to achieve the effectiveness of SCM (Basana et al., 2022b). Effective SCM is essential for building and maintaining the company's competitive advantages. Gunasekaran & Ngai (2004) stated that SCM effectiveness is affected by the management and integration of information's critical elements into the company's supply chain process. SCM has become an essential thing in increasing business competitiveness level (Siagian et al., 2022). A company must adopt the correct SCM strategy in the pursuit of competitiveness. The correct SCM strategy means that all parties within the supply chain must be able to cooperate in enhancing excellent operational performance (Tarigan & Siagian, 2021).

Today, the competition is not only on the quality, services, and the responsiveness but also on awareness of the company on the environmental issues. The more aware is the company of environmental sustainability (Basana et al., 2022a). Competitiveness is the product of the company. The advancement of civilization makes society more aware of the importance of sustainable nature for human well-being. Therefore, manufacturing industries are demanded to pay more attention to environmental issues in their production process. A different approach is needed to answer both demands of environmental issues and production needs on industrial manufacturing processes which must be effective, efficient, and environmentally friendly (Zhu & Sarkis, 2008). The Republic of Indonesia's law, (2009) articles 22 to 23 implies that every organization or business entity and activities which make a considerable impact on the environment are obligated to have environmental certification.

* Corresponding author.
E-mail address: zeplin@petra.ac.id (Z. J. Husada)

ISSN 2816-8151 (Online) - ISSN 2816-8143 (Print)

doi: 10.5267/j.jfs.2024.1.002

Green Supply Chain Management (GSCM) is a new concept in SCM study, which consists of two main concepts to answer modern society's demands which are SCM concept and environmental management system. Those concepts were initiated from the innovation's requirement in the field of SCM and manufacturing process which considers the side effect on the environment sustainability. The concept of GSCM are involving environmental friendly activities to increase the effectiveness of GSCM such as purchasing activities that include reduce, reuse, and substitution of non-environmental friendly materials with environmental friendly materials which called green purchasing (Dubey et al., 2017; Fang & Zhang, 2018; Laosirihongthong, Adebanjo, & Choon Tan, 2013; Rehman, Seth, & Shrivastava, 2016; Younis, Sundarakani, & Vel, 2016).

As a new concept in the world of manufacturing industries, there are obstacles and challenges in implementing GSCM in the production process of manufacturing industries. According to Ryder Centre for Supply Chain Management, (2003), there are three main obstacles to implement GSCM concept in manufacturing industries i.e., the lack of adequate technology for industries to implement GSCM concept, the difficulties to attain real-time data in supply chain process, and the improper use of technologies inside manufacturing industries. However, previous studies have tried to make approaches so that GSCM implementation could be done easier. Wilkerson (2005) propose four approaches for implementing GSCM practices i.e., aligning GSCM goals with business goals, evaluating existing supply chain as a one life cycle system, using green supply chain as a base for innovation development, and focusing on raw material saving, waste processing, and reduction.

Several studies (Dubey et al., 2017; Lee, 2015; Rehman et al., 2016; Younis et al., 2016) attempt to associate GSCM concept with operational performance in manufacturing industries. Results show that companies implementing GSCM practices proved that it could improve their operational performance. To implement the GSCM concept, the company must select which practice to apply in their business process to align with their product type and their field of production. Research done by Testa dan Iraldo (2010) found that GSCM implementation inside manufacturing industries can positively improve reputation and brand image of produced goods, this is due to the existence of environmental management activities within GSCM that support companies in the power of negotiating with potential customers. The research also stated that GSCM could also improve the company's competitive advantage by increasing effectiveness in the production process and environmentally friendly management (Siagian et al., 2022).

Top management commitment is one of the success factors to achieve GSCM effectiveness (Basana et al., 2022a). Top management commitment is considered as the initial key in implementing GSCM practices; top management decides environmental policies that will be applied, then initiating training and communication techniques required to achieve GSCM effectiveness for improving operational performance (Ram et al., 2023; Digalwar et al., 2013). According to the research done by Singh et al. (2016), ISO 14000 is one of the driving factors to improve operational performance in a manufacturing industry, also stated that manufacturing companies that apply environmental management in their production process would have to negotiate power with potential customers (Testa & Iraldo, 2010). According to Heras et al. (2012) dan Vachon (2007), external demands and pressure from customers are the key drivers to ISO 14000 implementation in the company. To be able to do an activity that is environmentally friendly and can improve operational performance, proper guidance and procedures are needed so that those activities can be done effectively and efficiently. ISO 14000 is expected to be proper guidance to achieve that goal (ISO Central Secretariat, 2015).

Green purchasing implementation is one of the most natural GSCM practice to be done among the other practices: green purchasing consists of reducing, reuse, and substitution of non-environmentally friendly materials (Dubey et al., 2017; Fang & Zhang, 2018; Laosirihongthong et al., 2013; Rehman et al., 2016; Younis et al., 2016). According to Lee and Cheong (2011), companies who are implementing green purchasing will consider their suppliers too, whether the suppliers sell raw materials that are environmentally friendly or not, raw materials not producing over waste and harmful for the environment and will use recycle-able materials. Reasonably, to assure that suppliers chosen by the company are implementing the green concept, companies can make collaborative activities with suppliers such as training, environmental related information sharing, early involvement on product innovation, and collaborative research. Based on the phenomenon that happens in the textile sector in Indonesia, textile industries in the Central of Java are decided to be the research subject in this research. Central Java is known as one of the textile centers in Indonesia and many textile industries from low to top class industries are built there. Textile is also known as one of the leading products in the manufacturing industries in Indonesia; the government declared that textile products have a high potential to improve the Indonesian economy because the textile industry is an export-oriented labor-intensive sector (Sukatma, 2017). The Indonesian government predicted that in 2019 there would be an export increment of Indonesian textile products, this happens because the Indonesian textile product's quality is high, and the price is quite low.

It was found that textile products, wherein the manufacturing process produce much waste and potentially pollute the environment both chemically and biologically (dangerous and poisonous materials), it is necessary to carry out sustainable waste treatment and activities that can prevent the occurrence of environmental pollution due to the production process of textile products. There are still many textile industries who in their production process do not pay attention to the preservation of the surrounding environment wellbeing in Indonesia. The appliance of green purchasing inside the company is expected to increase the company's operational performance and environment (Tarigan & Siagian, 2021). Green purchasing itself is an activity that is at the beginning of the company's production process, thus determining the next steps. If the raw materials

used are environmentally friendly, it is expected to help ease the subsequent waste treatment process (Laosirihongthong et al., 2013). Based on the explanation above, three research objectives can be set, namely: first, to obtain the influence of top management commitment on ISO 14000 implementation, green purchasing, and operational performance. Second, get a big influence of ISO 14000 implementation on green purchasing and operational performance. Finally, get the big influence of green purchasing on operational performance.

2. Theoretical review and hypotheses development

Supply chain management (SCM) is a management practice that integrates all planning, analysis, coordination and scheduling activities involved in the process of material or product flow from the supplier's direction to the customer, the flow of information both from the supplier's direction to the customer and the customer towards the supplier, and financial flow from the direction of the customer to the supplier (Jaggernath & Khan, 2015; Gunasekaran & Ngai, 2004). Meanwhile, Green Supply Chain Management (GSCM) is a new concept in SCM literature, which inside of it exist two concepts to answer modern societies demands: SCM concept and environmental management system. Green purchasing is one of the GSCM practices that can be applied in the textile industry. Younis et al., (2016) stated that among the two GSCM practices which is green purchasing and eco-design, green purchasing is proven to have a more positive impact on firm performance than eco-design for the process that is up-stream oriented inside the supply chain. Therefore, green purchasing was chosen as one of the variables in this research.

2.1. Top management commitment

Top management commitment refers to the demonstration of top management's trust in the importance of a system implementation or program that provides value to the company (Basana et al., 2022a). Digalwar et al., (2013) stated, top management commitment is a framework within a company that supports the implementation of activities to improve environmental sustainability. Top management determines the environmental policies that will be applied in the company, determines how far the level of training will be given to employees, and how far the level of communication will be applied for environmental sustainability in the company to achieve both production targets in quality and quantity and sustainability of the environment. Top management builds communication that is formed as a container requiring information technology (Ram et al., 2023).

Top management commitment can be seen in companies when top management confirms the importance of a program as the main strategic orientation for the company and can show that the program can have a positive impact on the sustainability of the company. Top management commitment is also needed to avoid conflicts between departments because a new system or program can change the functions and roles of organizations that threaten the status quo of the organization. Thus, top management must explain to the entire organization that the functions of the program must not be treated competitively by the departments within the company organization, on the contrary, all can and should contribute to a better relationship (Siagian et al., 2022). Therefore, an excellent top management commitment can be seen when top management can empower the department by its functions. High top management commitment will integrate company goals and objectives of a program, so the selection of partners will use criteria that are in line with those goals.

2.2. Green purchasing as applied GSCM Practice

Green purchasing is defined as the extent to which companies pay attention to the environmental impact when they do activities to buy company raw materials, company auxiliaries, and components needed to do production. According to Lee & Cheong (2011), manufacturing companies that implement green purchasing will pay attention to their suppliers, whether suppliers sell materials that are environmentally friendly, do not produce too much waste and are harmful to the environment, and will use materials that can be recycled. Green purchasing is a GSCM practice which is in the early stages of the production process in manufacturing companies, and is the company effort to preserve the environment where the activities of purchasing products and materials are carried out to support the goal of environmental sustainability in ways such as the use of materials with minimum waste, supporting the activities of recycling, reuse and replacement of hazardous and toxic materials (Younis et al., 2016). According to Dubey et al. (2013), to be able to produce environmentally friendly products, manufacturing companies are needed to cooperate with their suppliers. Because the company has the right as a customer of its suppliers, the company has the authority to determine the criteria for environmentally friendly raw materials to be used on its products. The company can also assist suppliers so that suppliers can meet these criteria. Thus, the final product from the manufacturing process will be an environmentally friendly product.

2.3. ISO 14000 Implementation

ISO 14000 implementation defined as calculating to what extent the company willing to do activities to preserve the environment, achieve occupational health and safety (OHS), and company's effort to run the production process effectively and efficiently. The International Organization for Standardization (ISO) 14000 is a standard on environmental management developed by ISO because ISO 9000 on quality management systems alone (Tarigan et al., 2019). In ISO 14000 there are

regulations regarding "environmental management system - specification with guidance for use" which contains specific requirements and procedures for environmental management in corporate organizations (Padma, Ganesh, & Rajendran, 2008). ISO 14000 is a tool to implement an environmental management system where the company is located. In implementing ISO 14000 companies are not required to have ISO 14000 certification (ISO Central Secretariat, 2015). In ISO 14000 there are also regulations regarding specific requirements and procedures for carrying out occupational health and safety procedures (OHS) in the corporate environment. There are also specific procedures for manufacturing companies to carry out their production activities effectively and efficiently (International Organization for Standardization, 1996).

2.4. Operational Performance

Operational performance is defined as the company's ability to meet the criteria set by the customer and see the company's performance in the production process from raw materials to finished goods (Mitekua et al., 2022). Satisfaction level is one of the criteria requested by the customer to maintain satisfaction with the products and services provided by the company (Tarigan & Siagian, 2021). Services provided by the company can be done by sending or delivering products to customers promptly. The delivery of this product also needs to be considered the integrity of the product in its quality and quantity (Zhu et al., 2008; Tarigan et al., 2021). Operational performance can be improved by the company by building good relationships with internal parties (top management, departments, and employees) and external parties (suppliers, distributors, retailers, and customers) of the company (Tarigan et al., 2019). Relationships that are built with external parties include: the company's relationship with the supplier to get the right material, the right time and the right price; a good relationship built by the company with the customer is to fulfill customer demands while the relationship within the company is to coordinate and collaborate between all departments in producing products and services that meet external demand (Ram et al., 2023).

2.5. The relationship between research concepts

Based on the research of Dubey et al., (2017) on GSCM practice in manufacturing industries, top management commitment proved to have a significant influence on GSCM effectiveness. Top management commitment is a basis for the company to run green practices such as green purchasing, eco-design, reverse logistic, ISO 14000 implementation, green manufacturing, etc. Top management emphasizes the importance of a program that must be run in a company and all departments so that every employee can contribute to the success of the program applied (Basana et al., 2022a). Top management commitment that acts as the main driver of the applied program in manufacturing companies that are committed to environmental sustainability will adopt green purchasing concept wherein there are collaborative activities with suppliers to improve the quality of raw materials and environmentally friendly properties of raw materials (Tarigan et al., 2021; Ram et al., 2023). This was done with the aim of achieving environmental management targets set by the local government, as well as to obtain a high level of customer satisfaction with the company's products (Dubey et al., 2013).

According to Rehman et al., (2016) study in 318 respondents of manufacturing companies in India, it was found that one of the success factors that influence the achievement of green purchasing is top management commitment. Top management in its role as a decision maker in the company considers the importance of environmental performance because the current competitive environment encourages companies to develop business and environmental performance (Siagian et al., 2022). Based on this, the following hypothesis is proposed:

H_1: *Top management commitment influences green purchasing.*

Previous studies on the importance of top management commitment in implementing green practice state that without the involvement of top management can lead to the failure of green practice programs that applied in manufacturing companies. Top management has the role to emphasize the importance of a program and get priority so that it can be implemented, top management also acts as a cost driver, resources are allocated so that a program can be implemented. Top management commitment also plays a role in the implementation of ISO 14000 because it is a program that is carried out to achieve operational goals and environmental goals (International Organization for Standardization, 1996).

The results of the study by Padma et al., (2008) that companies which have a low top management commitment to environmental sustainability will find it difficult to implement ISO 14000 because there are no supporting resources and facilities. Low awareness by top management on the importance of environmental sustainability can reduce the level of competitiveness of companies because the competitive environment of the manufacturing industry nowadays demands that companies pay attention to environmental sustainability issues in addition to their business excellence. Based on this, the following hypothesis is proposed.

H_2: *Top management commitment has influence on ISO 14000 implementation.*

There is a strong relationship between the implementation of ISO 14000 to the GSCM practice, ISO 14000 can be a guideline for running GSCM practice. GSCM practice used in this research is green purchasing. Implementation of ISO 14000

can help to increase the effectiveness of green purchasing. But not the other way around, green purchasing does not help or improve the implementation of ISO 14000. ISO 14000 is one factor with weak ability to control but relied on increasing GSCM practice effectiveness in improving operational performance, this is because in implementing ISO 14000 requires companies to consider environmental factors in their production process activities, so the company chooses to do GSCM practice in the process production (Singh et al., 2016). Based on this, the following hypothesis is proposed:

H_3: *ISO 14000 implementation has influence on green purchasing.*

Previous studies on operational performance showed that operational performance indicated by inventory level, quality, lead time and customer satisfaction could be improved if manufacturing companies implement GSCM practice concepts such as green manufacturing, green logistics, green purchasing, and green design (Seuring & Müller, 2008; Vachon, 2007). Another study conducted by Melnyk et al., (2003) stated that operational performance indicated by quality, cost, flexibility, effectiveness, and efficiency of the production process could be significantly improved by implementing ISO 14000 in manufacturing companies. Implementation of ISO 14000 in companies can also be able to increase employee productivity levels due to the creation of a sense of security and comfort in working in the corporate environment (ISO Central Secretariat, 2015). Thus, the following assumptions can be hypothesized:

H_4: *Top management commitment influences operational performance.*
H_5: *Green purchasing influences operational performance.*
H_6: *ISO 14000 implementation influences operational performance.*

Based on the explanation, the research model can be determined in Fig. 1.

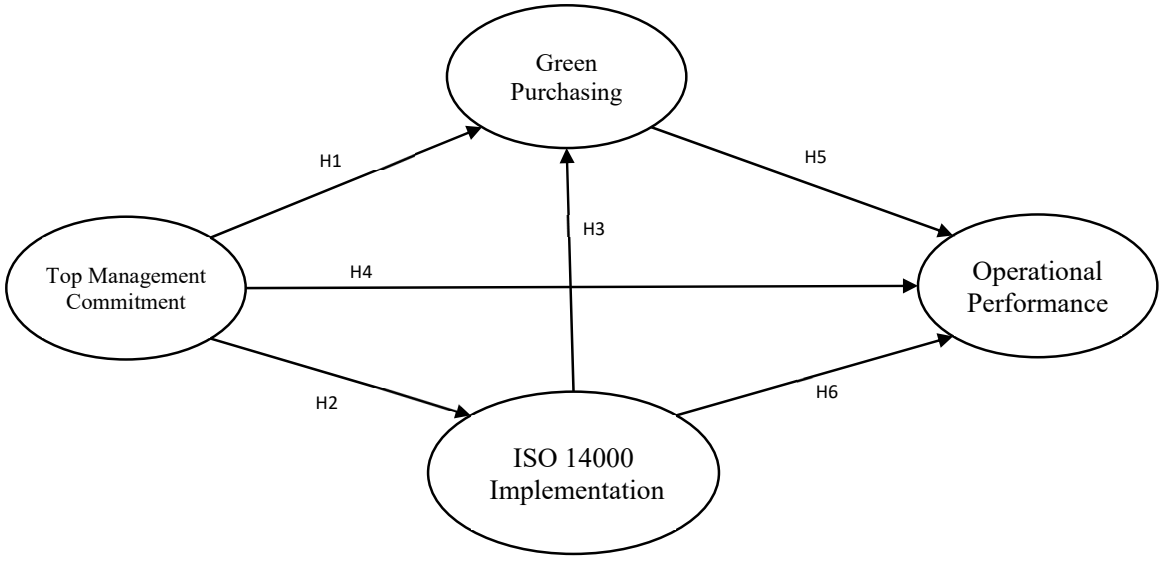

Fig. 1. The proposed research models.

3. Research Methods

Based on the research objectives that have been formulated, this research is carried out with a quantitative explanatory research approach, which intends to explain the position of the variables studied and the relationship between one variable and another (Solimun, 2007). This research was conducted with a survey approach because this study took a sample of a population of manufacturing companies engaged in the textile sector by using questionnaires as the main data measurement tool. The data collected is cross-sectional data obtained from respondents in answering questions items related to the variables that have been made in the form of a questionnaire that will be filled out by the respondents. This study also uses a descriptive statistical approach because it explains statistically each research variable. This research was conducted with a survey approach because this study took a sample of a population of manufacturing companies engaged in the textile sector by using questionnaires as the main data measurement tool. The data collected is cross-sectional data obtained from respondents in answering questions items related to the variables that have been made in the form of a questionnaire that will be filled out by the respondents. This study also uses a descriptive statistical approach because it explains statistically each research variable.

Based on Indonesian department of industrial and commerce (Disperindag, 2017) data, there are 88 textile industries with medium to large scale in the Central of Java, the products of these companies are yarn, fabric, convection industry, and

garment. This study will determine the minimum number of samples that are part of a population set that describes the population characteristics of 47 companies. This study uses sampling techniques from the population with a non-probability sampling technique, each member of the population does not have the same opportunity to be chosen because considering the locations of the companies are very far apart, and most of the population is in Surakarta, Sukoharjo, Karanganyar, Yogyakarta, Pekalongan, and Ungaran. The sampling technique used is judgmental sampling or purposive sampling. Respondents selected as representatives of organizations are managers who are related to the company's supply chain functions, including PPIC manager, production manager, purchasing manager, supply chain manager, and general manager. The selection of respondents was considered by several criteria including those who had been in the management position and had at least three years worked in the company. Questionnaires were made using the Likert scale approach (scale 1 = strongly disagree, scale 2 = disagree, scale 3 = less disagree, scale 4 = agree, and scale 5 = strongly agree). The questionnaire that was made was distributed to respondents as a textile industry representative. Respondents answer questionnaires made by answering all questions with the actual conditions in the field or by the company's operations. This questionnaire is intended to obtain data to test the hypothesis.

4. Data Analysis

The data in this research were analyzed by using SmartPLS software 3.2.7. The technique used to know the effect of the independent variable on the dependent variable between data is Structural Equation model (SEM) using SmartPLS3.2.7. SEM is one of the multivariate techniques that will show how to represent a series or series of causal relationships in a path diagram.

Table 1
Profile of respondents

Profile		Frequency	Percentage (%)
Job position	Manager	27	55.10%
	Head of a department	12	24.49%
Department	Production	22	44.90%
	PPIC	13	20.41%
Educational level	Bachelor	28	57.14%
	Diploma	9	18.37%
Work experience	>10 years	22	44.90%
	6≤10 years	14	28.57%
Company's age	>20 years	26	53.06%
	11≤20years	12	24.49%
Number of employees	>200	38	77.55%
	101≤200	7	14.29%

Table 2
Factor loading and Cross loading.

Indicator	Green Purchasing	ISO 14000 Implementation	Operational Performance	Top Management Commitment
GP1	**0.895**	0.779	0.775	0.783
GP2	**0.938**	0.824	0.855	0.840
GP3	**0.882**	0.764	0.830	0.810
GP4	**0.879**	0.827	0.824	0.765
GP5	**0.904**	0.818	0.828	0.807
ISO1	0.801	**0.917**	0.797	0.805
ISO2	0.824	**0.916**	0.853	0.808
ISO3	0.823	**0.925**	0.844	0.766
ISO4	0.801	**0.92**	0.796	0.753
ISO5	0.837	**0.903**	0.846	0.744
OP1	0.664	0.676	**0.788**	0.702
OP2	0.606	0.610	**0.725**	0.641
OP3	0.839	0.845	**0.902**	0.812
OP4	0.796	0.786	**0.913**	0.797
OP5	0.819	0.795	**0.881**	0.777
OP6	0.906	0.868	**0.942**	0.887
OP7	0.882	0.855	**0.93**	0.835
OP8	0.828	0.837	**0.886**	0.808
TMC1	0.693	0.681	0.710	**0.864**
TMC2	0.702	0.735	0.777	**0.841**
TMC3	0.753	0.763	0.799	**0.888**
TMC4	0.810	0.746	0.842	**0.878**
TMC5	0.622	0.556	0.658	**0.754**
TMC6	0.824	0.745	0.738	**0.838**
TMC7	0.863	0.778	0.808	**0.876**

The data in this research were obtained from a survey that was distributed by coming directly to 70 textiles companies in the Central of Java, and 49 responses (70% response rate) were obtained back., Table 1 describes the profile of research

respondents. Most respondents are those whose position is a manager of a department in the textile company (55.10%) and managing the production department (44.90%). The educational levels are commonly at a bachelor's degree (57.14%). Most respondents have more than ten years working experience in the textile related sector of industry (44.90%), the company they work for has been established and operational for more than 20 years (53.06%) and has more than 200 employees working over the company (77.55%). With this profile of respondents, it can be assured that respondents understand the real condition of textile industries in the field. Before testing the hypotheses, validity and reliability test was conducted using SmartPLS software 3.2.7 to ensure the questionnaire tool used to collect samples and the samples itself are valid and reliable. Validation measures using convergent validity and discriminant validity, on the other hand, reliability measurement using composite reliability, the data can be seen in Table 3.

Based on Table 2, the value of the outer loading of each indicator in all four research variables is more than 0.5 cut off-value. The higher loading factor value indicates that the more critical role indicator reflects the variable. Table 2 also shows that the resulting AVE value is greater than 0.5 so it can be explained that the indicators in this research developed model can be proven to measure the latent variables that are targeted and not measure other latent variables. The data on Table 2 also shows that the instruments in this research had already achieved acceptable convergent validity in the questionnaire. Composite reliability tests the reliability value of indicators on a construct. A construct or variable is said to meet composite reliability if it has a composite reliability value more than 0.6 (Sekaran, 2013). Table 2 shows that the composite reliability value is around 0.948 - 0.963, which means it has reached an acceptable internal consistency. From Table 2 we can also conclude that top management can empower all departments in the company as an indicator that has the essential role of reflecting top management commitment variable, while a company using "environmentally friendly" criteria for raw material use is an indicator that has the most critical role reflecting green purchasing variable. The company manages its waste properly by doing treatment is the most critical indicator that reflects the ISO 14000 implementation, and increasing production efficiency is the most important indicator that reflects operational performance. The measurement of discriminant validity in this research is using cross loading criteria that can be seen in Table 2. Based on Table 2, each indicator has the highest value on its variable which it represents, it means that that variable has fulfilled discriminant validity.

Table 3
R-Square and Reliability

Variable	R-Square	Composite Reliability	AVE
Top Management Commitment	-	0.948	0.722
Green Purchasing	0.861	0.955	0.810
ISO14000 Implementation	0.716	0.963	0.839
Operational Performance	0.894	0.962	0.763

From the structural model, predictive relevance can be assessed using Q-square criteria, when the Q square value exceeds 0 indicates that the structural model can predict the explained topic accurately whereas R-square is the measure of the goodness of fit of the regression equation. The value of R-square lies between 0 and 1, and a better model matches if R-square value gets closer to 1 (Solimun, 2007). The values of R-square can be seen in Table 3. Meanwhile, Q-square is calculated with Q = 0.975. From the calculation it can be seen that Q-square value exceeds 0, this means that the structural model developed in the study accurately predicts the data points of indicators by 97.5%. Table 3 Shows that the R-square value of green purchasing is 0.861, this means the percentage of green purchasing diversity data which can be concluded by top management commitment and ISO 14000 implementation is 86.1%. In other words, top management commitment, and ISO 14000 implementation can affect green purchasing of textile industries in the Central of Java by 86.1%. The R-square value of ISO 14000 implementation is 0.716; this means that top management commitment can affect ISO 14000 implementation by 71.6%. The R-square value of operational performance is 0.894; this means that top management commitment, green purchasing, and ISO 14000 implementation can affect the operational performance of textile industries in the Central of Java by 89.4%. The research hypothesis is accepted if t value exceeds t table at the error rate of (α) 5%, which is 1.96.

Table 4
Path coefficient and T-value

Hypothesis	Original Sample	T Statistics
TM Commitment → Green Purchasing (H1)	0.479	4.525
TM Commitment → ISO14000 (H2)	0.846	10.922
TM Commitment → Operational Performance (H3)	0.326	2.352
ISO14000 → Green Purchasing (H4)	0.487	4.456
Green Purchasing → Operational Performance (H5)	0.314	2.055
ISO14000 → Operational Performance (H6)	0.347	3.221

Based on Table 4, top management commitment to green purchasing has a gamma coefficient of 0.479 and T-statistic of 4.525 > T-tables of 1.96 (α = 5%). Top management commitment has a significant effect on green purchasing with a significant level of 0.05. This shows that top management in textile companies in Central Java has to run well and has the will and commitment to green practice in the company's production process to maintain environmental sustainability. From the

results obtained, the first hypothesis of this study (H1. Top management commitment influences green purchasing) is acceptable. At the top management commitment variable on the ISO 14000 implementation, the gamma coefficient is 0.846 and has T-statistics of 10.922 > T-table of 1.96 (α = 5%), indicating a significant influence of top management commitment on ISO 14000 implementation of textile industries in Central of Java with a significant level of 0.05. This illustrates management's commitment to affecting the importance of quality standards and standards of production processes to the environment. From the results obtained, the second hypothesis of this study (H2. Top management commitment influences ISO 14000 implementation) is acceptable.

Analysis of the top management commitment to operational performance variables in Table 4 shows a gamma coefficient of 0.326 and T-statistics of 2,352 > T-table of 1.96 (α = 5%), this indicates that there is a significant influence between the top management commitment variables on operational performance of the textile's companies in Central of Java with a significant level of 0.05. This illustrates that the commitment of top management to the company's operational performance has to be carried out well, top management has to commit to green practices to improve the company's operational performance. From the results obtained, the third hypothesis of this study (H3). Top management commitment influences operational performance is acceptable. The ISO 14000 implementation variable on green purchasing, the gamma coefficient is 0.487 and T-statistics is 4.456 > T-table of 1.96 (α = 5%), which indicates a significant influence between the ISO 14000 implementation on green purchasing with a significant level of 0.05. This shows that textile companies in Central Java that have implemented ISO 14000, green practice activities become more organized and easier to do because they are standardized by regulations and standard procedures. From the results obtained, the fourth hypothesis of this study (H4. ISO 14000 implementation influences green purchasing) is acceptable.

Based on Table 4, it can be seen at the green purchasing variable on operational performance that the gamma coefficient is 0.314 and T-statistics is 2.055 > T-table of 1.96 (α = 5%), it means that there is a significant effect of green purchasing activities on operational performance with a significant level of 0.05. This illustrates that green purchasing in textile companies in Central Java must be done well to improve operational performance in the textile industry. From the results obtained, the fifth hypothesis of this study (H5. Green purchasing influences operational performance) is acceptable. Based on Table 4, the ISO 14000 implementation variable on operational performance obtained a gamma coefficient of 0.347 and T-statistics of 3,221 > T-table of 1.96 (α = 5%). This means that there is a significant effect of implementing ISO 14000 on operational performance in textile companies with a significant level of 0.05. From the results obtained, the sixth hypothesis of this study (H6. ISO 14000 implementation influences operational performance) is acceptable.

In this section will be explained the indirect effect of top management commitment that is moderated by ISO 14000 implementation and green purchasing towards operational performance, the indirect effect of top management commitment on green purchasing trough ISO 14000 implementation, and the indirect effect of ISO 14000 implementation moderated by green purchasing towards operational performance. The effect will be explained through specific indirect value and total indirect value. Specific indirect value describes the indirect influence given by an independent variable that affects the dependent variable through intervening or moderating variables specifically in one line.

Table 5
Indirect value

Variables	Original Sample (O)	T Statistics (|O/STDEV|)
TM Commitment → ISO14000 → Green Purchasing	0.412	4.3
TM Commitment → ISO14000 → Green Purchasing → Operational Performance	0.129	1.748
TM Commitment → Green Purchasing→ Operational Performance	0.151	1.946
TM Commitment → ISO14000 → Operational Performance	0.294	3.08

Table 5 can see the value of the indirect influence of top management commitment specifically. The effect of top management commitment on operational performance through mediation by ISO 14000 implementation then mediated again by green purchasing has a value of 0.129 with a T-statistic of 1.748 <T-table of 1.96 (α = 5%), meaning not significant. The effect of top management commitment on operational performance through mediation by green purchasing is 0.151 with a T-statistic of 1.946 <T-table of 1.96 (α = 5%), meaning that it is not significant. The effect of top management commitment on operational performance through mediation by ISO 14000 implementation obtained a value of 0.294 with a T-Statistic of 3.08> T-table 1.96 (α = 5%), meaning significant.

When looking at specific indirect effects in Table 5, it can be seen only through the mediation of ISO 14000 implementation alone that top management commitment has a significant effect on the company's operational performance (0.294 with T-statistics of 3.08). Even compared to the direct effect of top management commitment on operational performance which is 0.326 and T-statistics of 2,352 > T-table of 1.96 (α = 5%), the specific indirect effects mediated by the ISO 14000 implementation appear smaller. Moreover, the influence mediated by green purchasing and the influence mediated by ISO 14000 implementation then green purchasing looks small and not significant (0.151 with T-Statistic of 1.946 and 0.129 with T-

Statistic of 1.748). However, when viewed in total, the indirect effect of top management commitment on operational performance (0.574 and T-statistics of 4.368) is greater than the direct effect (0.326 and T-statistics of 2.352). This shows that the role of green purchasing and ISO 14000 implementation in mediating the influence of top management commitment on operational performance is very important because it can make the influence of top management commitment bigger.

This study empirically tested the influence of top management commitment on operational performance through ISO 14000 implementation and green purchasing. The sample of this study is 49 respondents on management ranks working in different textile companies in Central Java. From this research, it is also known that top management commitment is an important factor that acts as an initiator to improve operational performance, and green purchasing and ISO 14000 implementation proved to be a good mediator or intervening variable that can boost the effect of top management commitment on operational performance.

5. Conclusions

The six hypotheses that are proposed in this study have proven to be significantly positive. This is certainly in line with the theories that have been proposed by the previous researchers. The effect of top management commitment on green purchasing (H1. Top management commitment has influence on green purchasing). This proved by the result of this study, top management commitment on green purchasing has a value of 0.479 and T-statistic of 4.525 > T-tables of 1.96 (α = 5%). This statement supports previous research by Dubey et al., (2017), it is said that the top management commitment that emphasizes the importance of environmental sustainability programs in companies to all corporate bodies can increase green purchasing. The effect of top management commitment on ISO 14000 implementation (H2. Top management commitment has influence on ISO 14000 implementation) obtained a value of 0.846 and has T-statistics of 10.922 > T-table of 1.96 (α = 5%). This statement supports the idea that top management needs to be involved in determining environmental standards and policies in the production process of manufacturing companies and emphasizing the importance of these standards being achieved for the sustainability of the company.

The effect of top management commitment on operational performance (H3. Top management commitment has influence on operational performance) obtained a value of 0.326 and T-statistics of 2,352 > T-table of 1.96 (α = 5%). This statement supports the previous study by Dubey et al., (2017), it is stated that the top management determines the target and the direction of development of the company, with the determination of the target and orientation of the company, it will produce steps and programs that need to be done to achieve the target. High top management commitment means that top management will consistently emphasize the importance of programs that need to be done and support resources in order to achieve predetermined targets. The effect of ISO 14000 implementation on green purchasing (H4. ISO 14000 implementation has influence on green purchasing) obtained a value of 0.487 and T-statistics is 4.456 > T-table of 1.96 (α = 5%). This statement supports the previous study by Singh et al., (2016), it is stated that the implementation of ISO 14000 can help with other green practices because in ISO 14000 there are regulations, procedures, and standards for environmental sustainability in carrying out production process activities.

The effect of green purchasing on operational performance (H5. Green purchasing has influence on operational performance) obtained a value of 0.314 and T-statistics is 2.055 > T-table of 1.96 (α = 5%). This statement supports the previous study by Laosirihongthong et al., (2013), it is stated that if the raw materials used are environmentally friendly then the advanced waste treatment process is less needed and the potential for environmental pollution caused by the production process is small, this can increase the effectiveness and efficiency of the production process in the company.

The effect of ISO 14000 implementation on operational performance (H6. ISO 14000 implementation has influence on operational performance) obtained a value of 0.347 and T-statistics of 3,221 > T-table of 1.96 (α = 5%). This statement supports the previous study by Testa and Iraldo, (2010), it is stated that manufacturing companies that apply the concept of environmental management will have the power to negotiate with potential customers. Manufacturing companies that have implemented ISO 14000 are proven to be able to improve their performance in various forms, such as saving energy and water consumption, production legality by the local government, and reducing negative environmental impacts (ISO Central Secretariat, 2015). At the specific indirect value on Table 6 can be seen that the specific indirect value of top management commitment towards operational performance through ISO 14000 implementation then green purchasing is not significant. This probably occurred due to the high cost of implementing good waste management which is the indicator of ISO 14000 implementation that has the highest factor loading and companies using green raw material which is the indicator of green purchasing that has the highest factor loading. Implementing those two green practices makes companies spend more resources that can reduce efficiency which is the operational performance's indicator that has the highest factor loading. Based on the findings in this study it can be concluded that the model used in this research can improve the operational performance of textile companies. Furthermore, the total indirect effect of top management commitment on operational performance (0.574) is significantly increased and has a higher value from the direct effect of top management commitment on operational performance (0.326). This means that green purchasing and ISO 14000 implementation are important factors that act as mediators which can amplify the effect of top management commitment on the operational performance of textile companies.

This study shows that the model used can improve the operational performance of textile industries, therefore managements in textile companies need to focus on improving these things:

For the top management commitment variable needs to be focused on two factors that significantly influence other variables, that is top management can show that environment friendly programs have a positive impact on the sustainability of the company, and top management is able to empower all departments in accordance with the need to implement ISO 14000 and green purchasing well so that operational performance can be improved. While other factors in the top management commitment that are the affirmation of the importance of environmentally friendly programs, top management acts as an example, resource support to run environment friendly programs, top management support for the use of environment friendly raw materials, and top management support for implementing environmental sustainability regulations need to be improved so that the effect on other variables also increases. For the ISO 14000 implementation variable needs to be focused on two factors that significantly influence green purchasing and operational performance, that is the company carries out waste management properly and fulfills the environmental regulatory requirements of the government.

Fulfillment of the environmental regulatory requirements of the government will alleviate the company's permits and production processes, while proper and correct waste treatment in accordance with procedures and regulations in ISO 14000 will make the production process more effective and efficient. The green purchasing variable needs to be focused on two significant factors that are setting criteria of "environmentally friendly" for raw materials used and support for suppliers to carry out R & D to continue developing environment-friendly raw materials. Other factors in green purchasing such as the use of environmentally friendly materials, efforts to reduce raw materials that are not environmentally friendly, and the selection of suppliers that have met environmental management requirements need to be increased so that the effect on operational performance becomes greater. There are some limitations in this study such as the sample of this study is too narrow which is the textiles companies in Central of Java. We recommend that further research could use broader sample coverage by using the scope of entire Indonesia and even in some developing countries with wider sample range on textile industries. This is intended for the results of research to be more generalizable so that we can know more about the effectiveness of top management commitment, especially in textile industries.

References

Basana, S.R., Siagian, H., Ubud, S. & Tarigan, Z.J.H (2022a). The effect of top management commitment on improving operational performance through green purchasing and green production. *Uncertain Supply Chain Management*, *10*(4), 1479-1492, DOI: 10.5267/j.uscm.2022.6.008

Basana, S.R., Suprapto, W., Andreani, F., & Tarigan, Z.J.H. (2022b). The impact of supply chain practice on green hotel performance through internal, upstream, and downstream integration. *Uncertain Supply Chain Management*, *10*(1), 169-180, DOI: 10.5267/j.uscm.2021.9.010

Digalwar, K. A., R. Tagalpallewar, A., & K. Sunnapwar, V. (2013). Green manufacturing performance measures: an empirical investigation from Indian manufacturing industries. *Measuring Business Excellence*, *17*(4), 59–75.

Dubey, R., Bag, S., Samar Ali, S., & Venkatesh, V. (2013). Green purchasing is key to superior performance: an empirical study. *Int. J. Procurement Management J. Procurement Management*, *6*(2), 187–210.

Dubey, R., Gunasekaran, A., & Papadopoulos, T. (2017). Green supply chain management: theoretical framework and further research directions. *Benchmarking: An International Journal*, *24*(1), 184–218.

Fang, C., & Zhang, J. (2018). Performance of green supply chain management: A systematic review and meta-analysis. *Journal of Cleaner Production*, *183*, 1064–1081.

Gunasekaran, A., & Ngai, E. W. . (2004). Information systems in supply chain integration and management. *European Journal of Operational Research*, *159*(2), 269–295.

Heras Saizarbitoria, I., Landin, G., & Molina Azorin, J. (2012). Do drivers matter for the benefits of ISO 14001 ?

International Organization for Standardization. (1996). ISO 14000.

ISO Central Secretariat. (2015). *ISO 14001, Key Benefits*. *International Organization for Standardization*. Retrieved from

Jaggernath, R., & Khan, Z. (2015). Green supply chain management. *World Journal of Entrepreneurship, Management and Sustainable Development*, *11*(1), 37–47.

Laosirihongthong, T., Adebanjo, D., & Choon Tan, K. (2013). Green supply chain management practices and performance. *Industrial Management & Data Systems*, *113*(8), 1088–1109.

Lee, K., & Cheong, I. (2011). Measuring a carbon footprint and environmental practice: the case of Hyundai Motors Co. (HMC). *Industrial Management & Data Systems*, *111*(6), 961–978.

Lee, S.-Y. (2015). The effects of green supply chain management on the supplier's performance through social capital accumulation. *Supply Chain Management: An International Journal*, *20*(1), 42–55.

Melnyk, S. A., Sroufe, R. P., & Calantone, R. (2003). Assessing the impact of environmental management systems on corporate and environmental performance. *Journal of Operations Management*, *21*(3), 329–351.

Mitekua, M.A., WoldSilase, B.D., & Dawed, E.A. (2022). Boosting operational performance through logistics drivers: Evidence from manufacturing industry, *Journal of Future Sustainability*, 2(3), 85-96, DOI: 10.5267/j.jfs.2022.9.008

Padma, P., Ganesh, L. S., & Rajendran, C. (2008). A study on the ISO 14000 certification and organizational performance of Indian manufacturing firms. *Benchmarking*, *15*(1), 73–100.

Ram, M.K., Selvabaskar, S., Guhan, R. & Rajarathi, K. (2023). The effect of digital communication technologies in retail supply chain management: Evidence from Indian small retailers. *Journal of Future Sustainability*, *3*(3), 125-132, DOI: 10.5267/j.jfs.2023.1.002

Rehman, M. A., Seth, D., & Shrivastava, R. L. (2016). Impact of green manufacturing practices on organisational performance in Indian context: An empirical study. *Journal of Cleaner Production*, *137*, 427–448.

Sekaran, U. (2013). *Research methods for business*. *Research methods for business* (Vol. 65).

Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, *16*(15), 1699–1710.

Siagian, H., Tarigan, Z.J.H., & Basana, S.R. (2022). The role of top management commitment in enhancing competitive advantage: The mediating role of green innovation, supplier, and customer integration. *Uncertain Supply Chain Management*, *10*(2), 477-494, DOI: 10.5267/j.uscm.2021.12.003

Singh, R. K., Rastogi, S., & Aggarwal, M. (2016). Analyzing the factors for implementation of green supply chain management. *Competitiveness Review*, *26*(3), 246–264.

Solimun. (2007). *Memahami Metode Kuantitatif Mutakhir Structural Equation Modeling & Partial Least Square*. Malang: Universitas Negeri Malang.

Sukatma, L. (2017). Prospek Industri Tekstil dan Produk Tekstil, Ini Rencana Kemenperin. *Bisnis Indonesia*. Retrieved from

Tarigan, Z.J.H. & Siagian, H. (2021). The effects of strategic planning, purchasing strategy and strategic partnership on operational performance. *Uncertain Supply Chain Management*, *9*(2), 363-372, DOI: 10.5267/j.uscm.2021.2.006

Tarigan, Z.J.H., Suprapto, W., & Basana, S.R. (2019). The effect of procedure change, TQM and ERP implementation to company performance on manufacturing industries. *IOP Conference Series: Materials Science and Engineering*, 473, 012052, DOI 10.1088/1757-899X/473/1/012052

Tarigan, Z.J.H., Mochtar, J., Basana, S.R., & Siagian, H. (2021). The effect of competency management on organizational performance through supply chain integration and quality. *Uncertain Supply Chain Management*, 9(2), 283-294, DOI: 10.5267/j.uscm.2021.3.004

Testa, F., & Iraldo, F. (2010). Shadows and lights of GSCM (green supply chain management): Determinants and effects of these practices based on a multi-national study. *Journal of Cleaner Production*, *18*(10–11), 953–962.

Vachon, S. (2007). Green supply chain practices and the selection of environmental technologies. *International Journal of Production Research*, *45*(18–19), 4357–4379.

Wilkerson, T. (2005). Best practices in implementing green supply chain. *Logistics Management Institute*.

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.

Zhu, Q., Sarkis, J., & Lai, K. hung. (2008). Confirmation of a measurement model for green supply chain management practices implementation. *International Journal of Production Economics*, *111*(2), 261–273.