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# ECONOMIC STUDENTS' AWARENESS ON THE GREEN SUPPLY CHAIN MANAGEMENT AND SUSTAINABILITY

## Bachelor of International Business Thesis


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Can Tho, April 28th, 2023.

The authors of the thesis.

# EXECUTIVE SUMMARY

In the current climate change situation, environmental issues are a top concern. Humans are facing global problems such as global warming, pollution of the water and air, depletion of the ozone layer, and the crisis in biodiversity. Therefore, this is not an urgent matter not only for those living on earth but for generations. This study aimed to discusse and understand the college students' knowledge and awareness of green supply chain management (GSCM) and sustainability issues. The study was realized with the participation of 534 economic students from universities in Can Tho City in Vietnam. The two analysing software IBM SPSS Statistics and SPSS Amos was adopted in this research. The research reveals that just a small percentage of economics students were aware of sustainability's critical role in the future and GSCM's primary components. This study deals with the correlation between five GSCM factors (internal environmental management, green procurement, green manufacturing, green distribution, and environmental education) and three sustainability performance dimensions (economic, environmental, and social performance). The results show that universities must emphasize the five areas listed above since they are essential to the long-term development of the economy, environment, and society. Although some research has examined how GSCM affects sustainability performance, nothing has been done to increase economic students' awareness of the part it plays in determining a company's success in sustainability. The notion that environmentally friendly corporate operations are advantageous is spreading. Raising students' knowledge of the value of corporate social responsibility (CSR), volunteerism, and environmentally friendly manufacturing is crucial for ensuring the long-term viability of enterprises, communities, and ecosystems.

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# LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| CFA | Confirmatory factor analysis |
| CSR | Corporate social responsibility |
| EE | Environmental education |
| EFA | Exploratory Factor Analysis |
| EFAM | External Factor Evaluation Matrix |
| ENP | Environmental Performance |
| EP | Economic Performance |
| GD | Green Distribution |
| GM | Green Manufacturing |
| GP | Green Procurement |
| GSC | Green Supply Chain |
| GSCM | Green Supply Chain Management |
| GSCS | Green Supply Chain Strategy |
| HM | Hospitality Management |
| IB/BA | International Business/Business Administration |
| IEM | Internal environment management |
| IFEM | Internal Factor Evaluation Matrix |
| MC | Media Communication |
| QSPM | Quantitative Strategic Planning Matrix |
| SCM | Supply Chain Management |
| SEM | Structural Equation Modelling |
| SP | Social Performance |
| SSCM | Sustainable Supply Chain Management |

# Chapter 1

# INTRODUCTION

*This chapter will provide a more comprehensive understanding of the study issue, the background, the objectives, and outline of the article, as well as an overview of the analysis methods used.*

## 1.1. BACKGROUND

Global climate change is one of society's most divisive and difficult issues, and its effects on business are now significant, but will grow. In December 2015, nearly 200 nations signed "The Paris Accord to address this serious issue. This was implemented in November 2016. The Paris pact aims to limit global warming to 2$^{o}$C and push world leaders to aim for net zero emissions, which would phase out fossil fuels. Industry contributes to climate change. Hence, the business community supports the Paris Climate Agreement. Approximately 350 corporations reaffirmed their support for the Agreement at COP22. Businesses are considering lowering $CO_2$ emissions to support global accords and reduce costs. Endorsing a carbon strategy may provide businesses with an edge over their rivals. Companies must alter their strategies and leverage climate change to gain a competitive advantage. Thus, firms and decision makers in this industry require help (Carola et al., 2013).

Today, sustainable development is increasingly significant in global business and the economy. Economic, environmental, and social factors can be used to create sustainable supply chains. Scientists and businesspeople are becoming increasingly interested in business strategies that include sustainable development ideas and instruments (Blanka, 2019). Recent studies on supply chain design have focused on environmental considerations. The GHG emissions from various transportation types and energy-saving technologies in transportation and manufacturing have been studied (Pan et al., 2013; Wang et al., 2011). The Green Supply Chain includes environmental considerations in supply chain design. Companies are also adding the green notion to their supply chains, establishing the "Green Supply Chain" (GSC). Green supply chain management (GSCM) processes have become a primary strategic focus of commercial enterprises. Green Supply Chain Strategy (GSCS) is a long-term strategy that integrates environmental thinking into supply chain management to gain a competitive edge

(Kumar et al., 2011). The GSCS covers water, waste, and carbon emissions, although this study focused on enhancing the carbon emission indicator (Carola et al., 2013).

Therefore, firms must prioritize green supply chain (GSCM) management if they want to establish and sustain a competitive edge (Zhu et al., 2008). For many years, GSCM has been widely discussed worldwide, particularly in the United States, European Union (EU), and Japan. As a new systematic environmental approach to green supply chain management, GSCM is adopted and used by forward-thinking companies worldwide (Bhool and Narwal, 2013). Although GSCM has been gaining traction internationally in recent years, it remains an emerging field of study in Vietnam (Do et al., 2020). There are strategies that businesses need to implement to discover new income possibilities, create value, enhance brand image, decrease costs, and mitigate risks. The Green Supply Chain Strategy provided in this study provides recommendations that may be put into practice. It provides direction that is broken down into a series of steps, beginning with the assessment and ending with the monitoring of outcomes (Luthra et al., 2013). The offered factors are intended to indicate reference models for assessing the efficiency of green supply chain management in sustainable development.

## 1.2. RESEARCH OBJECTIVES

### 1.2.1. Overall objective

The objective of this dissertation is to examine economic students' awareness of GSCM practices and determine the relationship between SCM practices and sustainability performance. In this way, the study suggests feasible business strategies for GSCM for sustainable development.

### 1.2.2. Specific objectives

To examine awareness of economic student about green SCM and sustainability

To identify influence of GSCM factors on sustainability performance

To propose feasible strategy solutions to enhance sustainability performance.

## 1.3. RESEARCH QUESTIONS

What do the economic students think about GSCM practices?

Which factors of GSCM impact on sustainability performance?

How to strengthen the relationship between GSCM and sustainability performance?

## 1.4. OUTLINE

This thesis comprises five chapters. The first chapter provides the background and objectives of this thesis. The second chapter provides a literature review of the theories involved in green supply chain management and sustainability. The third chapter presents the research framework, conceptual framework, questionnaire development, and data analysis in this thesis to demonstrate the whole process and its validity and reliability. Chapter 4 includes all the empirical findings of the study: the awareness of economic students in GSCM, the relationship between GSCM and sustainability, and feasible strategy solutions. The final section provides a summary and recommendations.

# Chapter 2

# LITERATURE REVIEW

*This chapter will develop the theoretical model and scale of components based on the related theories of GSCM, sustainability and strategic management.*

## 2.1. CONCEPT OF RESEARCH

### 2.1.1. Definition of sustainability

The success of the sustainability initiative is analyzed from a variety of perspectives, including economic, environmental, and social.

*Economic performance*, which refers to total profitability, is a significant reason why organizations use GSCM procedures. Economic performance refers to an organization's ability to save expenses through smart purchasing decisions, waste management, energy use, waste disposal methods, and penalties for environmental damage (Zhu et al., 2008). Therefore, we categorized the GSCM practice-economic performance relationship studies that evaluated economic performance using objective or perceived sales, profit, and market share increases (Chan et al., 2012; Lee et al., 2013; Kuei and Lu, 2013; Abdullah and Yaakub, 2014).

*Environmental performance* usually incorporates energy savings, waste reduction, and emission reduction. Environmental performance includes reducing air emissions, water waste, and solid wastes, and reducing hazardous product usage (Zhu et al., 2005). Energy conservation, waste, pollution, and emission reduction are environmental performance criteria (Rao, 2002; Zhu et al., 2005; Chiou et al., 2011; Lee et al., 2012).

*Social performance* is used to measure the impact of GSCM practices on product and company image, employee health and safety, and customer loyalty and satisfaction (Zailani et al., 2012; Ashby et al., 2012).

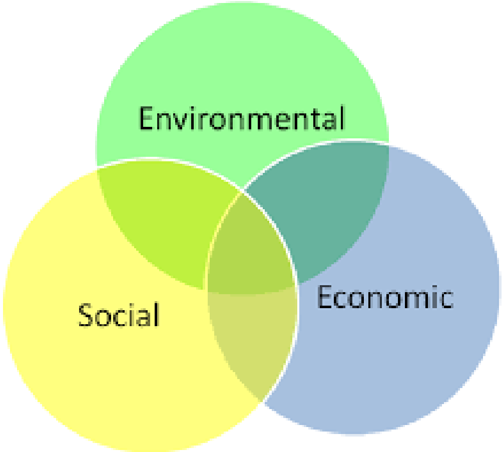


***Figure 2.1.*** *Three main components of sustainable development*

### 2.1.2. Definition of green supply chain management

The term "supply chain" refers to the network of businesses and organizations involved in the production and distribution of goods, from the initial procurement of raw materials to the collection of finished goods for recycling (Damert et al., 2017). The Supply Chain is composed of two major processes that operate in tandem with one another: 1) the Production Planning and Inventory Control Process, and 2) the Distribution Process (Carola et al., 2013).

The innovative and diverse character of supply chain management has resulted in a new way of defining the pitch. However, the phrase was not used for the first time until the 1980s, and it did not become commonly used until the 1990s. Prior to its widespread use, the phrases "logistics" and "operations management" operations management' were the most prevalent ones (Tekin et al., 2020). People often get logistics and supply chain management confused with one another. The process of procuring, manufacturing, and distributing raw materials and finished goods in appropriate amounts and locations is referred to as logistical. It is often considered to occur within the confines of a single corporation. The management of the supply chain includes the handling of client orders, manufacturing processes, movement of logistical goods, and flow of information. It is necessary to exercise control and supervision over all operations across the supply chain (Lummus et al., 2001; Peijia & Siqi, 2013). According to (Croom et al., 2000), a supply chain comprises many different types of participants, including suppliers, manufacturers, distributors, contractors, resellers, retailers, and customers. There are numerous distinct procedures and activities, including the production of goods, provision of services, and gathering of information (Peijia & Siqi, 2013).

Supply chain management is a multidisciplinary approach. Production management converts raw resources into intermediate and final goods and distributes them to customers (Lambert & Cooper, 2000; Bowersox et al., 2007). Supply chain operations increase consumer value and retain a competitive advantage (Bozarth et al., 2008; Tekin et al., 2020). Supply chain management should excel in planning and control, work and organization structures, product and information flows, facility structures, management techniques, power and leadership structures, risk and reward structures, and culture and attitude (Lambert & Cooper, 2000; Peijia & Siqi, 2013). Competition occurs across the entire supply chain, and effective management of the supply chain may increase a company's competitive advantage and improve organizational performance. The effectiveness of the supply chain depends on the choices made by businesses regarding supply chain drivers. This is a choice between operational effectiveness and customer service (Hugos, 2011; Peijia & Siqi, 2013; Tekin et al., 2020).

"Supply Chain Management (SCM) is the integration of these activities through improved supply chain relationships to achieve a sustainable competitive advantage'' (Handfield & Nichols, 1999).

SCM emerged in the 1970s with an emphasis on outsourcing, assembly, and distribution of goods to customers (Mentzer et al., 2001). SCM is "the integration of important business processes from end users via original suppliers that supply goods, services, and information that provide value to consumers and other stakeholders," as defined by the Global Supply Chain Forum (Lambert et al., 1998; Ankita & Nilupa, 2017).

"Green" is sometimes used interchangeably with "sustainable," which emphasizes environmental, social, and economic impact (Dobers and Wolff, 2000; Rahimifard and Clegg, 2007; Saha and Darnton, 2005). "Green supply chain management" (GSCM) has evolved as environmental consciousness grows (Srivastava, 2007). The 1980s "quality revolution" and the 1990s supply chain revolution inspired GSCM, which departed from the usual supply chain approach. GSCM's focus of GSCM on waste reduction and natural resource conservation has attracted researchers and industry experts. Eco-efficiency and remanufacturing are becoming increasingly vital for enhancing routine operations (Ashley, 1993; Srivastava, 2007). They believe that green actions to save resources, reduce waste, and enhance productivity may boost corporate competitiveness. Hence, "greening" may reduce firms' environmental impacts, increase productivity, and provide new ways to compete (Hajikhani et al., 2012). Consumer expectations and regulatory restraints drive sustainable business practices (Guide and Srivastava, 1998). Owing to government legislation and public environmental responsibility, strategic planners have had to address these issues and adopt many green initiatives (Mutingi, 2013).

Recently, academic and industry interest in cross-disciplinary GSCM has increased (Sarkis et al., 2011). Air pollution, solid waste disposal, and natural resource use must be monitored and managed throughout the development (Zhu et al., 2007). Environmentally conscious businesses, governments, organizations, and individuals have formed procurement and purchasing strategies that incorporate environmental requirements, displaying their collective bargaining and buying strength (Massoud et al., 2010; Kannan et al., 2010). Product control trumps environmental effects in GSCM manufacturing and delivery. A company must be lucrative and environmentally friendly (Ho et al., 2009; Luthra et al., 2013). Green supply chains contribute to sustainability and provide firms with a competitive edge in cost reduction, revenue growth, risk management, employee motivation, and environmental compliance (Tekin et al., 2020).

Green supply chain management (GSCM) is a subset of sustainable supply chain management that emphasizes collaboration across departments and with consumers and suppliers in environmental management (Zhu & Sarkis, 2004; Zhu et al., 2008; Yu et al., 2013). Management techniques and collaboration between downstream customers and upstream suppliers increase environmental sustainability (Rao & Holt, 2005; Vachon & Klassen, 2006; Green et al., 2012; Wong et al., 2013). GSCM relies on supply chain partners' practices, such as green purchasing embedded in supply interchanges between manufacturers, suppliers, and customers and cross-functional cooperation to maximize long-term benefits. When the supply chains work together, firms benefit from environmental management (Walton et al., 1998; Van Hoek, 1999; Zhu & Sarkis, 2004; Rao & Holt, 2005; Yu et al., 2013). Thus, GSCM must be entrenched throughout departments inside and across enterprises, and environmental practices can only be realized through collaboration and communication (Apsan, 2000; Zhu & Geng, 2001; Mengying et al., 2018).

According to Liu et al. (2012), GSCM stresses environmental concerns across the SC, and requires strategic coordination among all SC members. Mohanty and Prakash (2013) state that GSCM combines productivity increases and environmental preservation. They claimed that GSCM boosted productivity and environmental performance. Green efforts in various supply chain phases have been studied theoretically. Greening SC provides organizations cost savings, competitive advantage, and brand image, which helps create environmental uniqueness and benefits society (Bowen et al., 2001; Hall & Clark, 2003). Despite these advantages, Bowen et al. (2001) and Sarkis (1999) state that the industry does not green SC. Green buying also affects firms' environmental ambitions (Min & Galle, 1997). Sroufe (2006) established a framework that includes environmental performance indicators, a supplier assessment measure, and environmental activities to help organizations gain a competitive edge and decrease risk. According to Rao (2007), inbound greening is not well recognized in South Asia, although several companies have adopted it. Some firms implement inbound greening to boost performance and acquire a competitive edge, while others do so to fulfil their goals or comply with external regulations. Drumwright (1994) suggests that corporations use green inbound logistics because of numerous variables, including social duty efforts to increase efficiency and competition (Sardar Muhammad Zahid, 2016).

Academic and industrial interest in GSCM, a cross-disciplinary area, has recently grown (Sarkis et al., 2011). These development stages require the monitoring and management of local, regional, and global environmental challenges, including air pollution, solid waste disposal, and natural resource utilization (Zhu et al., 2007a). Environmentally minded enterprises, governments, organizations, and people have developed procurement and purchasing policies that include environmental standards, demonstrating their collective negotiating and buying powers (Kannan et al., 2010; Massoud et al., 2010).

Green Supply Chain Management reduces environmental hazards and improves the ecological efficiency of companies and their partners to increase corporate profits (Van Hoek, 1999). Zhu et al. (2008) stated that GSCM is an excellent management tool and concept for proactive and leading manufacturing organizations. GSCM emphasizes environmental challenges in upstream and downstream supply chain management (Shipeng & Linna, 2011). "GSCM is still relatively new (innovation) for most businesses in various sectors (Lin & Ho, 2008) and nations (Seuring & Müller, 2008)," Zhu et al. (2012) said. GSCM comprises of green procurement, production, packaging, delivery, and marketing. GSCM reduces energy, emissions, and hazardous, chemical, and solid wastes (Olugu et al., 2010; Kannan et al., 2013; Mengying et al., 2018).

Green Supply Chain Management (GSCM) is a more recent concept than traditional Supply Chain Management (SCM). Some literary reviews may be found in GSCM. Adding a "greening phase" to the supply chain operations across the board creates a more "integrated" and "co-operative" supply chain that, in the end, yields superior competitive advantages. This is what Green Supply Chain Management is about (Rao, 2002). GSCM, as was said before, necessitates the simultaneous consideration of environmental and social concerns within commercial operations. Porter and Van der Linde (1995) lay forth the fundamentals of "greening" as a "competitive endeavor". They believed that the competitiveness of businesses could be boosted by implementing green initiatives to conserve resources, eliminate waste, and increase productivity. Thus, "greening" may lessen businesses' negative effects on the environment, while simultaneously boosting productivity and opening up novel avenues to gain an edge in the marketplace (Hajikhani et al., 2012).

In short, GSCM differs from the conventional SCM. GSCM considers the environment and economics, whereas conventional SCM focuses on economy. GSCM is green, integrated, and environmentally optimized, whereas conventional SCM ignores human toxicology (Beamon, 1999; Gilbert, 2000; Ho et al., 2009). GSCM prioritizes product control over environmental impacts during manufacturing and delivery. A corporation must be competitive and profitable while meeting environmental standards for goods and manufacturing (Ho et al., 2009; Luthra et al., 2013). Therefore, green supply chains play an important role in sustainability, as they provide a competitive advantage for businesses in terms of cost reductions, generation of new revenues and innovative sources of income, risk management and reduction, staff motivation, and means of satisfying environmental compliance requirements (Tekin et al., 2020). GSCM is an eco-friendly method for enhancing business processes.

To enhance agility, GSCM reduces risk and accelerates innovation, both of which contribute to increased agility.

To boost adaptability: As a means of making the supply chain more flexible, green supply chain analysis typically results in new methods and ongoing enhancements.

To encourage alignment, a key part of GSCM is establishing policies with suppliers and customers to improve business processes and principal alignment (Françoise, 2010).

## 2.2. REVIEW OF PAST STUDIES

### 2.2.1. The past studies in relationship between GSCM and sustainability

This investigation contributes to GSCM theory by assessing the impact of GSCM practices on environmental sustainability and examining the impact of five GSCM practices on environmental sustainability. Schmidt et al. (2017) discovered a link between GSCM practices, and market and financial performance. The findings, according to Paulraj (2011), inferred a positive relationship between green purchasing and environmental sustainability. This implies that careful product procurement and the consideration of environmental, social, and economic factors may improve environmental sustainability. These findings support those of Chan et al. (2012), who argue that implementing a valuable internal environmental management system can help a company improve its sustainability performance. Furthermore, Singh and Pandey (2012) argue that accounting for the environment in a firm's promotional behavior may increase CSP while generating a positive image and trust within society. Similarly, green marketing was discovered to have a major impact on environmental sustainability as well as green distribution and packaging. The findings of Zsidisin and Siferd (2001), who discovered that green packaging may reduce harmful environmental impacts by implementing recycling progression, and Kumar et al. (2015), who discovered that green distribution may direct fuel consumption by optimizing transportation routes.

According to Zhu et al. (2007b); Sungchul and Alex (2011); Zhu et al. (2012); Yu and Ramanathan (2015); Ikegwuru and Pokubo (2018); Pratiwa and Widodob (2019), an affluent discernment into the ingrained blueprints of green supply chain management (GSCM) practices for humanizing environmental sustainability is suggested by previous empirical literature. According to the literature, implementing green supply chain management practices can improve a company's environmental sustainability. For instance, Pratiwa and Widodob (2019) used a cross-sectional research design to examine the impact of GSCM practices on corporate sustainability performance. Using data from retail fuel stations in Rivers State, Nigeria, Ikegwuru and Pokubo (2018) show how sustainable supply chain management practices and environmental performance are related. The study included statistical methods, such as reliability and validity tests, as well as a correlational test. The findings support the hypotheses that economic sustainability is related to environmental performance, environmental sustainability is related to environmental performance, and social sustainability is related to environmental performance. Sungchul and Alex (2011) used an experimental method to investigate the impact of two sustainability dimensions (environmental and economic) and price on consumer responses. The study's findings show that consumers support sustainability in both dimensions, leaving behind confirmatory appraisals of the company and purchase intent. Consumers react more negatively to a company's meager commitment to environmental care than to a company's meager commitment to economic sustainability.

Finally, the study discovered that when consumers are aware of a firm's poor environmental sustainability, they do not respond positively to low prices. This study found a link between consumer support for sustainability and corporate sustainability. Other research, such as Yu and Ramanathan's (2015) and Zhu et al. (2012), gave the impression that there is a positive relationship between the implementation of sustainable supply chain management (SSCM) practices and environmental performance. Zhu, Sarkis, and Lai (2007) discovered that implementing eco-design measures in the context of supply chain management can enhance environmental performance.

GSCM techniques have been linked to improved environmental, economic, and operational outcomes as well as enhanced competitiveness, according to the findings of several academic studies. Several studies have found that GSCM techniques improve environmental efficiency (Florida, 1996; Zhu & Sarkis, 2004). According to Geffen and Rothenberg (2000), a cooperative relationship with vendors may boost the spread of environmentally friendly procedures. Additionally, joint efforts in areas such as R&D and collaboration programs between suppliers and customers have a positive impact on the environment. In many cases, companies adopt environmentally progressive policies to improve their bottom lines. It remains unclear whether GSCM methods have beneficial or negative financial effects (Wagner et al., 2001). Environmental management strategies, such as GSCM, according to Alvarez Gil et al. (2001), have a favorable impact on the bottom line. It has been said that "inter-firm contacts provide formal and informal systems that increase trust and minimize risk and, in turn, enhance creativity and productivity; however, this has been refuted by experts such as Dodgson (2000), Dyer and Singh (1998), and Von Hippel (1998). Few studies have shown a beneficial correlation between environmental practices and business outcomes. Environmental management practices are strategic, creative initiatives and instruments for business, as described by Szwilski (2000) and Hajikhani et al. (2012).

The integration of environmental thinking requires paying close attention to actions that encourage ecologically sound and environmentally benign ways of living and making choices. Sustainable actions like these ensure that our planet's natural riches will be there for future generations to enjoy (Verma et al., 2018). Socially responsible businesses may reduce their expenses and have a less environmental effect, as mentioned by Jaggernath and Khan (2015) and Verma et al. (2018). Green supply chain collaboration, as proposed by Cosimato and Troisi (2015), is also beneficial since it helps increase efficiency and decrease waste. Like the proactive environmental approach, GSCM adoption may result in a number of positive changes for business operations. To objectively investigate the connection between institutional pressures, GSCM practices, and performance, Zhu et al. (2013) surveyed 396 firms in China. Long-term economic success may be achieved by changing environmental and operational standards; however, GSCM techniques have little effect. Using a questionnaire survey of typical export-oriented cities in China, Zhu et al. (2017) investigated the moderating and mediating effects of customer relational governance (CRG) on the links between two GSCM practices (green innovation and purchasing) and environmental and economic performance. Empirical research conducted on the Brazilian automotive supply chain by Rosaangla et al. (2017) showed a favorable correlation between supply chain economic performance and environmental performance and the use of GSCM principles (Feng et al., 2018).

GSCM techniques promote business strategies and environmental sustainability. Collaboration decreases environmental effects without compromising the quality, cost, reliability, effectiveness, or energy savings (Wei et al., 2016). Supply chain professionals employ GSCM methods to lessen the environmental effect of manufacturing businesses by responsibly disposing items and improving their economic and social standing. GSCM improves organizational performance (Shafique et al., 2017). Wei et al. (2016) and Shafique et al. (2017) believed that GSCM techniques save costs and help the environment and society. GSCM helps supply chain managers reduce environmental waste. Supply chain optimization boosts cash flow and customer value across the product life cycle (Li et al., 2015).

Organizational financial success is driven by raw material and energy efficiency, waste minimization, and process enhancements across the product lifecycle (Schmidt et al., 2017). Green supply chain techniques boost brand image, social validity, and competitiveness (Yang, 2017). Li et al. (2015) and Yang (2017) agree that green supply chain methods assist the company in both ways. Proactive environmental regulations boost corporate social responsibility. Collaboration improves strategic and tactical eco-efficient supply chain planning. Green product design improves environmental and economic performance (Li et al., 2015). Ecological elements in supply chain models minimize costs and carbon footprints. Environmental performance requires a reduction in carbon footprint. Green strategies and partnerships improve economic and environmental performance (Yang, 2017; Grandiere, 2019).

Environmental and financial performance may benefit from both GSCM approaches, as Cousins et al. (2019) show. In addition, the more robust the correlation between GSCM procedures and cost performance, the more idiosyncratic the company and the more traceable its supply chain. Companies are being pushed to adopt GSCM because of rising expenses associated with hazardous waste disposal, eco-friendly product production, and eco-friendly product packaging (Laosirihongthong et al., 2013). Internal awareness, supplier pressure, customer awareness, cost-related pressure, and legislation are the only few elements that drive industries to implement green supply chain management and improve their performance. Balasubramanian and Shukla (2017), Wang and Dai (2018), and Le (2020) find favorable correlations between GSCM and macroeconomic efficiency in terms of GDP, environmental impact, and social well-being. Furthermore, Green et al. (2012) and De Giovanni and Vinzi (2012) find that GSCM and other forms of environmental management positively correlate with a company's financial performance, operational performance (increased quantity of goods delivered on time, decreased inventory levels, decreased scrap rate, promoted product quality, expanded product lines, and improved capacity utilization), and environmental performance (Do et al., 2020).

Zhu and Sarkis (2004) evaluated the connection between certain GSCM methods and the performance of Chinese manufacturing firms was evaluated in a broad sense by Zhu and Sarkis (2004). They examined how concepts such as quality control and just-in-time production affect the efficiency with which GSCM is implemented. Issues in the GSCM performance assessment were summarized by Hervani et al. (2005). According to Chien and Shih (2007a, 2007b), the electrical and electronic sectors in Taiwan have implemented GSCM techniques. They also linked management methods with organizational output in accordance with EU regulations. Three researchers from India (Hasan et al., 2007) created a theoretical framework to interpret the obstacles faced by environmentally aware manufacturers. Green supply chain methods were investigated by Yu (2007), who looked at what elements in Taiwan's logistics sector influenced their acceptance. Zhu et al. (2007a) how GSCM was the use of GSCM in China's industrial industry and its effect on productivity. They looked at the extent to which GSCM was in its adoption process in four distinct Chinese manufacturing industries. Building on earlier research, Zhu et al. (2007b) conducted an empirical study on the automotive supply chain in China's companies to examine the challenges, drivers, initiatives, and performance of GSCM. According to the findings, there are significant internal motivations for GSCM practice adoption in the Chinese car supply chain, and regulatory and market pressures have been considerable and increasing. Choudhary (2011) analyzed the interrelationships between various performance assessment criteria. Internal environment management, green buying, customer collaboration, investment recovery, and eco-design are the five criteria used to evaluate performance. According to Diabat and Govindan (2011), GSCM may be an effective organizational philosophy for mitigating environmental hazards. Using a case study, they produced a model based on the ISM to aid in the implementation of green supply chain management principles. Eltayeb et al. (2011) determined the concrete environmental, economic, and intangible effects of the implementation of green supply chain efforts by Eltayeb et al. (2011). Barriers to GSCM adoption in India's car sector were modelled by Luthra et al. (2011) using the Integrated Systems Model (ISM) by Luthra et al. (2011). Measures of success for green supply chains in the automotive industry were determined by Olugu et al. (2010). Forward and inverse chain performance metrics were also created. For the best possible selection of eco-friendly vendors, Peng (2012) used an analytic hierarchy process and grey relational analysis. He created a mechanism to rate and rank green suppliers (Luthra et al., 2013).

The goal of this study was to determine whether there is a connection between GSCM practices and sustainability performance. Green purchasing, green manufacturing, green marketing, distribution, eco-design, internal environment management, environmental education, investment recovery, customer cooperation, and green information systems are typical components of GSCM activities. This study aims to determine which factors affect performance the most, which is sustainable. Environmental, economic, social, and operational performances are all aspects of sustainable performance. In this study, we incorporated factors from other studies, including Zhu et al. (2008), Cankaya and Sezen (2018), and Green et al. (2012). The significance or renewal of the research is the addition of measurement indicators on sustainability performance from ISO 26.000, Indonesia regulation from Environment and Forestry Ministry from the Republic of Indonesia Number: The inclusion of quantitative indicators for sustainability performance represents the renewal or importance of the research. Cankaya and Sezen (2018) contented that environmental education has long been viewed as a crucial tool for ensuring human expansion and open access for a future sustainable society. Recent quantitative studies highlight the value of eco-friendly business management. The success of environmental education has two objectives. Teaching each employee about a company's environmental policy comes first. Changing each person's behavior will create a more stable and responsible connection with the rest of the world.

### 2.2.2. The role of strategic management

David (2004) proposed a strategy for accomplishing far-reaching goals. Geography, acquisition, diversification, product development, personnel rationalization, market penetration, liquidation, divestment, and joint ventures are all examples of business strategies (Fadhilah and Ayunda, 2020). If managers want to achieve their organizations' goals, they should weigh the pros and cons of potential cross-departmental decisions using a strategic (Pearce and Robinson, 2013). A company's strategic strategy guides resource allocation (Wang et al., 2011; Ben-Abdallah et al., 2022).

The development of these strategies is complex. To set objectives, establish the organization's vision and purpose. However, it is difficult to achieve business trips. However, technology and marketing are obstacles. This strategy must change with many new competitors. Organizational Technology Impact Strategy. Organizational performance may also suffer. Technology must be used to improve performance and income. Technology can also save companies (Fadhilah and Ayunda, 2020). Several successful companies have found that a strategic planning process helps them analyze situations, set goals, and allocate resources. This tool may help improve decision-making and assess corporate growth (Brews and Purohit, 2007; Altamony et al., 2012; Gürel and Tat, 2017; Alshraideh et al., 2017; Ahmad et al., 2021a; Ahmad et al., 2021b; Alaali et al., 2021; Al-Dmour et al., 2021).

Strategy management includes examining the internal and external contexts to plan, implement, and evaluate strategies (Gupta et al., 2015; Fadhilah and Ayunda, 2020). Strategic management helps corporate leaders create and implement future plans and policies for the future (Nolan et al., 2008; Widiatama, Hamid and Matrono, 2018; Studer, 2016). It organizes qualitative and quantitative facts to aid in ambiguous decision-making (Meredith, et al., 2009). The Strategic Management Process (SMP) choices and actions typically determine a company's long-term prosperity. SMP does not always give "positive news." Certain firm parts and divisions may be affected and unforeseen implications must be considered (Ibrahim, Bartsch and Sharifi, 2020). Strategy management can help any company. According to Catley (2014), strategic management can help them set realistic goals and objectives and ensure that all relevant parties work together to achieve them; 2) it can help them better understand their strengths and weaknesses and how they compare themselves to the market and their competitors; 3) it can provide employees with meaningful work; and 4) it can provide organizations with a competitive advantage. Clear goals inspire and concentrate on employees (Fadhilah and Ayunda, 2020).

### 2.2.3. The past studies about strategic management for GSCM

Kusi-Sarpong, Sarkis, and Wang (2016) found that firms that form strategic relationships with their suppliers are more likely to remain profitable in the long term. Several studies, such as Roychowdhury, Shroff, and Verdi (2019) and Bansah et al. (2018), have found similar outcomes. Dong et al. (2020) and Jermsittiparsert, Siriattakul, and Sangperm (2019) also highlighted the capability of enterprises to enhance their sustainable performance via reverse logistics operations. Shahid et al. (2020) found that companies with an environmental management program were more successful in maintaining stable economic, social, and environmental footings over time. The findings of Owusu et al. (2021) on the relationship between environmental management and sustainable performance are similar.

Tekin et al. (2020) found that strategy management helps firm X profit from green measures. Company X benefited from contributing to the development of GSCM. Thus, the GSCM strategy indirectly enhances Firm X's economic and environmental performance via cost reduction and innovation. Fahad and Iffat (2018) examine Unilever's SSCM strategy. The firm has high GSCM goals. It aims to sustainably provide 100% of agricultural raw materials, integrate over half a million smallholder farmers and small firms into their supply chains, and empower over a billion people to enhance their health and well-being by 2020. Unilever's board of directors chose a new CEO and planned to improve their financial performance. The first non-Unilever CEO introduced new ideas. A sustainable supply chain requires collaboration, integration of key players, operations, distribution, redesign, purchase, and the ability to execute sustainability initiatives (Laurin and Fantazy, 2017). IKEA makes durable, high-quality furniture using as little material as possible to reduce shipping, petrol, and labor expenses. Malti (2021) said that this unique qualitative case study seeks a GSCM strategic solution in which supply chain managers need to gain a competitive advantage. Business managers may apply GSCM strategies to increase environmental performance, waste reduction, cost savings, and competitiveness (Daddi et al., 2016). The competitive advantage of green supply chain managers may be the largest finding of this study. Management may use a company's sustainability model to determine its economic and social impacts (Pryshlakivsky and Searcy, 2015). This qualitative case study can assist corporate leaders and supply chain managers in identifying the correct green supply chain solution, enhancing environmental efficiency, decreasing waste, saving money, and increasing competitiveness.

This report may help managers evaluate GSCM strategies to gain a competitive advantage. This study indicates that GSCM solutions, such as green purchasing, manufacturing, distribution, packaging, marketing, environmental education, environmental certification, internal environmental management, and return on investment may increase competitiveness and save money. Jamila Nasser Malti's (2021) study may assist company managers in conserving the environment and minimizing air pollution to meet society's health needs. GSCM lowers air pollutants, water discharge, solid waste, and hazardous materials (Nishitani, Kokubu and Kajiwara, 2016). These findings may assist GSCM managers in developing competitive GSCM solution strategies. This report suggests various actions. Second, administrators should establish a thorough set of rules, processes, and duties for all personnel involved in the integration. Green operations improve efficiency and competitiveness. Managers should include employees, suppliers, and customers in the supply chain GSCM. Green purchasing, manufacturing, distribution, packaging, marketing, environmental education, internal environmental management, and region of interest (ROI) are important.

ISO 14001 is required to fulfil global emissions, waste, resources, and environmental protection standards.

In conclusion, existing research on the aforementioned topics has been gathered and reduced to provide practical knowledge on GSCM construction and development. Discuss the advantages of problem-solving approaches. Thus, this research might help organizations explore GSCM strategies to gain a competitive advantage.

# Chapter 3

# RESEARCH METHODOLOGY

*The theoretical framework and methodologies used for the study will be defined in this chapter. Each method's structure and explanation are also thoroughly discussed.*

## 3.1. THEORITICAL FRAMEWORK

### 3.1.1. Research framework

This research framework presents an approach for this study. First, before coming up with a research idea, information was collected from the literature review: Green Supply Chain and Sustainability Performance from previous studies, articles, scientific journals, and information from the government. From this, we developed a theoretical framework and appropriate research model. After building a theoretical framework and model to determine it, the collected information helps determine the scope of the research study, observational sample size, stakeholder design, questionnaire, and organization of the trial survey before primary data collection. The analytical method will provide research results from which to develop a reasonable solution strategy, combined with the results of discussions with previous studies on green supply chains for sustainable development.

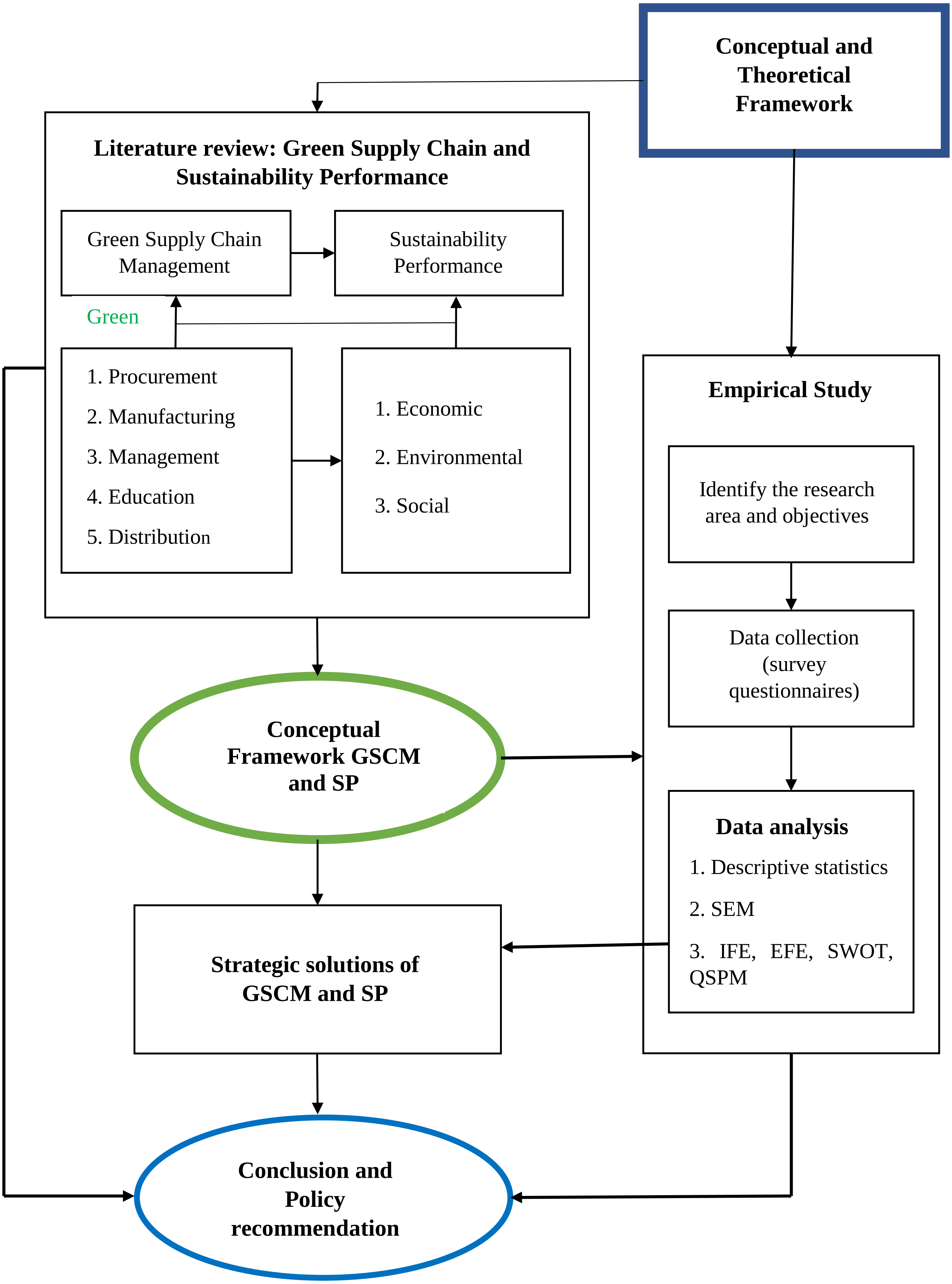


***Figure 3.1.*** *Research Framework*

### 3.1.2. Hypothetical conceptual framework

#### 3.1.2.1. Conceptual framework

The success of the sustainability initiative is analyzed from a variety of perspectives, including economic, environmental, and social.

Economic performance, which refers to total profitability, is a significant reason why organizations use GSCM procedures. Economic performance refers to an organization's ability to save expenses through smart purchasing decisions, waste management, energy use, waste disposal methods, and penalties for environmental damage (Zhu et al., 2008). Therefore, we categorized economic performance relationship studies that evaluated economic performance using objective or perceived sales, profit, and market share increases (Chan et al., 2012; Kuei & Lu, 2013; Lee et al., 2013; Abdullah & Yaakub, 2014).

Environmental performance usually incorporates energy saving, waste reduction, and emission reduction. Environmental performance includes reducing air emissions, water wastes, and solid wastes and reducing hazardous product usage (Zhu et al., 2005). Energy conservation, waste, pollution, and emissions reduction were environmental performance criteria (Rao, 2002; Zhu et al., 2005; Chiou et al., 2011; Lee et al., 2012).

Social performance was used to measure the impact of GSCM practices on product and company image, employee health and safety, and customer loyalty and satisfaction (Ashby et al., 2012; Zailani et al., 2012).

#### 3.1.2.2. Research hypotheses

In the publications analyzed in this section of the literature study, GSCM procedures were reviewed in relation to various supply chain actions. Previous research has focused on many aspects of GSCM procedures, such as (Ninlawan et al. (2010), Green et al. (2012), Lee et al. (2012), Laosirihongthong et al. (2013), and Thoo et al. (2014). Internal environmental management, external GSCM, eco-design, and investment recovery are the four dimensions of GSCM presented by Zhu et al. (2005). Important GSCM activities were outlined by Holt and Ghobadian (2009), and include logistics, supplier assessment and evaluation, green procurement and logistics policies, supplier education and mentorship, and industrial networks. Green purchasing, production, distribution, and logistics are all crucial components of GSCM practices that, according to Ninlawan et al. (2010) and Thoo et al. (2014), are required for manufacturing sectors to improve their sustainability performance. Internal environmental management, green information systems, green buying, customer participation, eco-design, and investment recovery are approaches proposed by Green et al. (2012) as part of GSCM. Corporate and operational strategies, including internal environmental management, green buying, customer collaboration, and eco-design, are all part of the GSCM processes, as pointed out by Lee et al. (2012). This study examined GSCM approaches from four key perspectives: internal environmental management, green procurement, green manufacturing, green distribution, and environmental education (Thoo et al., 2015).

The term "intra-organizational environment management" (IEM) is used to describe the processes and procedures that take place inside an organization to ensure environmental sustainability. Studies have shown this to be the case (Zhu et al., 2005; Ann et al., 2006; Kim et al., 2011; Huang et al., 2012; Kuei and Lu, 2013; Cheng et al., 2014).

*$H_1$: There is a positive influence of internal environment management on sustainability*

Green procurement: An organization uses green procurement to select suppliers based on their environmental competence, technical and eco-design capabilities, environmental performance, ability to produce environmentally friendly products, and ability to support the main company's environmental goals (Paulraj, 2011). Green procurement is a collection of supply side practices used by an organization to select suppliers based on their technical, environmental, and social competencies. This study also emphasizes the 3Rs, reuse, recycle, and reduce, as part of the green procurement process for paper and part containers (plastic bag/box), placing purchasing orders via email (paperless) (Ninlawan et al., 2010; Lee et al., 2012), eco-labeling products, ensuring suppliers' environmental compliance certification, and auditing suppliers' internal environmental management (Lee et al., 2012).

*$H_2$: There is a positive influence of green procurement on sustainability.*

Green manufacturing is a production method that actively designs and redesigns green processes (Green et al. 2012; and Lee et al. 2012) decreasing hazardous substances, boosting energy efficiency in lighting and heating, practicing 3Rs, and limiting waste (Ninlawan et al., 2010), and so on., Green et al. (2012) and Lee et al. (2012) all agree that in order to be considered "green," a company's product designs must allow for the easy reuse, recycling, and recovery of parts and materials; the elimination or reduction of hazardous products used in the manufacturing process; and the judicious use of both raw materials and energy.

*$H_3$: There is a positive influence of green manufacturing on sustainability.*

Green distribution includes downsizing packing, using "green" materials, promoting recycling and reuse, standardizing packaging among vendors, and encouraging returnable packaging. (6) Reduce material and unpacking time (Ninlawan et al., 2010), (7) Use recyclable pallets, and (8) Save warehouse energy (Holt and Ghobadian, 2009).

*$H_4$: There is a positive influence of green distribution on sustainability.*

Green environmental education has long been viewed as a crucial tool for ensuring human expansion and open access for a future sustainable society. The success of environmental education has two objectives. Teaching each employee about a company’s environmental policy comes first. Changing each person's behavior will create a more stable and responsible connection with the rest of the world (Cankaya and Sezen, 2018).

*$H_5$: There is a positive influence of environmental education on sustainability.*

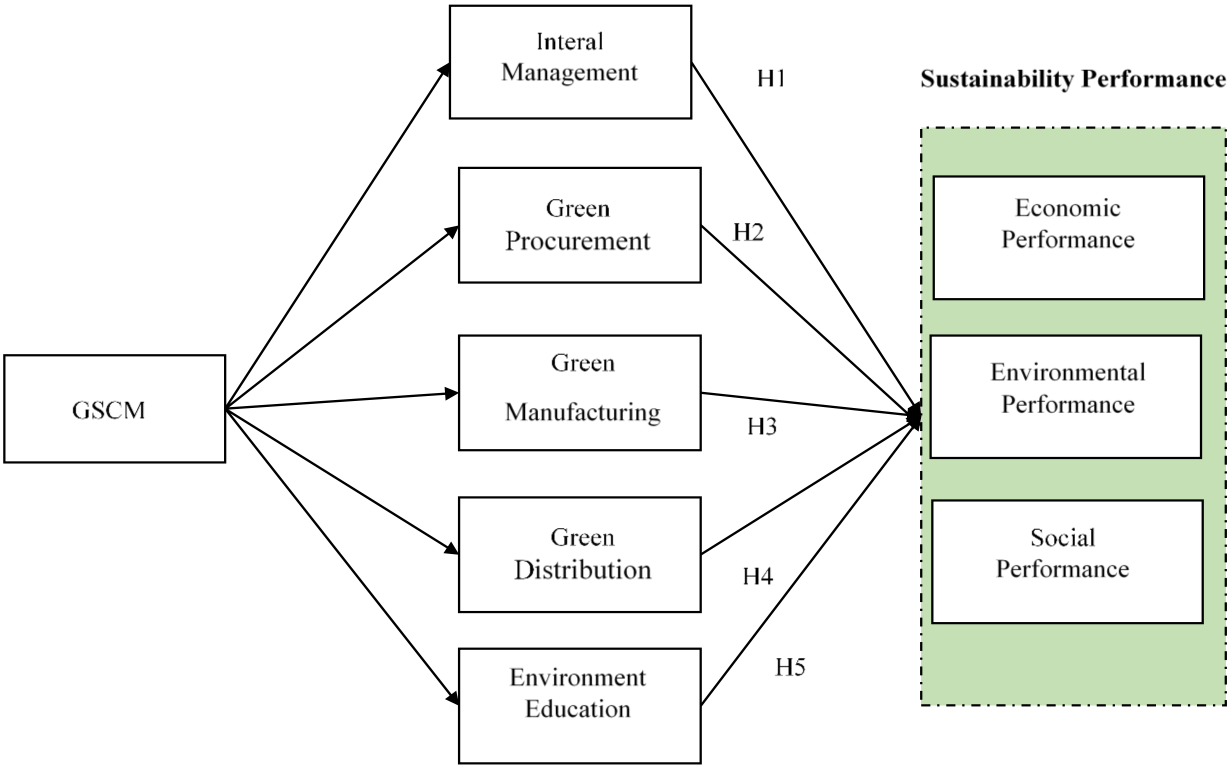


***Figure 3.2.*** *Conceptual framework*

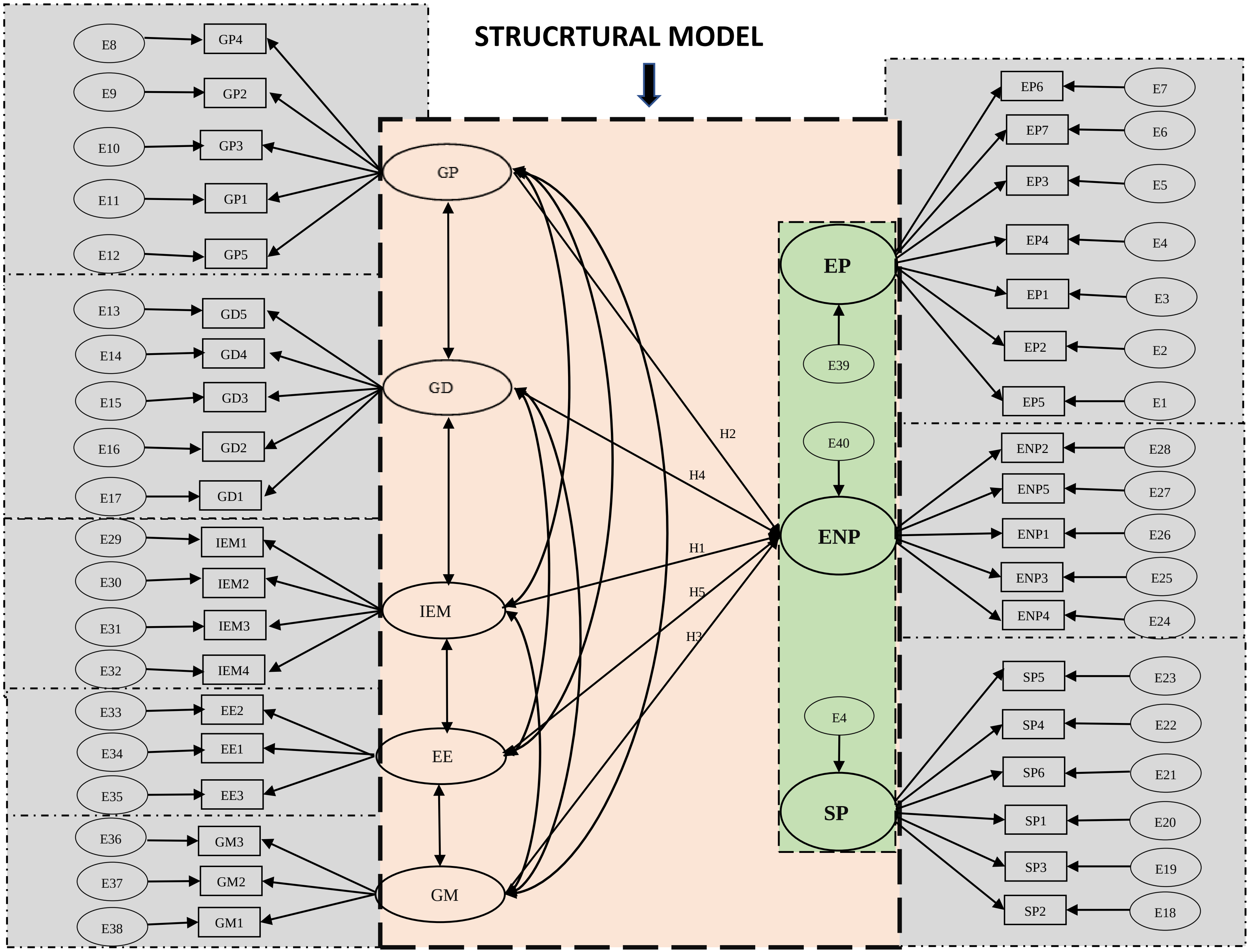


***Figure 3.3.*** *Hypothesis framework*

## 3.2. QUESTIONNAIRES DEVELOPMENT AND DATA COLLECTION

### 3.2.1. Methods of Data collection

The main purpose of this research was to determine the relationship between GSCM practices and sustainability performance of economic students in Can Tho City, Vietnam. Before developing the questionnaire, three academicians and 102 supply chain managers and scholars were asked which dimensions of GSCM practices should be considered. As a result, five dimensions were considered for analysis (internal environmental management, green procurement, green manufacturing, green distribution, and environmental education). A structured questionnaire was used to collect data from 534 economic students from business administration, international business, hospitality management, and multimedia communication disciplines. Purposive sampling was used to select respondents due to their in-depth knowledge and involvement in execution and strategy formulation with regard to issues related to supply chains and logistics. All selected students had experienced courses such as supply chain management, global procurement, logistics, and omni-channels. Walks in follow-ups were made to classes to be collected by QR codes in 10 weeks (from November 01, 2022, to January 15, 2023). After ten weeks of data collection, 534 questionnaires were retrieved, representing an 85% response rate, which was deemed appropriate for data analysis. The questionnaire was composed of two sections, along with a section on the control variables. Control variables considered as categorical measures included sex, age, and educational level. The two main sections were rated on a five-point Likert scale (1= strongly disagree to 5= strongly agree). The first section covered the 33 items used to measure GSCM based on (Bu et al., 2020; Dadhich et al., 2015; Ghobakhloo et al., 2013; Xie and Breen, 2012). These items were divided into the following dimensions: internal environmental management (four items), green procurement (five items), green manufacturing (four items), green distribution (five items), and environmental education (three items). The second section considered economic (seven items), environmental (five items), and social (six items) performance to measure sustainability performance.

***Table 3.1.*** *Factors and items of GSCM*

| Factors | Items | Code | Sources |
|---|---|---|---|
| **Internal Environment Management** | Commit GSCM from senior managers | IEM1 | Zhu et al. (2008); Huang et al. (2012); Kuei et al. (2013); Cheng et al. (2014); Feng et al. (2015) |
| | Support to GSCM from mid-level managers | IEM2 | |
| | Establish cross-functional cooperation team | IEM3 | |
| | Take criteria to measure green quality | IEM4 | |
| **Green Procurement** | Ensure suppliers meet their environmental objectives | GP1 | Rao and Holt (2005); Min and Galle (1997); Zhu et al. (2008); Salam (2009) |
| | Require suppliers to have ISO 14000 | GP2 | |
| | Purchase materials with green attributes | GP3 | |
| | Purchase equipment that saves energy | GP4 | |
| | Purchase goods with eco-labeling | GP5 | |
| **Green Manufacturing** | Ensure product have recyclable contents | GM1 | Al-Sheyadi et al. (2019); Schmidt et al. (2017); Rao and Holt, (2005); Zhu and Sarkis, 2004; Carter et al. (2000) |
| | Minimize the use of materials in packaging | GM2 | |
| | Encourage reuse of products and recycled materials | GM3 | |
| | Use Life Cycle Assessment to evaluate environmental load | GM4 | |
| **Green Distribution** | Recyclable whether reusable package or containers in logistics | GD1 | Cankaya and Sezen (2018) |
| | Reuse of valuable components of an end-of life product | GD2 | |
| | Select a method about cleaner transportation | GD3 | |
| | Use routing systems to reduce travel activity | GD4 | |
| | Identify defective merchandise to reuse | GD5 | |
| **Environmental Education** | Participate in non-government and government subsidized program about GSCM and sustainability | EE1 | Cankaya and Sezen (2018) |
| | Participate training courses on GSCM and sustainability for executives | EE2 | |
| | Participate training courses on GSCM and sustainability for managers and members | EE3 | |
| **Economic Performance** | Reduce cost for environmentally friendly input procurement | EP1 | Chan et al. (2012); Lee et al. (2013); Kuei et al. (2013); Abdullah and Yaakub (2014) |
| | Reduce cost of delivery and inventory | EP2 | |
| | Reduce fee to waste discharge | EP3 | |
| | Increase demand flexibility, delivery flexibility, and production flexibility | EP4 | |
| | Ensure procurement and delivery on time | EP5 | |
| | Capture demand for environmentally friendly product market | EP6 | |
| | Obtain certificate for green product warranty | EP7 | |
| **Environmental Performance** | Optimize process for waste and emission reduction, pollution control | ENP1 | Rao (2002); Zhu et al. (2005); Chiou et al. (2011); Lee et al. (2012) |
| | Recognize products of eco-labeling, recycled material, and design-for-assembly | ENP2 | |
| | Save energy consumption and recycling process | ENP3 | |
| | Encourage green and clean technologies use | ENP4 | |
| | Increase efficiency in scarcity of resources, higher waste generation and waste disposal problem | ENP5 | |
| **Social Performance** | Increase social and environmental responsibility | SP1 | Zailani et al. (2012); Ashby et al. (2012) |
| | Increase organizational capability | SP2 | |
| | Increase employees' motivation, health and safety | SP3 | |
| | Increase customer interest and satisfaction from green products | SP4 | |
| | Create trust to society or public | SP5 | |
| | Get government support for enforcement | SP6 | |

*Source: Authors' synthesis, 2023*

### 3.2.2. Data analysis

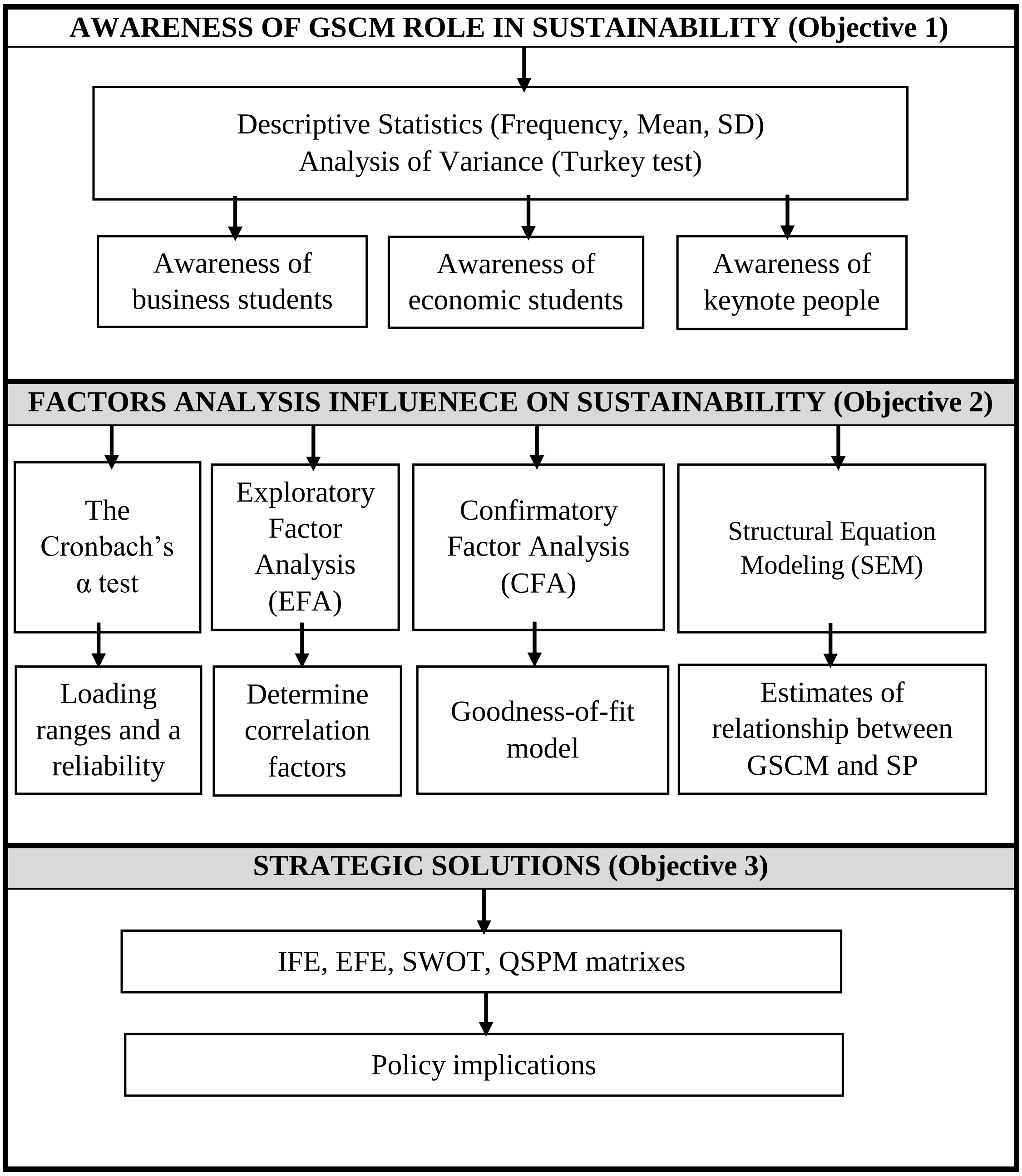


***Figure 3.4.*** *Analytical framework*

**Objective 1: To examine awareness of green SCM role in sustainable development**

To reflect the first objective, descriptive statistics are a technique for summarizing, estimating, presenting, and describing sample characteristics. It includes statistical analysis, frequency distribution, percentage distribution, and use of the average value and standard deviation of narrative analysis displayed in tables and graphs to meet the objectives of the study. The values used in this study were the highest, lowest, and average values of the components being studied. Moreover, the study applied an ANOVA test to this objective.

Fisher, a statistician, created the ANOVA (1919). It is a collection of statistical models and estimation procedures for analyzing how means differ from one another. The ANOVA test allows one to compare more than two groups simultaneously to determine whether there is a relationship between them. The result of the ANOVA formula, the F statistic, enables the analysis of numerous datasets to evaluate the variability within and across samples. One-way ANOVA was used to investigate the relationship between the dependent and independent variables when there were three or more sets of data. Therefore, go to the Bonferroni test in Post Hoc if Sig > 0.05 in the Test of Homogeneity of Variances indicates that the variance between the two categories is similar; otherwise, it is assumed that the variance between the two categories is different and moves on to Tamhane's test. Any comparison pair was considered to have a difference if the Sig value was less than 0.05. This value indicates that if there is a difference, the difference is utilized to decide which group is larger and which group is smaller. ANOVA assists in detecting correlations between variables, which leads to new discoveries that can contribute to previous studies and improve the reliability of data and conclusions.

**Objective 2: To identify factors influence on sustainability performance**

One of the most commonly used dependability metrics in the social and organizational sciences is Cronbach's alpha reliability (Cronbach, 1951). A reliability test called Cronbach's Alpha Rules was used to assess a questionnaire's dependability, stability, and item structure. Since it is also used to assess the internal consistency of indices, Cronbach's alpha is an "internally consistent" measure of dependability (Cronbach, 1951). A decent scale should have a Cronbach's alpha reliability of 0.7 or higher, according to Nunnally (1978). According to Hair et al. (2009), a scale that guarantees unidirectionality and reliability should have a Cronbach's alpha criterion of 0.7 or higher; however, for an initial exploratory investigation, a threshold of 0.6 is appropriate. The more Cronbach's alpha that is present, the more reliable the scale.

The SEM methodology can be traced back to the early part of the previous century. However, the full potential of route analysis was not revealed by sociologists, particularly until the 1960s. This discovery was made in the 1960s. Based on this, Joreskog (1973) and Keesling (1972) extended SEM into a broad notion that may be used for all types of causal interactions. Bagozzi and Yi (1988) pioneered its use in economics, particularly marketing research. Since then, its utilization has become routine throughout the majority of economic specializations.

The ideas of a theory, the assumptions generated by the theory, the observations and measurements contained in the theory, and the formal arrangement of all these pieces in an overall representation make up the structure of theory creation (Bagozzi and Yi, 1998). In this setting, structural equation modelling (SEM) provides a comprehensive method that seeks to bridge the gap between philosophical and statistical traditions. It provides a representation of theoretical as well as observational concepts, as well as the rules that apply to those words. In addition, it considers the likelihood of measurement mistakes in both variables and equations. At the observable level, SEM considers manifest variables as indicators, and at the theoretical level, it takes into account unseen, latent, or emergent variables as theoretical constructs. The link between constructs and indicators can be characterized using measurement models. These models define how the constructs are assessed using the indicators, thereby modelling the relationship between the two. In the structural model, the equations are what "represent" the theoretical connections that exist between the different structures.

After a theoretical model is created, it can be tested against real-world data. SEM is the current gold standard for the multivariate statistical analysis of this procedure. Covariance of all observable variables was considered in the covariance-based SEM analysis. Compared to approaches such as regression analysis, which focus on the data as a whole, this is a key distinction. The free parameters of all models were estimated using the empirical covariance matrix. An iterative process is used to reduce the discrepancy between the empirical and estimated covariance matrices.

The primary aim of covariance-based SEM is confirmatory, as it is used to examine the soundness of pre-established models. It needs a theoretical foundation, and its contribution to theory building is found in its capacity to evaluate measurement models, differentiate between distinct conceptions, and theorize about the strength of causal links. This SEM method is used for theories after conceptual work has been completed.

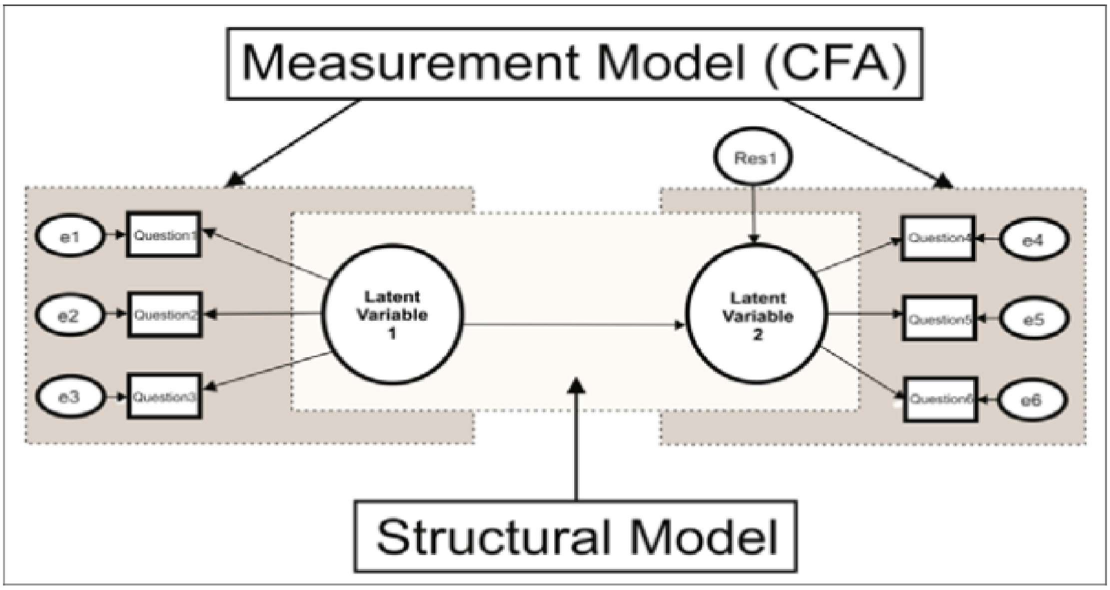


***Figure 3.5.*** *Demarcation between Measurement Model and Structural Model*

(Source: Byrne, 2010)

Structural Equation Model (SEM) is a hybrid methodology that considers elements from both factor and regression analyzes. Nevertheless, in contrast to the regression model, the Structural Equation Model (SEM) is predicated on the covariance matrix and uses a confirmatory method to evaluate research hypotheses in a unified procedure by modelling complicated interactions among a large number of observable and latent variables. In addition, SEM analyzes the observed variables to determine the measurement errors as well as the correlations between the errors. In contrast to the regression model, which can only identify direct impacts, the structural equation model can identify both direct and indirect influences. Cronbach's alpha test is the first stage in the SEM analysis process, followed by numerous further procedures that culminate in the generation of SEM estimations. In the first step of the process, the reliability of the newly developed scale was assessed using Cronbach's alpha. In the second stage, Exploratory Factor Analysis (EFA) was conducted to select eligible items for inclusion in the models and to exclude items whose factor loadings were lower than 0.5.

The most notable aspect of the third step was Structural Equation Modeling (SEM) estimation, which involved an iterative process based on theoretical and empirical analyzes to obtain a structural model fit. This was done to evaluate the rationality of the fundamental multidimensional constructs. The SEM evaluates not only the measurement model but also the structural model. Confirmatory factor analysis will make use of the measurement model to establish the nature of the link between latent variables and observable variables. Hence, in the event that the model fit indices are poor, testing the structural model will not be guaranteed (Dursun and Kocagoz, 2010). This helps narrow the gap between a confirmatory strategy, in which only one model is tested, and an exploratory approach, in which several models are tried (Garetti and Taisch, 2009). Statistics such as the chi-square fit test index (CMIN/DF), Tucker-Lewis index (TLI), goodness-of-fit index (GFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) were included in the indicator developed by Yu et al. (2013) to evaluate how well a model fits its data. Finally, the structural model is evaluated to establish the nature of the connection between the endogenous variable (sustainability performance) and the exogenous factors (GSCM). The software packages SPSS 22.0, and AMOS 22.0, were used to process the collected data.

**Objective 3: To propose feasible strategy solutions to enhance sustainability performance**

In this study, four matrices, namely IFE, EFE, SWOT, and QSPM, were used to determine feasible strategies.

SWOT is a crucial tool for strategic planning and organizational objectives. The SWOT analysis identifies, analyzes, and evaluates possible internal and environmental variables and their impacts. SWOT analysis evaluates business processes during strategic corporate planning. Focus on IFE and EFE to achieve organizational objectives. External factors affect product development, market segmentation and positioning, service offerings, and company acquisition and sales. Internal analysis assesses operational capabilities and performance. Comparing and analyzing prior firm performance, significant rivals, and industry may help determine internal strategic variables.

This study employed a case study technique using many data sources. We utilized questionnaire surveys. We also interviewed the crucial field informants in detail. The survey included 16 external and 15 internal variables. The SWOT criteria were utilized to create EFE and IFE matrices (Haryani et al., 2018). Variable scales were determined using definitions. IFE and EFE are strategy inputs. Strategists may build and assess different strategies by making modest judgments in the input matrices regarding the relative relevance of external and internal components (David, 2011). The variables were measured and evaluated as follows.

A coefficient weight was assigned to each element to represent the importance of that factor in comparison with the others. From a score of 0.0 (which indicates that the factor is not essential) to a value of 1.0 (which indicates that the item is very important), the goal is to assign the most weight to the element that has the greatest influence on the organization (very important). It is expected that the total of these coefficients will be 1.

The rating was established via the completion of a questionnaire, with the following factors taken into consideration:

- The IFE matrix is as follows: 1, major weakness; 2, minor weakness; 3, minor strength; and 4, major strength.
- The rating for the EFE Matrix represents how the firm reacted to external influences, where 1= low response; 2=average response; 3= good response; and 4= high response.
- The ultimate value of each factor can be calculated by multiplying its weight by its rating.
- The final total score for each factor is calculated first, followed by computation of the overall weighted score for the factor as a whole.

The high-level strategic management tool QSPM evaluates strategies. It objectively compares plausible strategies and actions. It uses management tools to objectively choose an optimal plan. It helps organize and prioritize critical internal, external, and competitor data for strategic planning. Many managers and academics reject emotional, intuitive, creative, and political techniques (Meredith et al., 2009). QSPM ranks plans by how well they help businesses capitalize on strengths and opportunities, address weaknesses, and avoid or reduce external risks (Abratt, 1993; Dibb, 1995; David, 2016). This necessitates subjective choices along the process, boosting the possibility that the organization's ultimate strategy selection will be successful (Zulkarnain, 2019). The QSPM now includes Attractiveness Scores (AS), Total Attractiveness Scores (TAS), and TAS Sum (Leliga et al., 2019).

***Table 3.2.*** *Internal factors in sustainability*

| No. | Strength | Code | Sources |
|---|---|---|---|
| | **Economic aspect** | | |
| 1 | Reduce cost for environmentally friendly input procurement | SE1 | Hervani et al. (2005); Zhu et al. (2007b); Chardine-Baumann (2011); Azevedo et al. (2011); Ageron et al. (2012) |
| 2 | Reduce cost of delivery and inventory | SE2 | |
| 3 | Reduce fee to waste discharge | SE3 | |
| 4 | Reduce fine for environment accidents | SE4 | |
| 5 | Increase demand flexibility, delivery flexibility, and production flexibility | SE5 | |
| 6 | Ensure procurement and delivery on time | SE6 | |
| | **Environmental aspect** | | |
| 7 | Optimize process for waste and emission reduction, pollution control | SEN1 | Beamon (1999); Hervani et al. (2005); Zhu et al. (2007a); Azevedo et al. (2011); Deif (2011) |
| 8 | Recognize products of eco-labeling, recycled material, and design-for-assembly | SEN2 | |
| 9 | Save energy consumption and recycling process | SEN3 | |
| 10 | Encourage green and clean technologies use | SEN4 | |
| | **Social aspects** | | |
| 11 | Increase social and environmental responsibility | SS1 | Gunasekaran et al. (2004); Zhu et al. (2007b); Markley and Davis (2007); Pochampally et al. (2009); Azevedo et al. (2011) |
| 12 | Increase organizational capability | SS2 | |
| 13 | Increase employees' motivation, health and Safety | SS3 | |
| 14 | Increase customer interest and satisfaction from green products | SS4 | |
| | **Weakness** | | |
| | **Economic aspect** | | |
| 15 | Constrained finance/capital | WE1 | Rogers et al. (1998); AlKhidir and Zailani (2009); Ravi and Shankar (2005); AlKhidir et al. (2009); Mclaren et al. (2004) |
| 16 | Lack of organization encouragement | WE2 | |
| 17 | Lack of IT implementation | WE3 | |
| 18 | Hesitate to convert to new systems | WE4 | |
| | **Environmental aspect** | | |
| 19 | Hesitate to change GSCM from supplier | WEN1 | Yu Lin (2007); Yu Lin et al. (2008); Hsu et al. (2008); Chien et al. (2007a); Ravi et al. (2005). |
| 20 | Lack of sustainable guidance | WEN2 | |
| 21 | Lack of sustainability training courses/consultancy/mentor | WEN3 | |
| | **Social aspect** | | |
| 22 | Lack of corporate social responsibility | WS1 | Digalwar et al. (2004); Hamel et al. (1989); Sarkis (2009); Mudgal et al. (2009); Mudgal et al. 2010); Ravi V. et al. (2005); Zhu et al. (2007b) |
| 23 | Lack of top management commitment | WS2 | |
| 24 | Do not want technology advancement adoption | WS3 | |

*Source: Authors' synthesis , 2023*

***Table 3.3.*** *External factors in sustainability*

| No. | Opportunity | Code | Sources |
|---|---|---|---|
| | **Economic aspect** | | |
| 1 | Promote green image, global marketing and competitiveness | OE1 | Hervani et al. (2005); Zhu et al. (2007b); Chardine-Baumann (2011); Azevedo et al. (2011); Ageron et al. (2012) |
| 2 | Capture demand for environmentally friendly product market | OE2 | |
| 3 | Obtain certificate for green product warranty | OE3 | |
| 4 | Attract investors and shareholders | OE4 | |
| | **Environmental aspect** | | |
| 5 | Increase green business strategies | OEN1 | Beamon (1999); Hervani et al. (2005); Zhu et al. (2007); Azevedo et al. (2011); Deif (2011) |
| 6 | Increase efficiency in scarcity of Resources, higher waste generation and waste disposal problem | OEN2 | |
| 7 | Adapt to global climate pressure and ecological change | OEN3 | |
| 8 | Contribute to government rules and legislation system related to sustainability | OEN4 | |
| | **Social aspect** | | |
| 9 | Support from green movement activism by non-government organization | OS1 | Gunasekaran et al. (2004); Zhu et al. (2007b); Markley and Davis (2007); Pochampally et al. (2009); Azevedo et al. (2011) |
| 10 | Create trust to society or public | OS2 | |
| 11 | Get government support for enforcement | OS2 | |
| | **Threat** | | |
| | **Economic aspect** | | |
| 12 | Impact economic uncertainty | TE1 | Hosseini (2007); Yu Lin (2007); Mudgal et al. (2010). |
| 13 | Impact market competition | TE2 | |
| 14 | Need for big investment | TE3 | Hosseini (2007); Mudgal et al. (2009); Ravi et al. (2005); AlKhidir et al. (2009). Walker et al. (2008). |
| | **Environmental aspect** | | |
| 15 | Poor legislation related to sustainability | TEN1 | Hosseini (2007); Yu Lin et al. (2008); Hsu et al. (2008); Mudgal et al. (2009); Mudgal et al. (2010); Scupola (2003); Srivastva (2007). |
| 16 | Lack of effective environmental measures | TEN2 | |
| 17 | Lack of government support system | TEN3 | |
| | **Social aspect** | | |
| 18 | Weak pressure from society | TS1 | Yu Lin (2007); Yu Lin et al. (2008); Hsu et al. (2008); Chien et al. (2007b); Yu Lin and Hui Ho (2008); Rao and Holt (2005); Perron (2005) |
| 19 | Lack of quality human resources | TS2 | |

*Source: Authors' synthesis, 2023*

# Chapter 4

# RESULTS AND DISCUSSION

*This chapter will review the results or findings of the data collected and analyzed, describing the awareness of and relationship between green supply chain management and sustainability, and strategy solutions for sustainability.*

## 4.1. AWARENESS ABOUT GREEN SUPPLY CHAIN MANAGEMENT AND SUSTAINABILITY

### 4.1.1. General information

Table 4.1 provides more detailed information about the characteristics of the economic students in the study area. The majority of the respondents (63.3%) were female, while 36.7% were male. Based on the different major groups of economic students, the maximum range is the business administration or international business (IB/BA) group at 73.60%, followed by the media communication (MC) group (17.79%). The minimum range was observed in the hospitality management (HM) group (8.61%).

***Table 4.1.*** *Demographic characteristics of economic student group*

| Description | Quantity | Percentage (%) |
|---|---|---|
| *Based on Gender* | | |
| Male | 196 | 36.70 |
| Female | 338 | 63.30 |
| *Based on Major* | | |
| International Business/Business Administrator | 393 | 73.60 |
| Hospitality Management | 46 | 8.61 |
| Media Communication | 95 | 17.79 |

*Source: Field Survey Data, 2023*

Table 4.2 displays basic information of scholars. They play vital role to provide weight score for calculating marks of strategic matrixes. There is various information related to scholars. First, scholars' age group (36-49) had the largest percentage 49.02% of ones, whereas over 50 ages group occupied a modest number 17.65%. Less than 36 years old group was 33.33%. Second, the vast majority of males participated the interview (73.53%) contrasting with a minority of females (26/47%) doing similar investigations. Third, the biggest disparity could be found at the marital status, which can be well-illustrated in the fact that 85.29% of scholars had married compared to only 14.71% single. Fourth, the most outstanding feature of the table is that scholar education at doctoral level was the most prevalent background, at 41.16%, while the opposite is true of university level (10.78%). Master level ranks second in terms of popularity, at 34.31%, followed by others with 12.75%. Last but not least, the greatest proportion of original professional is domestic scholars, at 55.88%. Less than half as much, namely 22.55%, is from foreign scholars. Transporter/Logistics accounts for 21.57%.

***Table 4.2.*** *Demographic characteristics of scholar group*

| Description | N | Percentage (%) |
|---|---|---|
| *Based on Age* | | |
| ≤35 | 34 | 33.33 |
| 36-49 | 50 | 49.02 |
| ≥50 | 18 | 17.65 |
| *Based on Gender* | | |
| Male | 75 | 73.53 |
| Female | 27 | 26.47 |
| *Based on Marital status* | | |
| Single | 15 | 14.71 |
| Married | 87 | 85.29 |
| *Based on Academic level* | | |
| University | 11 | 10.78 |
| Master | 35 | 34.31 |
| Doctor | 43 | 42.16 |
| Others | 13 | 12.75 |
| *Based on original professional* | | |
| Domestic Scholar | 57 | 55.88 |
| Foreign Scholar | 23 | 22.55 |
| Transporter/Logistics | 22 | 21.57 |

*Source: Field Survey Data, 2023*

### 4.1.2. Awareness of economic student about GSCM

Information on the economic students' shares is presented in Table 4.3. Overall, opinions of the MC learner group relate to factors of GSCM higher than those of the IB/BA and HM groups. For internal environmental management (IEM), there was a statistically significant disparity at the 1% level of the robustness test. Although there was no significant difference in awareness of the IB/BA, HM, and MC groups regarding the factors of green procurement (GP), green manufacturing (GM), green distribution (GD), and environmental education, the MC student group showed a trend of better awareness in all factors compared to the IB/BA and HM groups, except for GD.

***Table 4.3.*** *Awareness of economic students about GSCM*

| **Factors** | **IB/BA** (n=393) | **HM** (n=46) | **MC** (n=95) | ANOVA Sig.F ≤ **0.05** | Robust Test Sig.Welch ≤ **0.05** |
|---|---|---|---|---|---|
| Internal environment management (IEM) | 4.15[a] | 4.38[ab] | 4.42[b] | - | *** |
| Green procurement | 4.07 | 4.09 | 4.21 | NS | |
| Green manufacturing | 4.05 | 4.01 | 4.29 | NS | |
| Green distribution | 4.14 | 4.31 | 4.18 | NS | |
| Environmental education | 4.15 | 4.17 | 4.24 | NS | |

*Source: Field Survey Data, 2023*

*Note: *, p-value < 0.1; **, p-value < 0.05; ***, p-value < 0.001. Significant at the 0.05 level. If the value of Levene is less than 0.05, the Robust test is used. If the value of Levene is more than 0.05, the Anova test is used. The numbers in the same row followed by different letters are significant at the 5% level via the statistical Anova or Robust test.*

More specifically, in the IEM (Figure 4.1), the HM category showed impressive significance in awarding the item of commit GSCM from senior managers (IEM1), while the MC group was overwhelmingly greater in terms of support for GSCM from mid-level managers (IEM2) than in the IB/BA and HM groups. The HM and MC groups are similar in that they have the same ideas on the items of establishing a cross-functional cooperation team (IEM3) and criteria for measuring green quality (IEM4). Awareness of the IB/BA student category was the lowest among all IEM items among the student categories.

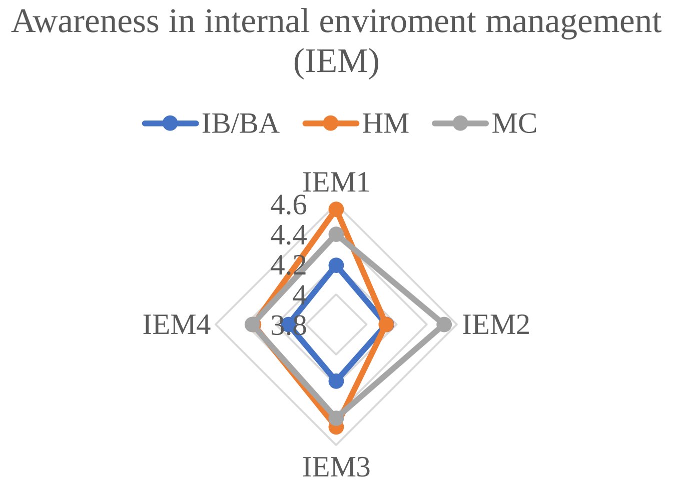


***Figure 4.1.*** *Awareness of economic students in IEM*

Regarding green procurement, Figure 4.2 presents a remarkable rise in awareness of the MC group in all GP components. Although the awareness of the IB/BA group was lower than that of the MC group, it was better than that of the HM group.

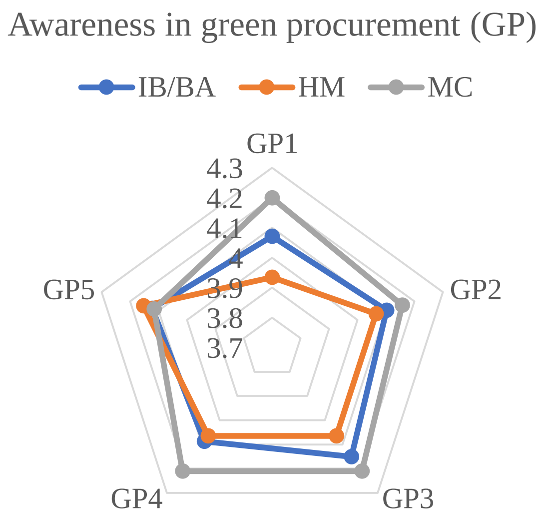


***Figure 4.2.*** *Awareness of economic students in GP*

Turning to green manufacturing (Figure 4.3), the MC student profile had the best awareness in the minimization of the use of materials in the packaging (GM2) and reuse of products and recycled materials (GM3), whereas the HM learner profile played the most important role in the life cycle assessment to evaluate the environmental load (GM4). There was an idea convergence among IB/BA, HM, and MC profiles to ensure that products had recyclable contents (GM1).

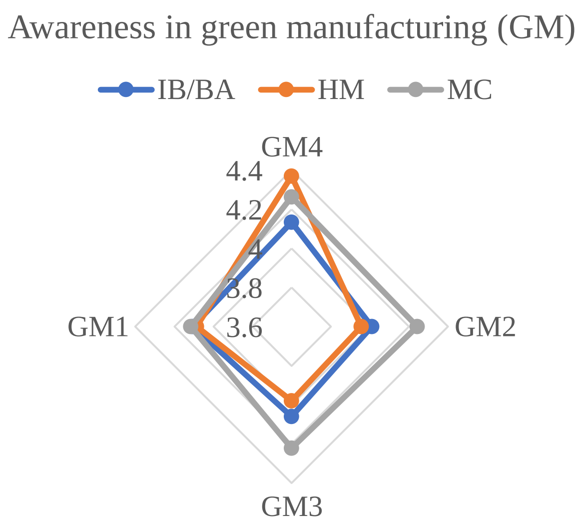


***Figure 4.3.*** *Awareness of economic students in GM*

Figure 4.4 demonstrates the ideas of the economic students related to green distribution. There was a considerable disparity in awareness of the HM student category compared with IB/BA and MC. This student group had the highest score in all GD components, followed by the MC student category, and the lowest score was in the IB/BA student category.

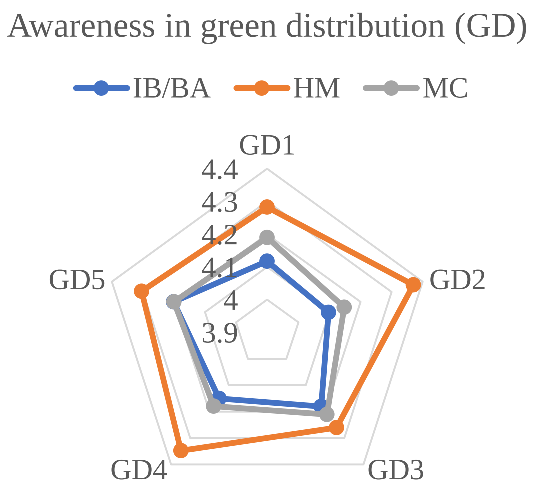


***Figure 4.4.*** *Awareness of economic students in GD*

For environmental education (Figure 4.5), the MC learner group continued to show their awareness of environmental aspects. The MC students had the highest scores for all components of EE ideas compared to the IB/BA and HM groups, in which the item of sustainability for executives (EE2) witnessed a similar opinion in both HM and MC.

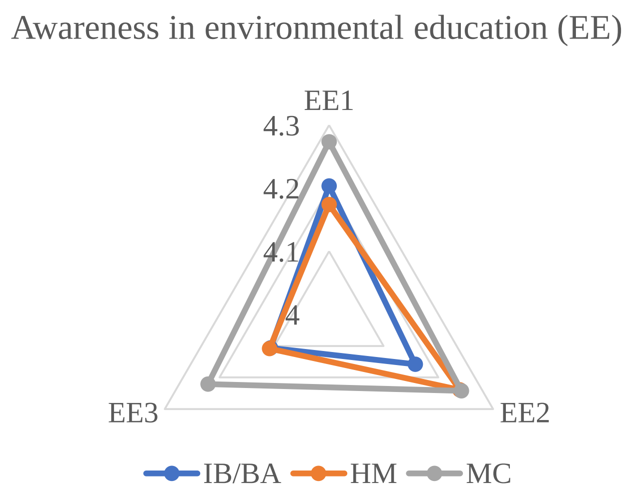


***Figure 4.5.*** *Awareness of economic students in EE*

#### 4.1.3. Awareness of economic student and scholars about sustainability

According to previous research papers, some internal factors (Strengths and Weaknesses) affect sustainable performance (Table 3.2). The factors of strength that bring about sustainable performance include reducing costs for environment-friendly input procurement (SE1), reducing the cost of delivery and inventory (SE2), reducing the fee for waste discharge (SE3), reducing fines for environmental accidents (SE4), increasing demand flexibility, delivery flexibility, and production flexibility (SE5), and ensuring procurement and delivery on time (SE6). Environmental factors include optimizing processes for waste and emission reduction, pollution control (SEN1), recognizing products of eco-labeling, recycled materials, design-for-assembly (SEN2), saving energy consumption and recycling processes (SEN3), and encouraging green and clean technologies to use (SEN4). Factors affecting social performance include increasing social and environmental responsibility (SS1); increasing organizational capability (SS2); increasing employees' motivation, health, and safety (SS3); and increasing customer interest and satisfaction with green products (SS4). On the other hand, the factors that affect the economic aspect include constrained finance/capital (WE1), lack of organizational encouragement (WE2), Lack of IT implementation (WE3) and hesitation to convert to new systems (WE4). The environmental aspect included heating to change GSCM from the supplier (WEN1), lack of sustainable guidance (WEN2), and lack of sustainability training courses/consultancy/mentor (WEN3). On the other hand, Lack of corporate social responsibility (WS1), Lack of top management commitment (WS2), and Do not want technology advancement adoption (WS3) are barriers to social performance.

Table 4.4 compares the perceptions of the economic students regarding the sustainability of internal factors (strengths and weaknesses). The results show a significant difference among the three groups of economic students in terms of economic performance (EP) factor (Levene Sig = 0.880) and environmental performance (ENP) (Levene Sig =0.031). Specifically, the mean value of MC group was the highest 4.10 for economic performance and 4.23 for environmental performance. The study also found a significant difference in the environmental performance of the MC and IB/BA groups at the 5% significance level.

***Table 4.4.*** *Economic students' awareness about internal factors of sustainability*

| Factors | IB/BA (n=393) | HM (n=46) | MC (n=95) | ANOVA Sig.F ≤ 0.05 | Robust Test Sig.Welch ≤ 0.05 |
|---|---|---|---|---|---|
| Economics Performance (EP) | 4.04 | 3.93 | 4.10 | * | |
| Environmental Performance (ENP) | 4.04[a] | 3.97[ab] | 4.23[c] | | ** |
| Social Performance (SP) | 4.12 | 4.10 | 4.22 | NS | |

*Source: Field Survey Data, 2023*

*Note: *, p-value < 0.1; **, p-value < 0.05; ***, p-value < 0.001. Significant at the 0.05 level. If the value of Levene is less than 0.05, the Robust test is used. If the value of Levene is more than 0.05, the Anova test is used. The numbers in the same row followed by different letters are significant at the 5% level via the statistical Anova or Robust test.*

The radar chart (Figure 4.6) provides information on the share of economic students associated with the internal factors of sustainability. Generally, there was no substantial difference in the awareness of the internal factors of sustainability among IB/BA. HM and MC groups.

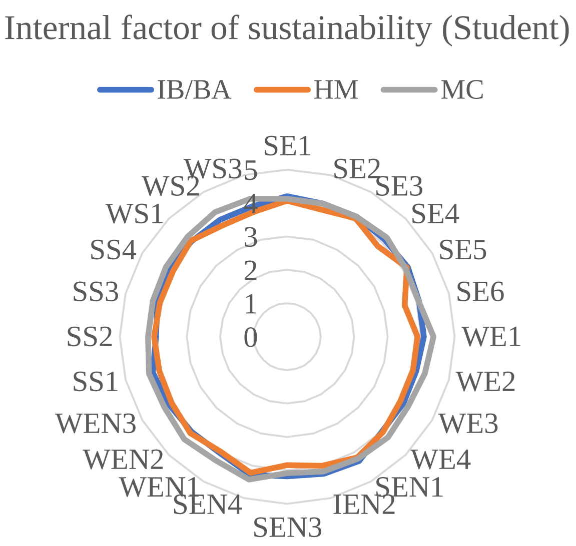


***Figure 4.6.*** *Awareness of internal factor of sustainability*

Table 3.3 (page 42) presents the external factors of the sustainability performance effect. The factors that promote the economic aspect include promoting green image, global marketing, and competition (OE1), capturing demand for an environment-friendly product market (OE2), obtaining a certificate for green product warranty (OE3), and attracting investors and shareholders. (OE4). The environmental performance aspect includes increasing green business strategies (OEN1), increasing efficiency in resource scarcity, higher waste generation and waste disposal problems (OEN2), adapting to global climate pressure and ecological change (OEN3), and contributing to government rules and legislation systems related to sustainability (OEN4). Other opportunistic factors for improving social performance include support from green movement activism by non-government organizations (OS1) and creating trust in society or the public (OS1). OS2) and government support for enforcement (OS2). On the other hand, external sustainability factors that threaten sustainable performance from an economic perspective include impact economic uncertainty (TE1), impact market competition (TE2), and the need for big investment (TE3). Barriers to environmental aspects include poor legislation related to sustainability (TEN1), a lack of effective environmental measures (TEN2), and a lack of a government support system (TEN3). Social aspects include weak pressure from society (TS1) and a lack of quality human resources (TS2).

***Table 4.5.*** *Economic students' awareness about external factors of sustainability*

| Factor | **IB/BA** (n=393) | **HM** (n=46) | **MC** (n=95) | ANOVA Sig.F $\leq \mathbf{0.05}$ |
|---|---|---|---|---|
| Economics Performance (EP) | 4.17 | 4.02 | 4.25 | * |
| Environmental Performance (ENP) | $4.13^{a}$ | $4.09^{ab}$ | $4.31^{b}$ | ** |
| Social Performance (SP) | $4.13^{a}$ | $4.12^{ab}$ | $4.29^{b}$ | ** |

*Source: Field Survey Data, 2023*

*Note: *, p-value < 0.1; **, p-value < 0.05; ***, p-value < 0.001. Significant at the 0.05 level. If the value of Levene is less than 0.05, the Robust test is used. If the value of Levene is more than 0.05, the Anova test is used. The numbers in the same row followed by different letters are significant at the 5% level via the statistical Anova or Robust test.*

The ANOVA results (Table 4.5) revealed significant differences among the student groups in terms of sustainability awareness. Economic performance (Levene Sig=0.282), environmental performance (Levene Sig=0.180), and social performance (Levene Sig = 0.604) were all shown to have significantly different average student perceptions of the external elements (opportunities and threats) of sustainable performance. By comparing the opinions of all three student subgroups, it becomes clear that MC students have the most favorable view of economic performance (4.25), followed closely by IB/BA students (4.17). There was a discrepancy in how people rated environmental performance and social performance, with mean MC values of 4.3 and 4.29, respectively. As a result, we need to spread the knowledge about national competitiveness and sustainable development worldwide; we need to connect the dots between economic growth, environmental preservation, and social progress. Able to draw on resources outside of oneself to counter potential dangers.

More specifically, Figure 4.7 indicates that the students' selection propensity for external factors for the sustainable performance of the MC group has the highest impact on each factor. In general, the three groups of students exhibited different selection trends. Specifically, the MC group tended to choose OE1, OE3, TE3, OEN3, and OS1, which reached value of 4.4 or higher. The HM group tended to favor OS1, OE1, and OE4. As for the factor, IB/BA students tended to make other choices that were similar in choice, but in some choices OS1, OE1 achieved a value of 4.2.

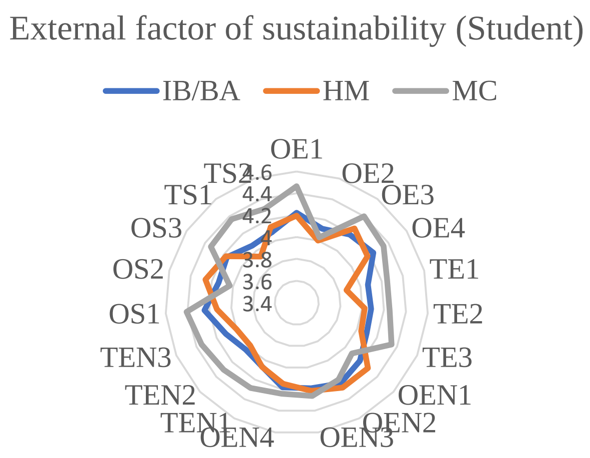


***Figure 4.7.*** *Awareness of external factor of sustainability*

In general, the students had similar opinions on internal factor, but their answers diverged when the topic of sustainability was raised. It is worth noting that students from various disciplines were able to apply the notion of sustainability to their work. Future educators said they would educate their own students about sustainability, and students in the IB/BA, HM, and MC programs said they had learned that environmental concerns should be weighed alongside economic and social concerns. In particular, MC students focused on the three main pillars of sustainability (economic, environmental, and social aspects).

Scholars generally agreed with the core components, but their views shifted when asked about long-term viability. It is noteworthy that students from a broad range of scholarly backgrounds were able to incorporate the idea of sustainability into their projects. Most scholars said that they appreciated the internal components. The difference in the selection trend based on the internal variables of sustainable performance is shown in Figure 4.8 If the value of the selection criteria exceeds 2.5 on a scale of 0 to 5, the evaluation is good; otherwise, the assessment is poor. The three fundamental pillars of sustainability (economic, environmental, and social aspects) have received extraordinary attention from international researchers. The trend of picking components by foreign scholars is relatively similar, with values greater than 4.5. The concepts of domestic scholars and Transporter/Logistics groups are similar in that they share around 4.0.

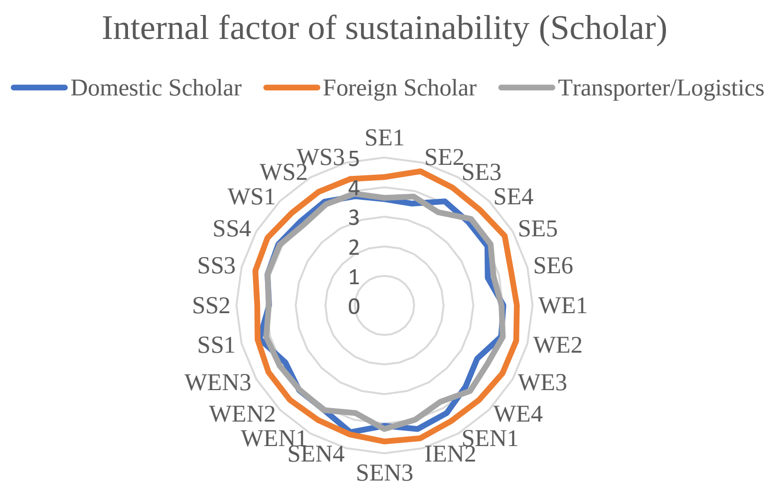


***Figure 4.8.*** *Scholars' share about internal factors of sustainability*

The radar chart (Figure 4.9) shows the differences in the selection trends of the internal factors of sustainable performance. The results show that the group of foreign scholars has the highest value and tends to be similar to each factor, but prominently shows in factors OS1, TEN3, TEN1, OE2, TE1, and TE3 with values above 4.5. For the logistics/transporter group, the trend was in favor of TEN3, OEN4, and the domestic scholar group was OS1.

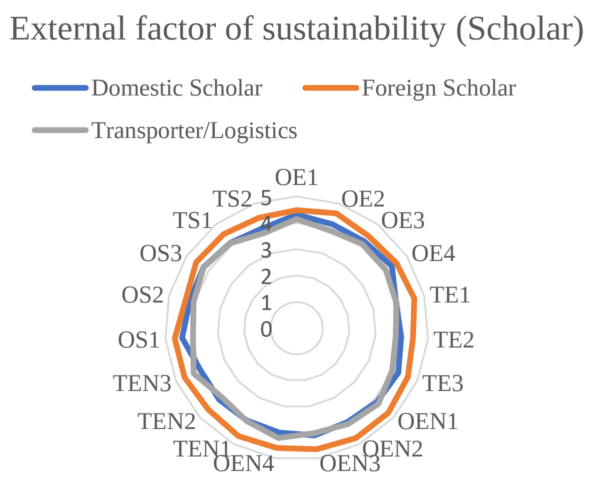


***Figure 4.9.*** *Scholars' share about external factors of sustainability*

ANOVA was used to compare the differences in opinions and perceptions of scholars and economic student groups on the internal factors affecting sustainable performance. When Levene Sig = 0.003 for environmental performance and 0.006 for social and economic performance, Levene Sig = 0.319. In particular, the average value of foreign scholars has always reached its highest value (Table 4.6). Analysis of differences in the perception and opinion of each item with each internal factor of sustainable performance showed significant differences. Specifically, when analyzing economic performance, the foreign scholar group has a significant disparity in opinion with others. For the analysis of environmental and social performance, there is a remarkable difference in the awareness of foreign scholars compared to the IB/BA group.

***Table 4.6.*** *The opinion of scholars and students about internal factor of sustainability*

| | Domestic Scholar **(n=57)** | Foreign Scholar **(n=23)** | Transporter **(n=22)** | IB/BA **(n=393)** | HM **(n=45)** | MC **(n=95)** | **ANOVA Sig.F ≤ 0.05** | **Robust Test Sig.Welch ≤ 0.05** |
|---|---|---|---|---|---|---|---|---|
| Economics Performance (EP) | $3.84^{bc}$ | $4.55^{d}$ | $3.93^{ac}$ | $4.09^{ac}$ | $3.93^{abc}$ | $4.18^{ac}$ | *** | |
| Environmental Performance (ENP) | $4.15^{a}$ | $4.54^{c}$ | $3.99^{a}$ | $4.04^{a}$ | $3.97^{ab}$ | $4.23^{bc}$ | | *** |
| Social Performance (SP) | $4.05^{a}$ | $4.44^{bc}$ | $3.99^{a}$ | $4.12^{a}$ | $4.10^{ab}$ | $4.22^{ac}$ | ** | |

*Source: Field Survey Data, 2023*

*Note: *, p-value < 0.1; **, p-value < 0.05; ***, p-value < 0.001. Significant at the 0.05 level. If the value of Levene is less than 0.05, the Robust test is used. If the value of Levene is more than 0.05, the Anova test is used. The numbers in the same row followed by different letters are significant at the 5% level via the statistical Anova or Robust test.*

The ANOVA findings (Table 4.7) show substantial variations in sustainability awareness between economic students and scholars. There was a statistically significant difference among economic performance (Levene Sig = 0.006), environmental performance (Levene Sig= 0.001), and social performance (Levene Sig= 0.364) in terms of sustainable performance. A comparison of the perspectives of these three categories reveals that foreign scholars have the most positive outlook on economic success (4.52), followed by MC students (4.25). Both environmental and social performance were lower in the foreign scholar group (4.65 and 4.50).

***Table 4.7.*** *The opinion of scholars and students about external factor of sustainability*

| | Domestic Scholar **(n=57)** | Foreign Scholar **(n=23)** | Transporter **(n=22)** | IB/BA **(n=393)** | HM **(n=45)** | MC **(n=95)** | **ANOVA Sig.F ≤ 0.05** | **Robust Test Sig.Welch ≤ 0.05** |
|---|---|---|---|---|---|---|---|---|
| Economics Performance (EP) | $4.15^{ac}$ | $4.52^{bc}$ | $3.96^{a}$ | $4.17^{a}$ | $4.02^{a}$ | $4.25^{ab}$ | | *** |
| Environmental Performance (ENP) | $4.04^{a}$ | $4.65^{b}$ | $4.11^{a}$ | $4.13^{a}$ | $4.09^{a}$ | $4.31^{ab}$ | | *** |
| Social Performance (SP) | $4.17^{ac}$ | $4.50^{bc}$ | $4.02^{a}$ | $4.13^{a}$ | $4.12^{a}$ | $4.29^{ab}$ | *** | |

*Source: Field Survey Data, 2023*

*Note: *, p-value < 0.1; **, p-value < 0.05; ***, p-value < 0.001. Significant at the 0.05 level. If the value of Levene is less than 0.05, the Rrobust test is used. If the value of Levene is more than 0.05, the Anova test is used. The numbers in the same row followed by different letters are significant at the 5% level via the statistical Anova or Robust test.*

It is important to note that there have been a number of recent sustainability measures implemented at the university level. The value of a sustainable environment is important for millennials. Sustainability efforts or studies should involve students in designing, developing, implementing, and leading the most sustainability efforts. Students were aware of various GSCM and sustainability. This could be attributed to the lack of obvious efforts to promote sustainability and the integration of sustainability into various program curricula.

The research yielded a total of 43 indicators for various parts of the triple bottom line. According to the reviewed materials, raising student awareness of the need for sustainable supply chain management is a critical challenge. The findings showed that the IB/BA student group had a lower awareness level of GSCM and sustainability than the HM and CM groups. The awareness levels of college students differ from those of community members. If education helps students learn more about sustainability in the classroom, they may be more likely to use sustainable ideas and methods in their own lives. Even though there are three aspects of sustainability (economic, social, and environmental issues), universities often use only the economic and social aspects, which students are less interested in. A study of economics students shows that they fully understand what it means to be sustainable. This finding agrees with Labog's (2017) research, which showed that learning about ideas and activities in school can help people connect with the environment and become more aware of sustainability. As the students learn more, they feel more like they know what to do. This result is consistent with what Sivamoorthy et al. (2013) presented, which is that knowledge does not change how people feel or act, but it does change how students see practice.

Additionally, this research reveals that students have a strong grasp of socio-economic and environmental issues but lack practical experience due to disparities in perception with experts. Hence, in addition to theoretical knowledge, universities should give students more experience to induce the necessary lifestyle or behavior change, so that students are more aware of GSCM practices (Hamid et al., 2017). This level of sustainability consciousness must be developed primarily through the college curriculum. To induce the necessary lifestyle or behavior change, so that students are more cognizant of sustainable practices, universities must give students more than just theoretical material (Hamid et al., 2017). To improve students' knowledge of sustainability and GSCM, instructors should provide criteria that students do not possess. Students must be mindful when discussing or delivering information on environmental concerns and engaging in activities that raise knowledge about sustainable performance. Students may receive environmental and cognitive instruction at home and at university.

## 4.2. THE RELATIONSHIP BETWEEN GSCM AND SUSTAINABILITY PERFORMANCE

Relationships between variables can be estimated using modern statistical methods, such as structural equation modeling (SEM) (Wang and Rhemtulla, 2021). AMOS.22 was used to conduct Structural Equation Modeling (SEM) to test the hypotheses. Confirmatory factor analysis (CFA) was used to check the reliability and validity (CFA). The loading intervals and reliability estimates are summarized for each construct in Table 4.8. Cronbach’s alphas for internal environment management, green procurement, green manufacturing, green distribution, environmental education, economic performance, environmental performance, and social performance were 0.834, 0.929, 0.826, 0.914, 0.904, 0.937, 0.828, and 0.820, respectively. All Cronbach’s alpha values were higher than 0.7, indicating that the correlations between the observable and latent variables were reliable (De Leeuw et al., 2019).

***Table 4.8.*** *Factor loading and the Cronbach's α estimates (Cronbach's Alpha)*

| | | |
|---|---|---|
| **Internal environment management (Cronbach's Alpha)** | | **0.834** |
| IEM1 | Commit GSCM from senior managers | 0.782 |
| IEM2 | Support to GSCM from mid-level managers | 0.783 |
| IEM3 | Establish cross-functional cooperation team | 0.784 |
| IEM4 | Take criteria to measure green quality | 0.815 |
| **Green procurement (Cronbach's Alpha)** | | **0.929** |
| GP1 | Ensure suppliers meet their environmental objectives | 0.915 |
| GP2 | Require suppliers to have ISO 14000 | 0.914 |
| GP3 | Purchase materials with green attributes | 0.911 |
| GP4 | Purchase equipment that saves energy | 0.911 |
| GP5 | Purchase goods with eco-labeling | 0.914 |
| **Green manufacturing (Cronbach's Alpha)** | | **0.826** |
| GM1 | Ensure product have recyclable contents | 0.777 |
| GM2 | Minimize the use of materials in packaging | 0.770 |
| GM3 | Encourage reuse of products and recycled materials | 0.751 |
| GM4 | Use Life Cycle Assessment to evaluate environmental load | 0.820 |
| **Green distribution (Cronbach's Alpha)** | | **0.914** |
| GD1 | Recyclable whether reusable package or containers in logistics | 0.903 |
| GD2 | Reuse of valuable components of an end-of life product | 0.900 |
| GD3 | Select a method about cleaner transportation | 0.897 |
| GD4 | Use routing systems to reduce travel activity | 0.892 |
| GD5 | Identify defective merchandise to reuse | 0.884 |
| **Environmental education (Cronbach's Alpha)** | | **0.904** |
| EE1 | Participate in non-government and government subsidized program about GSCM and sustainability | 0.869 |
| EE2 | Participate training courses on GSCM and sustainability for executives | 0.853 |
| EE3 | Participate training courses on GSCM and sustainability for managers and members | 0.867 |
| **Economic Performance (Cronbach's Alpha)** | | **0.937** |
| EP1 | Reduce cost for environmentally friendly input procurement | 0.925 |
| EP2 | Reduce cost of delivery and inventory | 0.924 |
| EP3 | Reduce fee to waste discharge | 0.926 |
| EP4 | Increase demand flexibility, delivery flexibility, and production flexibility | 0.926 |
| EP5 | Ensure procurement and delivery on time | 0.931 |
| EP6 | Capture demand for environmentally friendly product market | 0.930 |
| EP7 | Obtain certificate for green product warranty | 0.926 |
| **Environmental Performance (Cronbach's Alpha)** | | **0.828** |
| ENP1 | Optimize process for waste and emission reduction, pollution control | 0.781 |
| ENP2 | Recognize products of ecolabeling, recycled material, and design-for-assembly | 0.800 |
| ENP3 | Save energy consumption and recycling process | 0.790 |

| | | |
|---|---|---|
| ENP4 | Encourage green and clean technologies use | 0.777 |
| ENP5 | Increase efficiency in scarcity of resources, higher waste generation and waste disposal problem | 0.820 |
| **Social Performance (Cronbach's Alpha)** | | **0.820** |
| SP1 | Increase social and environmental responsibility | 0.787 |
| SP2 | Increase organizational capability | 0.784 |
| SP3 | Increase employees' motivation, health and safety | 0.785 |
| SP4 | Increase customer interest and satisfaction from green products | 0.781 |
| SP5 | Create trust to society or public | 0.827 |
| SP6 | Get government support for enforcement | 0.785 |

*Source: Field Survey Data, 2023*

The factor loading values in Table 4.9 exceeded 0.5, indicating that they fell within the allowable range (Al-Lozi et al., 2018; Sung et al., 2019). To examine the discriminant validity in covariance-based SEM, Rimkeviciene et al. (2017) proposed a comparison strategy. The Kaiser-Meyer-Olkin (KMO) test was used to examine the relationship performance measures and determine whether the factor analysis for the scale was adequate; all results were within the acceptable zone of more than 0.5. The KMO value in the research required a significance level over 0.5 which was considered statistically significant (0.925). In addition, we extracted all possible components with eigenvalues greater than one (1.566). Through Bartlett's test of sphericity, we can determine whether the observed variables in the factor are associated with one another. Statistically, the results of Bartlett's test are significant (sig Bartlett's Test 0.05 (0.00), demonstrating significant correlation between the observed variables within the factor.

The factor-loading coefficient represents the strength of the association between a given factor and an observable variable. The factor-loading coefficient of 0.7 is statistically significant. Overall, the factor loadings of the three factors were greater than 0.70, except for Environmental Performance (ENP2=0.686; ENP5=0.682), and Social Performance (SP4=0.688; SP6=0.679). Validity in previous research was often deemed to be met by factor loadings of 0.50 or higher (Yu et al., 2013).

***Table 4.9.*** *Scale of factors and test parameters in Exploratory Factor Analysis (EFA) on Sustainability Performance*

| Items | Factor Loading | | |
|---|---|---|---|
| | **F1** | **F2** | **F3** |
| EP2 | 0.856 | | |
| EP1 | 0.848 | | |
| EP4 | 0.826 | | |
| EP3 | 0.823 | | |
| EP5 | 0.803 | | |
| EP7 | 0.782 | | |
| EP6 | 0.780 | | |
| SP2 | | 0.770 | |
| SP3 | | 0.736 | |
| SP1 | | 0.718 | |
| SP5 | | 0.702 | |
| SP4 | | 0.688 | |
| SP6 | | 0.679 | |
| ENP4 | | | 0.776 |
| ENP1 | | | 0.768 |
| ENP3 | | | 0.764 |
| ENP2 | | | 0.686 |
| ENP5 | | | 0.682 |
| **Parameters of test** | | | **Result** |
| Kaiser-Meyer-Olkin (KMO) | | | 0.925 |
| Cumulative % (Initial Eigenvalues) | | | 63.100% |
| Bartlett's Test of Sphericity (Sig.) | | | 0.000 |
| Initial Eigenvalue | | | 1.566 |

*Source: Field Survey Data, 2023*

The factor loading values in Table 4.10 exceeded 0.5, indicating that they fell within the allowable range (Al-Lozi et al., 2018; Sung et al., 2019). To examine the discriminant validity in covariance-based SEM, Rimkeviciene et al. (2017) proposed a comparison strategy. The Kaiser-Meyer-Olkin (KMO) test was used to examine the relationship performance measures and determine whether the factor analysis for the scale was adequate; all results were within the acceptable zone of more than 0.5. The KMO value in the research required a significance level over 0.5 which was considered statistically significant (0.878). In addition, we extracted all possible components with eigenvalues greater than one (1.053). Through Bartlett's test of sphericity, we can determine whether the observed variables in the factor are associated with one another. Statistically, the results of Bartlett's test are significant (sig Bartlett's Test 0.05 (0.00), demonstrating significant correlation between the observed variables within the factor. The factor-loading coefficient represents the strength of the association between a given factor and an observable variable. The factor-loading coefficient of 0.7 is statistically significant. Overall, the factor loadings of the five factors were greater than 0.70, except for Internal Environment Management (IEM4=0.692).

***Table 4.10.*** *Scale of factors and test parameters in Exploratory Factor Analysis (EFA) on Green Supply chain management*

| Items | Factor Loading | | | | |
|---|---|---|---|---|---|
| | F1 | F2 | F3 | F4 | F5 |
| GP4 | 0.878 | | | | |
| GP3 | 0.874 | | | | |
| GP2 | 0.855 | | | | |
| GP1 | 0.852 | | | | |
| GP5 | 0.849 | | | | |
| GD5 | | 0.894 | | | |
| GD4 | | 0.862 | | | |
| GD3 | | 0.849 | | | |
| GD2 | | 0.840 | | | |
| GD1 | | 0.813 | | | |
| IEM1 | | | 0.838 | | |
| IEM2 | | | 0.770 | | |
| IEM3 | | | 0.763 | | |
| IEM4 | | | 0.692 | | |
| EE2 | | | | 0.849 | |
| EE1 | | | | 0.822 | |
| EE3 | | | | 0.819 | |
| GM3 | | | | | 0.863 |
| GM2 | | | | | 0.776 |
| GM1 | | | | | 0.762 |
| **Parameters of test** | | | | | |
| Kaiser-Meyer-Olkin (KMO) | | | | | 0.878 |
| Cumulative % (Initial Eigenvalues) | | | | | 75.575% |
| Bartlett's Test of Sphericity (Sig.) | | | | | 0.000 |
| Initial Eigenvalue | | | | | 1.053 |

*Source: Field Survey Data, 2023*

The last step of the measurement process involved averaging the results for each multivariate construct. The EFA recommended that the objects be placed into suitable dimensions that were being investigated, which supported the specification of the SEM (Table 4.11). In this study, Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) were performed using the statistical software program SPSS AMOS version 22.0, to assess the degree to which the survey data sets were a good match for the model. The covariance connection between E8 and E9 was determined using a modified index. Similarly, the covariance relationships between E13 and E17, E29 and E30, and E6 and E7 were also obtained in Figure 4.10.

***Table 4.11.*** *Scale of factors and test parameters in Confirmatory Factor Analysis (CFA)*

| Items | Factors | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | F1 | F2 | F3 | F4 | F5 | F6 | F7 | F8 |
| EP5 | 0.915 | | | | | | | |
| EP2 | 0.903 | | | | | | | |
| EP1 | 0.859 | | | | | | | |
| EP4 | 0.858 | | | | | | | |
| EP3 | 0.812 | | | | | | | |
| EP7 | 0.681 | | | | | | | |
| EP6 | 0.658 | | | | | | | |
| GP4 | | 0.894 | | | | | | |
| GP2 | | 0.863 | | | | | | |
| GP3 | | 0.850 | | | | | | |
| GP1 | | 0.841 | | | | | | |
| GP5 | | 0.827 | | | | | | |
| GD5 | | | 0.912 | | | | | |
| GD4 | | | 0.863 | | | | | |
| GD3 | | | 0.855 | | | | | |
| GD2 | | | 0.853 | | | | | |
| GD1 | | | 0.813 | | | | | |
| SP2 | | | | 0.858 | | | | |
| SP3 | | | | 0.757 | | | | |
| SP1 | | | | 0.757 | | | | |
| SP6 | | | | 0.711 | | | | |
| SP4 | | | | 0.695 | | | | |
| SP5 | | | | 0.515 | | | | |
| ENP4 | | | | | 0.819 | | | |
| ENP3 | | | | | 0.809 | | | |
| ENP1 | | | | | 0.804 | | | |
| ENP5 | | | | | 0.716 | | | |
| ENP2 | | | | | 0.700 | | | |
| IEM1 | | | | | | 0.855 | | |
| IEM2 | | | | | | 0.764 | | |
| IEM3 | | | | | | 0.763 | | |
| IEM4 | | | | | | 0.592 | | |
| EE2 | | | | | | | 0.916 | |
| EE1 | | | | | | | 0.881 | |
| EE3 | | | | | | | 0.876 | |
| GM3 | | | | | | | | 0.847 |
| GM2 | | | | | | | | 0.734 |
| GM1 | | | | | | | | 0.726 |
| **Parameters of test** | | | | | | | | |
| Kaiser-Meyer-Olkin (KMO) | | | | | | | 0.908 | |
| Cumulative % (Initial Eigenvalues) | | | | | | | 70.208% | |
| Bartlett's Test of Sphericity (Sig.) | | | | | | | 0.000 | |
| Initial Eigenvalue | | | | | | | 1.1163 | |

*Source: Field Survey Data, 2023*

The investigation resulted in the generation of a fit-generated structural model that indicated a p-value of 0.000 (p-value less than 0.01), chi-square value of 1289.551 (2,793.8), and goodness of fit index (GFI) of 0.887 (> 0.800). According to Baumgartner and Homburg (1995), this index can be accepted at a value of 0.8, even though GFI cannot be less than 0.9. Other acceptable values include a Tucker-Lewis index (TLI) of 0.943 (> 0.900), a comparative fit index (CFI) of 0.948 (> 0.900), and a root mean square error of approximation (RMSEA) of 0.044 (less than or equal to 0.080. In light of these findings, the research model was put through its pace, and the outcomes proved that the model is appropriate (Table 4.12).

***Table 4.12.*** *Model fit indicators in Structural Equation Modelling (SEM)*

| **Indicators** | **Cut-off values** | **Calculated values** | **Conclusion** |
|---|---|---|---|
| Chi-square/df | ≤ 3.000 | 2.028 | Fit |
| CFI | ≥ 0.900 | 0.948 | Fit |
| GFI | ≥ 0.800 | 0.887 | Fit |
| TLI | ≥ 0.900 | 0.943 | Fit |
| RMSEA | ≤ 0.080 | 0.044 | Fit |

*Source: Field Survey Data, 2023*
*Note:* Cut-off values adopted from Yu *et al.* (2013)

### *Impact of GSCM on Economic Performance*

The value of the correlation between GSCM practices and economic performance is R=0.514, which indicates that it is a robust and favorable association (Table 4.13). Economic performance is considered the first variable of sustainability performance. GSCM techniques have a favorable impact on economic performance, according to the theory provided. We hypothesize that GSCM procedures have a beneficial influence on economic performance (1a, 1b, 1c, 1d, and 1e). The data in Table 4 indicate that green procurement has a positive value of = 0.723 and a P value of 0.00, which is less than 0.05. As a result, we accept 1b as being true for certain GSCM procedures. Green manufacturing, green distribution, environmental education, and internal environmental management all have negative betas for economic performance. Consequently, for these GSCM procedures, hypotheses 1a, 1c, 1d, and 1e must be rejected.

***Table 4.13.*** *Final estimates of relationship between GSCM and EP*

| Relationship | Estimate β | S.E | C.R | P – value | Hypothesis Result |
|---|---|---|---|---|---|
| EP ← IEM | 0.125 | 0.093 | 1.336 | 0.181 | Not accepted |
| EP ← GP | 0.723 | 0.054 | 13.401 | *** | Accepted |
| EP ← GM | -0.188 | 0.062 | -3.026 | 0.002* | Not accepted |
| EP ← GD | -0.121 | 0.035 | -3.437 | *** | Not accepted |
| EP ← EE | -0.054 | 0.052 | -1.044 | 0.297 | Not accepted |
| **$R^2$ = 0.514 (EP)** | | | | | |

*Source: Field Survey Data, 2023*
*Note: *, **, and *** indicate significance at P < 0.05, P < 0.01, and P < 0.001, respectively.*

$$EP = 0.723\,GP - 0.188\,GM - 0.121\,GD \quad (1)$$

The equation (1) demonstrates that three aspects (green procurement, green manufacturing, and green distribution) of GSCM practices have a major impact on economic performance. The value of the original sample, 0.723, reveals that green procurement has the most positive influence on economic performance. This means that procuring goods and services in a more environmentally responsible manner may boost economic output by ensuring the use of products and services that meet stringent sustainability standards. On the other hand, both green manufacturing and green distribution have a detrimental impact on economic performance.

***Impact of GSCM on Environmental Performance (ENP)***

Table 4.14 presents the findings of the second hypothesis regarding environmental performance and how the use of GSCM procedures affects environmental performance. Because the P-value for each dimension (except for green distribution) is lower than 0.05, and the beta coefficients for internal environmental management (0.379) and green procurement (0.316) are positive, the research indicates that environmental performance is significantly improved by green procurement and internal environmental management. Based on the findings of this research, Hypotheses 2a and 2b are supported. Consequently, companies can improve their performance in terms of the environment by increasing the frequency of these activities. However, hypotheses 2c, 2d, and 2e cannot be accepted because their corresponding beta values are negative: 0.203, 0.082, and 0.242, respectively.

***Table 4.14.*** *Final Estimates of relationship between GSCM and ENP*

| Relationship | Estimate β | S.E | C.R | P – value | Hypothesis Result |
|---|---|---|---|---|---|
| ENP ← IEM | 0.379 | 0.128 | 2.973 | 0.003* | Accepted |
| ENP ← GP | 0.316 | 0.060 | 5.244 | *** | Accepted |
| ENP ← GM | -0.203 | 0.083 | -2.450 | 0.014** | Not accepted |
| ENP ← GD | -0.082 | 0.047 | -1.754 | 0.079 | Not accepted |
| ENP ← EE | -0.242 | 0.070 | -3.459 | *** | Not accepted |
| **$R^2$ = 0,109 (ENP)** | | | | | |

*Source: Field Survey Data, 2023*
Note: *, **, and *** indicate significance at $P < 0.05$, $P < 0.01$, and $P < 0.001$, respectively.

ENP = 0.379 IEM + 0.316 GP - 0.203 GM – 0.242 EE (2)

Equation (2) shows the results of regression analysis to test the effect of GSCM on environmental performance. The environmental performance of sustainability is significantly impacted by four factors of GSCM practices (internal environmental management, green procurement, green manufacturing, and environmental education). According to the results, the factor that had the greatest impact on environmental performance was internal environmental management, which received a value of 0.379. The second most important factor was green procurement, which had a value of 0.316. This indicates that managers' participation in GSCM in constructing a company's green team and green quality measurement may increase environmental performance. There is a negative correlation between environmental performance, green manufacturing, and environmental education.

***Impact of GSCM on social performance***

Table 4.15 shows the results of Hypotheses 3a, 3b, 3c, 3d, and 3e that GSCM practices improve Social Performance (SP). The beta values of internal environmental management (0.354), green procurement (0.327), and environmental education (0.418) revealed a strong link with social performance. Hypotheses 3a, 3b, and 3e are accepted because the P-value of internal environmental management, green procurement, and environmental education is

0.000, which is less than 0.001. Finally, green manufacturing and distribution beta values of 0.212 and 0.033 showed that social performance was negatively associated, disproving Hypotheses 3c and 3d.

***Table 4.15.*** *Final Estimates of relationship between GSCM and SP*

| Relationship | Estimate β | S.E | C.R | P – value | Hypothesis Result |
|---|---|---|---|---|---|
| SP ← IEM | 0.354 | 0.096 | 3.669 | *** | Accepted |
| SP ←GP | 0.327 | 0.047 | 7.028 | *** | Accepted |
| SP ←GM | -0.212 | 0.062 | -3.026 | *** | Not accepted |
| SP ←GD | -0.033 | 0.034 | -0.945 | 0.345 | Not accepted |
| SP ← EE | 0.418 | 0.096 | 4.343 | *** | Accepted |
| **$R^2$ = 0, 194 (SP)** | | | | | |

*Source: Field Survey Data, 2023*
Note: *, **, and *** indicate significance at $P < 0.05$, $P < 0.01$, and $P < 0.001$, respectively.

$$SP = 0.354\ IEM + 0.327\ GP - 0.212\ GM + 0.418\ EE \quad (3)$$

According to Equation (3), four GSCM-related factors have a significant effect on the social performance of sustainability. These four elements are green purchasing, green production, green marketing, internal environmental management, and environmental education. The original sample value of 0.418 indicated that environmental education had the greatest impact on social performance. The results of this study show that environmental education may improve the social performance of sustainability. This finding is in line with research by Febry et al. (2022), who discovered that providing environmental training to managers and staff may boost a company's social performance and, hence, its sustainability performance. Environmental government policies can boost the social performance of sustainability. This study contradicts Cankaya and Sezen (2018), who found that environmental education does not improve. Environmental education raises awareness and achieves a green strategy to reach the public, but it takes time to see its effects.

***Economic performance aspect***

The findings of structural equation modelling reveal that there is only one factor that determines the economic performance, and that factor is green procurement. This finding is in line with those of numerous other investigations (Febry et al., 2022; Adnan et al., 2021; Le, 2020; Wisdom et al., 2019; Hassan et al., 2016). Research also shows that there is a considerable correlation between green procurement and economic performance. It has been shown that purchasing goods and services that minimize environmental effect contributes considerably to improved economic performance. The findings also demonstrate that businesses that engage in environmentally responsible purchasing may contribute to an improvement in economic performance. Zailani et al. (2012) believe that green procurement may improve the community image. However, the research differs from the results of Yassine (2022), who noted that there was no relationship between green procurement and economic performance.

There was no statistically significant link between economic performance (EP) and internal environmental management, green production, green distribution, or environmental education. More precisely, EP makes no noticeable difference in the way the research manages its internal environment. This is similar to the findings of Benedict et al. (2022). There was no connection between EP and the green manufacturing factor. Sezen and Cankaya (2013) arrived at the same conclusion. Moreover, the results demonstrate that green distribution does not positively influence EP (Febry et al., 2022; Le, 2020). Finally, although our study did not find a correlation between environmental education and EP, prior research by Febry et al. (2022) and Adnan et al. (2021) found such a link.

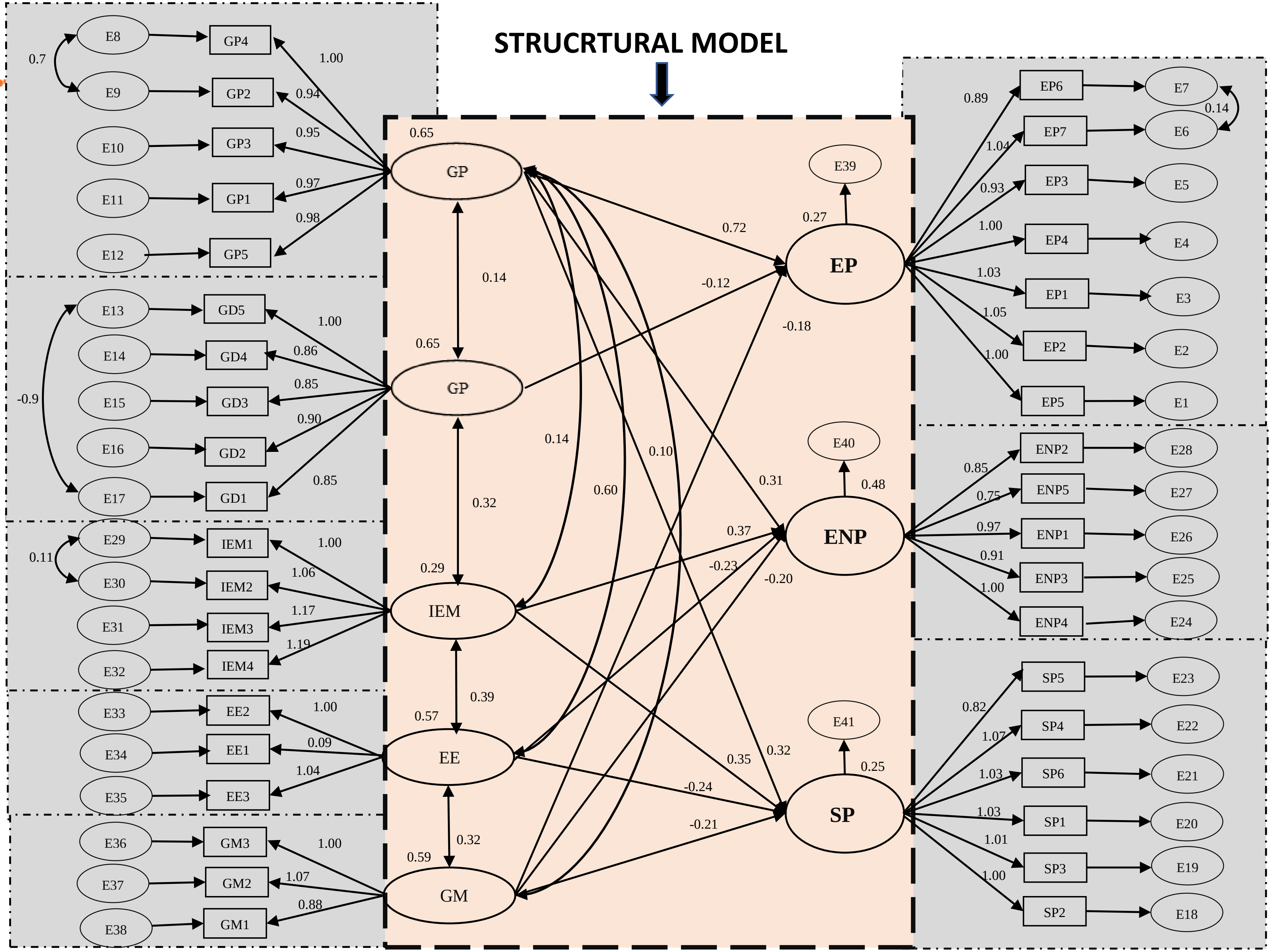


*Figure 4.10.* *SEM Model of GSCM and Sustainability performance*

***Environmental performance aspect***

This study demonstrated how internal environmental management and green procurement affect environmental performance. According to the results, internal environmental management of GSCM practices enhances environmental performance (ENP), which was confirmed by previous studies by Benedict et al. (2022), Febry et al. (2022), and Adnan et al. (2021). Febry et al. (2022), Adnan et al. (2021), and Wisdom et al. (2019) state that green procurement reduces environmental pollutants, which may improve environmental performance. This study finds that green procurement helps businesses effectively. Nevertheless, Le (2020) and Hassan et al. (2016) find no relationship between green procurement and ENP.

On the other hand, green manufacturing, green distribution, and environmental education do not have a significantly positive effect on ENP. Consequently, the hypotheses were rejected. The findings for the green manufacturing factor contradict those of Febry et al. (2022), Adnan et al. (2021), Le (2020), Wisdom et al. (2019), Ardian et al. (2018), and Sezen and Cankaya (2013), who found that green manufacturing has a positive and significant influence on environmental performance. This implies that green manufacturing practices, such as process optimization and the use of cleaner production, not only minimize negative environmental effects, but also cut costs and boost revenues. Nevertheless, the link between green distribution and ENP was minor. This is consistent with the findings of prior studies by Febry et al (2022).

***Social performance aspect***

Internal environmental management and green procurement have a positive relationship with SP. The findings of the study show that the internal environmental management practices of GSCM contribute to social performance. This confirms the findings of Benedict et al. (2022), Febry et al. (2022), and Adnan et al. (2021) that when the activities of internal environmental management are senior managers' commitment, mid-level managers support, cross-functional cooperation teams, and green quality criteria. In other words, EE had the highest impact on environmental performance with a beta value of 0.418 (Table 4.14). Raise awareness and understanding of green supply chains, actively participate in knowledge training programs on green supply chains, and promote sustainable development organized by the government and non-governmental organizations. A training course on production and business management in a green and sustainable supply chain for managers and employees has a positive impact and improves social performance. This has also been demonstrated in environmental education research that supports a company's sustainable performance. This correlation is the highest among other continents, and similar results have been reported by Rizki and Augustine (2022), and Adnan et al. (2021). By contrast, green manufacturing and green distribution are not significant and have a positive impact on social performance. Thus, green manufacturing and green distribution do not improve sustainability performance. Similar results have been reported by Febry et al. (2022), Le (2020), and Ardian et al. (2018).

## 4.3. BUSINESS STRATEGY SOLUTION FOR SUSTAINABILITY

### 4.3.1. Analysis of internal factor matrix

Table 4.16 shows that when analyzing the identified strengths, the main strengths SE3, SE4, SE5, SEN1, SEN1, SEN4, SS1, SS3, and SS4 showed similar average scores, that is, between 0.1668 and 0.1708 each, while SE1, SE2, SE6, and SS2 ranged between 0.1230 and 0.1290. In analyzing the weaknesses, the most outstanding feature of Table 4.16 is that WS3 is the most common weakness at 0.0824, whereas the opposite is true for WE2 (0.0410). WE3 ranked second in terms of weakness (0.0818), followed by WE1 (0.0418). Notably, WE2, WE4, WEN1, WS1, WS2, WEN2, and WEN3 had similar levels, that is, between 0.0410 and 0.0416, respectively. The results of the analysis of IFEM obtained a number of strengths of 2.1799 and 0.4952 weaknesses and a total weighted final score of 2.6751. In light of these findings, organizations may use the power factor to mitigate the disadvantages experienced by sustainable businesses and boost competitive advantage.

Internal characteristics such as strengths and weaknesses impact the IFEM analysis. The investigation found three key parameters that determine the green sustainability performance dynamics. The highest-scoring qualities of this strategy are employee motivation, health, and safety (SE1). This suggests that a corporation may provide a safe working environment and excellent remuneration, and top managers can assist their people in embracing the idea and fully comprehend green sustainability performance, making it simpler to execute the sustainability plan. This research matches of Peijia and Siqi (2013). Consumer satisfaction with green goods was the second-most important aspect of this survey (SS4). This finding supports Peijia and Siqi (2013) study. This suggests that buyers are more interested in environmentally friendly goods and want to know their environmental information, which encourages GSCM and sustainable performance by increasing competition from manufacturers of green products. Enhanced social and environmental responsibility was next found (SS1). This resembles the findings of recent studies (Peijia and Siqi, 2013; Malti, 2021). Thus, socially responsible companies help corporations recruit, develop, and manage people as investments. Environmental social responsibility considers people, environment, and profits for long-term competitive advantage. Socially responsible and sustainable employment strategies help organizations satisfy their present and future needs.

***Table 4.16.*** *The Internal Factor Evaluation Matrix (IFEM)*

| Code | INTERNAL FACTOR | Weight | Rating | Score |
|---|---|---|---|---|
| | **Strength** | | | |
| SE1 | Reduce cost for environmentally friendly input procurement | 0.0424 | 3 | 0.1272 |
| SE2 | Reduce the cost of delivery and inventory | 0.0417 | 3 | 0.1251 |
| SE3 | Reduce fee to waste discharge | 0.0421 | 4 | 0.1684 |
| SE4 | Reduce fines for environmental accidents | 0.0417 | 4 | 0.1668 |
| SE5 | Increase demand, delivery, and production flexibility | 0.0421 | 4 | 0.1684 |
| SE6 | Ensure procurement and delivery on time | 0.0410 | 3 | 0.1230 |
| SEN1 | Optimize processes for waste and emission reduction, pollution control | 0.0423 | 4 | 0.1692 |
| SEN2 | Recognize products of eco-labeling, recycled material, and design-for-assembly | 0.0403 | 4 | 0.1612 |
| SEN3 | Save energy consumption and recycling process | 0.0410 | 4 | 0.1640 |
| SEN4 | Encourage green and clean technologies used | 0.0417 | 4 | 0.1668 |
| SS1 | Increase social and environmental responsibility | 0.0424 | 4 | 0.1696 |
| SS2 | Increase organizational capability | 0.0430 | 3 | 0.1290 |
| SS3 | Increase employees’ motivation, health, and Safety | 0.0427 | 4 | 0.1708 |
| SS4 | Increase customer interest and satisfaction with green products | 0.0426 | 4 | 0.1704 |
| | **Total** | **0.587** | | **2.1799** |
| | **Weakness** | | | |
| WE1 | Constraining finance/capital | 0.0418 | 1 | 0.0418 |
| WE2 | Lack of organizational encouragement | 0.0410 | 1 | 0.0410 |
| WE3 | Lack of IT implementation | 0.0409 | 2 | 0.0818 |
| WE4 | Hesitate to convert to new systems | 0.0412 | 1 | 0.0412 |
| WEN1 | Hesitate to change GSCM from supplier | 0.0412 | 1 | 0.0412 |
| WEN2 | Lack of sustainable guidance | 0.0416 | 1 | 0.0416 |
| WEN3 | Lack of sustainability training courses/consultancy/mentor | 0.0416 | 1 | 0.0416 |
| WS1 | Lack of corporate social responsibility | 0.0413 | 1 | 0.0413 |
| WS2 | Lack of top management commitment | 0.0413 | 1 | 0.0413 |
| WS3 | Do not want technology advancement adoption | 0.0412 | 2 | 0.0824 |
| | **Total** | **0.4131** | | **0.4952** |
| | **Total weighted score** | | | **2.6751** |

*Source: Field Survey Data, 2023*

This study discovered three primary elements that determine sustained output performance. WS3 was initially discovered. This result matches those of previous studies (Luthra et al., 2011; Abebaw and Virdi, 2019). This suggests that it is difficult to transform a company's fundamental technology will be tough. Hence, technological skepticism hinders GSCM implementation. The absence of IT implementation is another performance obstacle (WE3). This finding supports earlier research (Luthra et al., 2011; Abebaw and Virdi, 2019; Govindan et al., 2013). Businesses struggle to adapt technology to green supply chains. Constraining finance/capital prevents sustainable performance (WE1). This finding supports earlier research (Govindan et al., 2013; Abebaw and Virdi, 2019; Peijia and Siqi, 2013; Luthra et al., 2011). This indicates that green supply chain implementation requires capital and financial resources.

#### 4.3.2. Analysis of external factor matrix

Table 4.17 shows an analysis of the external variables (opportunities and threats). In analyzing opportunities, the key point to taking advantage of in the matrix is (OE4) in sustainable development, with an average score of 0.2188. The second and most important level is (OE1), which builds a company's image of the environment and increases its international competitiveness, with an average score of 0.2176. Next, non-governmental organizations' (OS1) support for green movement advocacy is crucial, averaging 0.2168. When examining the opportunity, the lowest score may assist the organization in running more effectively in the context of finite natural resources, pollution, and emissions challenges (OEN2). The average score increased from 0.2016. For instance, economics learners and scholars have argued that ineffective environmental policies hurt sustainable green performance. (TE3) and (TEN3) had the highest average values of 0.2014. This yields 2.3280 dominant elements of opportunity, 1.4636 threats, and a difference of 0.8644. This indicates that corporate sustainability strategies have the potential to combat danger and improve companies.

EFEM analysis determines external elements such as opportunity and threat. External factor analysis makes the three main drivers of sustainable performance manageable and discussable. The top element was attracting investors and stockholders (OE4). This study matches those of (Peijia and Siqi, 2013; Roychowdhury, Shroff and Verdi, 2019; Bansah et al., 2018). Maintaining good supplier connections is crucial to GSCM's long-term success of GSCM. Long-term supplier relationships may encourage suppliers and investors to work with businesses to achieve green buying and sustainability objectives.

***Table 4.17.*** *The External Factor Evaluation Matrix (EFEM)*

| Code | EXTERNAL FACTOR | Weight | Rating | Score |
|---|---|---|---|---|
| | **Opportunity** | | | |
| OE1 | Promote green image, global marketing, and competitiveness | 0.0544 | 4 | 0.2176 |
| OE2 | Capture demand for environmentally friendly product market | 0.0536 | 4 | 0.2144 |
| OE3 | Obtain a certificate for a green product warranty | 0.0525 | 4 | 0.2100 |
| OE4 | Attract investors and shareholders | 0.0547 | 4 | 0.2188 |
| OEN1 | Increase green business strategies | 0.0529 | 4 | 0.2116 |
| OEN2 | Increase efficiency in scarcity of resources, higher waste generation and waste disposal problem | 0.0504 | 4 | 0.2016 |
| OEN3 | Adapt to global climate pressure and ecological change | 0.0513 | 4 | 0.2052 |
| OEN4 | Contribute to government rules and legislation systems related to sustainability | 0.0522 | 4 | 0.2088 |
| OS1 | Support from green movement activism by non-government organizations | 0.0542 | 4 | 0.2168 |
| OS2 | Create trust in society or public | 0.0525 | 4 | 0.2100 |
| OS3 | Get government support for enforcement | 0.0533 | 4 | 0.2132 |
| | **Total** | **0.5820** | | **2.3280** |
| | **Threat** | | | |
| TE1 | Impact economic uncertainty | 0.0519 | 3 | 0.1557 |
| TE2 | Impact market competition | 0.0522 | 3 | 0.1566 |
| TE3 | Need for big investment | 0.0526 | 4 | 0.2104 |
| TEN1 | Poor legislation related to sustainability | 0.0522 | 4 | 0.2088 |
| TEN2 | Lack of effective environmental measures | 0.0518 | 3 | 0.1554 |
| TEN3 | Lack of government support system | 0.0526 | 4 | 0.2104 |
| TS1 | Weak pressure from society | 0.0522 | 4 | 0.2088 |
| TS2 | Lack of quality human resources | 0.0525 | 3 | 0.1575 |
| | **Total** | **0.4180** | | **1.4636** |
| | **Total weighted score** | | | **3.7916** |

*Source: Field Survey Data, 2023*

Green image, worldwide marketing, and competitiveness promote sustainable performance (OE1). This matches previous surveys (Ososanmi et al., 2021; Geng et al., 2017; Khan et al., 2020; Yenipazarli, 2017; Brockhaus et al., 2016). This indicates that companies advertise eco-friendly items. Green goods boost a company's reputation and revenue. Environmental organizations may compete for and export globally. If a company learns that its competitors are exporting, it may be motivated to develop more sustainable manufacturing practices. The sustainability promotion study showed that NGO green movement action support was the final component (OS1). This result matches those of previous studies (Ososanmi et al., 2021; Peijia and Siqi, 2013; Dawkins et al., 2019). Sustainable performance requires non-government. These groups have designed environmental and competitiveness policies for industrial companies. However, these groups encourage global green production and consumption among the national governments. Full government support is required to promote GSCM in industry.

This study discovered two important external challenges for sustained success. (TE3) and (TEN3) scored the highest scores. This means that, to adopt GSCM, firms must invest in green techniques, including green procurement, green design, green manufacturing, green distribution, and green labeling for packaging. They must also pay environmental management expenses. Hence, the biggest obstacle to GSCM adoption is the lack of financial backing. This is consistent with the results of previous studies (Luthra et al., 2011; Govindan et al., 2013; Abebaw and Virdi, 2019; Peijia and Siqi, 2013). According to Luthra et al. (2011), the absence of a government support system (TEN3) reveals that governments do not exert pressure on non-compliant enterprises regarding environmental performance and regulatory punishment policies.

### 4.3.3. SWOT analysis for strategic solutions in sustainability

The SWOT analysis generates viable alternatives. The SWOT analysis provides four possible strategies: expansion (SO), diversification (ST), stability (WO), and defensive (WT). SWOT helps strategic planning achieve organizational objectives. This aids in problem solving.

Most implementations of the SWOT model take the form of a two-dimensional coordinate table, with each of the four zones displaying a distinct set of strategies.

***Expansion Strategy (SO)***

$SE_{1234}OE_{12}$: Advertising image of eco-brand for smart consumers ($SO_1$).

$SE_{12345}OE_4$: Investing a synchronic process of GSCM in an organization ($SO_2$).

$SE_4OEN_{123}$: Enhancing enterprise production for ecology ($SO_3$).

$SE_{56}OEN_4$: Fortifying role and position of an enterprise ($SO_4$).

$SEN_{1234}OS_{123}$: Approaching green fund with priority loan ($SO_5$).

$SS_{1234}OE_{1234}$: Increasing domestic and international competition through environmental and social responsibility actions. ($SO_6$).

***Table 4.18.*** *The SWOT matrix*

| SO Strategies | WO Strategies |
|---|---|
| $SE_{1234}OE_{12}$: Advertising image of eco-brand for smart consumers **($SO_1$)** | $WE_{1234}OE_4$: Appealing investor for GSCM **($WO_1$)** |
| $SE_{12345}OE_4$: Investing a synchronic process of GSCM in organization **($SO_2$)** | $WEN_{123}OS_{13}$: Improving GSCM knowledge for human resource in enterprise by training program of government and non-government **($WO_2$)** |
| $SE_4OEN_{123}$: Enhancing enterprise production for ecology **($SO_3$)** | $WS_3OEN_2$: Applying advanced technology in production and management to increase efficiency **($WO_3$)** |
| $SE_{56}OEN_4$: Fortifying role and position of enterprise **($SO_4$)** | |
| $SEN_{1234}OS_{123}$: Approaching green fund with priority loan **($SO_5$)** | |
| $SS_{1234}OE_{1234}$: Increasing domestic and international competition by environmental and social responsibility actions **($SO_6$)** | |
| **ST Strategies** | **WT Strategies** |
| $SE_{1234}TE_{12}$: Establishing risk fund for unexpected situations **($ST_1$)** | $WEN_{123}TEN_{123}$: Inviting foreign consultancy and using international criteria related to sustainability **($WT_1$)** |
| $SS_{1234}TS_{12}$: Building a green association comprises Enterprise-Government-Consumer **($ST_2$)** | $WS_{12}TS_{12}$: Conducting campaign smart consumer and manufacturer for a green planet **($WT_2$)** |

*Source: Field Survey Data, 2023*

***Diversification Strategy (ST)***

$SE_{1234}TE_{12}$: Establishing risk fund for unexpected situation ($ST_1$).

$SS_{1234}TS_{12}$: Building a green association comprises Enterprise-Government-Consumer ($ST_2$)

***Stability Strategy (WO)***

$WE_{1234}OE_4$: Appealing investor for GSCM ($WO_1$)

$WEN_{123}OS_{13}$: Improving GSCM knowledge for human resources in an enterprise by training programs of government and non-government ($WO_2$).

$WS_3OEN_2$: Applying advanced technology in production and management to increase efficiency ($WO_3$)

***Defensive Strategy (WT)***

$WEN_{123}TEN_{123}$: Inviting foreign consultancy and using international criteria related to sustainability (WT1)

$WS_{12}TS_{12}$: Conducting a campaign for smart consumers and manufacturers for green planets ($WT_2$).

### 4.3.4. QSPM analysis for prioritization identified strategies in sustainability

The QSPM helps to analyze and prioritize internal, external, and competitor data for strategic planning. This method impartially selects the firm's best strategy. QSPM's left column of the QSPM includes the IFE and EFE matrix factors. The attractiveness Score (AS) reflects the factor's significance to other approaches. AS is (1-4) or (not attractive – highly attractive). The total attractiveness score (TAS) ranks strategies by significance. The QSPM sum of the total attractiveness scores shows the strategy choices.

***Expansion Strategy (SO)*** plan requires prioritization of various factors. This method boosts sustainability by investing in a synchronic process of GSCM in the organization (I), strengthening the enterprise's role and position (II), improving enterprise production for ecology (III), increasing domestic and international competition through environmental and social responsibility actions (IV), advertising eco-brand image for smart consumers (V), and approaching green funds with priority loans (VI) (VI).

***Stability Strategy (WO)*** promotes corporate stability or innovation. Combining weaknesses with opportunities achieves stability. If a business's sustainability is hindered by financial shortages, investment capital for applied technology and sustainability-savvy employees. Some recommended tactics and priorities: Using sophisticated technology in production and management to boost efficiency (I), appealing to investors for GSCM (II), and Developing GSCM knowledge for company human resources via government and non-government training programs (III).

***Diversification Strategy (ST)*** is a resource-based approach to sustainability issues. The ST strategy addresses the vulnerabilities and threats. Considering these outcomes, sustainability requires considerable investment resources and government support. The suggested approach creates a green connection with Enterprise-Government-Consumer (I), creating a risk fund for unforeseen events, and (II).

***Defensive Strategy (WT)*** reduces internal vulnerabilities and avoids external threats. A savvy consumer and manufacturing campaign for a green world (I), inviting foreign consultants and employing international sustainability standards may be a solution (II).

***Table 4.19.*** *The Quantitative Strategic Planning Matrix (QSPM)*

| No. | Strategic solutions | Code | Score | Rank/ Priority |
|---|---|---|---|---|
| | **SO Strategies** | | | |
| 1 | $SO_2$: Investing a synchronic process of GSCM in the organization | $SE_{12345}OE_4$ | 6.8185 | I |
| 2 | $SO_4$: Fortifying role and position of enterprise | $SE_{56}OEN_{123}$ | 6.6388 | II |
| 3 | $SO_3$: Enhancing enterprise production for ecology | $SE_{56}OEN_4$ | 6.5705 | III |
| 4 | $SO_6$: Increasing domestic and international competition through environmental and social responsibility actions | $SS_{1234}OE_{1234}$ | 6.5295 | IV |
| 5 | $SO_1$: Advertising image of eco-brand for smart consumers | $SE_{1234}OE_{12}$ | 6.4004 | V |
| 6 | $SO_5$: Approaching green fund with priority loan | $SEN_{1234}OS_{123}$ | 6.3102 | VI |
| | **WO Strategies** | | | |
| 7 | $WO_3$: Applying advanced technology in production and management to increase efficiency | $WS_3OEN_2$ | 6.5662 | I |
| 8 | $WO_1$: Appealing to investors for GSCM | $WE_{1234}OE_4$ | 6.5318 | II |
| 9 | $WO_2$: Improving GSCM knowledge for human resource in the enterprise by training programs of government and non-government | $WEN_{123}OS_{13}$ | 6.4345 | III |
| | **ST Strategies** | | | |
| 10 | $ST_2$: Building a green association comprising Enterprise-Government-Consumer | $SS_{1234}TS_{12}$ | 6.1904 | I |
| 11 | $ST_1$: Establishing risk fund for unexpected situations | $SE_{1234}TE_{12}$ | 6.1062 | II |
| | **WT Strategies** | | | |
| 12 | $WT_2$: Conducting a campaign for smart consumers and manufacturer for a green planet | $WS_{12}TS_{12}$ | 6.4423 | I |
| 13 | $WT_1$: Inviting foreign consultancy and using international criteria related to sustainability | $WEN_{123}TEN_{123}$ | 6.3777 | II |

*Source: Field Survey Data, 2023*

# Chapter 5

# CONCLUSION AND RECOMMENDATION

## 5.1. CONCLUSION

First and foremost, GSCM plays important role to the long-term growth of the economy, environment, and society, university educations need to emphasize the critical importance of five elements (IEM, GP, GM, GD, and EE). Students in general, and those majoring in IB/BA and HM in particular, must do this. By educating and inspiring students to support and participate in the essential policies, programs, and efforts to bring about economic, environmental, and social change, universities have the ability to contribute to a world that is healthier and more sustainable. The establishment of business people and businesses toward social responsibility, community involvement, and eco-friendly manufacturing for sustainability depends heavily on raising economic learners' understanding of these issues.

Second, past studies have mostly examined how GSCM strategies affect firms' sustainability performance and perspectives. As a result, a theoretical framework that connects economics students' perspectives and the connection between GSCM practice and sustainable performance is required. Today's business students will eventually work as executives for businesses and governments. The notion that environmentally friendly corporate operations are advantageous is spreading. Even if they are only in town for a brief time, students may have a significant impact by introducing novel sustainability strategies and even by launching successful enterprises.

Third, the score of 2.6751 for internal variables and 3.7916 for external factors showed that corporations had a lot of sustainability potential. SWOT analysis shows economic students' sustainable awareness as a positive. SWOT matrix with thirteen sustainable business strategy solutions discovered SO (Expansion), WO (Stability), ST (Diversification), and WT (Defensive). After reaching this level, it was expected that QSPM matrix would give more accurate analysis. Based on the analysis, SO (Expansion) "Investing a synchronic process of GSCM in the organization" with TAS of 6.8185, WO (Stability) "Applying advanced technology in production and management to increase efficiency" with TAS of 6.5662, ST (Diversification) "Building a green association comprising Enterprise-Government-

Consumer" with TAS of 6.1904, and WT (Defensive) "Conducting a campaign for the smart consumer and manufacturer were priority business strategies to carry out.

Fourth, Education plays important role in providing sustainable business knowledge for business learner. Universities have the ability to contribute to a world that is healthier and more sustainable. The establishment of business people and businesses toward social responsibility, community involvement, and eco-friendly manufacturing for sustainability depends heavily on raising economic learners' understanding.

Last but not least, today's economics students are tomorrow's managers and entrepreneurs. Their understanding of sustainable business is an important tool to help guide business decisions that care about the environment, social responsibility, in addition to the profit goals of the business. Even if they are just employees at the company, they can share sustainable business knowledge with their colleagues and managers. These bring a sense of business responsibility towards the value of sustainability.

## 5.2. RECOMMENDATION

In this study, using internal factors (strengths and weaknesses) and external factors (opportunities and threats) related to the corporate sustainable development strategy built on an integrated foundation. Incorporating reliable sources from previous studies. Internal and external factors are grouped into three key dimensions of sustainability (economic, environmental and social aspects). This helps the respondents (economic students) to understand the nature of sustainability and give important opinions. The research focuses on exploiting the awareness of bioeconomists on the criteria of sustainable business strategies that approach the green supply chain, as a potential future entrepreneur. Therefore, the opinion of economics students play role as a coming start-up entrepreneur. The proposed strategies are also applicable to start-ups in the direction of green supply chain approach for sustainable business strategy rather than assessing students' consciousness. This paper suggests 19 activies of four strategy groups towards sustainable business operations for prospective entrepreneurs.

***Expansion Strategy (SO)***

**$SO_1$:** Advertising image of eco-brand for smart consumers

*Activity 1:* To convey environmentally friendly messages to the minds of consumers.

*Activity 2:* To carry out green advertising by holding a company campaign related to environmental responsibility

.**$SO_2$:** Investing a synchronic process of GSCM in the organization.

*Activity 3:* To consult GSCM processes in the international organization

**$SO_3$**: Enhancing enterprise production for ecology

*Activity 4:* Invest in friendly technological innovation in line with environmental changes.

**$SO_4$**: Fortifying role and position of enterprise.

*Activity 5:* Businesses should have action programs to protect the environment and improve social responsibility.

*Activity 6:* Capturing customers' feelings and needs in connecting with customers.

*Activity 7:* Train loyal and effective staff in the process of creating a brand image

**$SO_5$:** Approaching green fund with priority loan.

*Activity 8:* To make detailed plans to appeal for green funds organizations to consider, approve and receive support packages for green development programs.

**$SO_6$:** Increasing domestic and international competition.

*Activity 9:* To improve reputation to enhance competitiveness.

***Diversification Strategy (ST)***

**$ST_1$:** Establishing risk fund for unexpected situation.

*Activity 10:* To extract 5-10% enterprise’s annual profit for risk fund

**$ST_2$:** Building a green development association comprises Enterprise-Government-Consumer

*Activity 11:* To collect and analyze green data related to circular economy, green growth and sustainable development.

*Activity 12:* To consult sustainability policies with Enterprise-Government-Consumer

***Stability Strategy (WO)***

**$WO_1$:** Appealing investor for GSCM

*Activity 13:* To introduce organization's green planning and strategies for medium and long period to investor, green financial institutions.

*Activity 14:* To participate environmental improve, sustainable development campaigns that NGOs, government carry out.

**$WO_2$:** Improving GSCM knowledge for human resources of enterprise by training programs of government and non-government.

*Activity 15:* To participate actively sustainable courses and training to upgrade human resource.

**$WO_3$:** Applying advanced technology in production and management to increase efficiency.

*Activity 16:* To approach GSCM for stakeholder in supply chain towards synchronic and green technology system.

*Activity 17:* To establish budget for green technology exchange.

***Defensive Strategy (WT)***

**WT1:** Inviting foreign consultancy and using international criteria related to sustainability

*Activity 18:* To approach evaluating, monitoring criteria and production and management standardization towards international regulation.

**$WT_2$:** Conducting smart consumers and manufacturers campaigns for green planets.

*Activity 19:* To carry out advertisement and public relationship benefits from green products and manufacturing.

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# APPENDICES

## 1. Questionnaire

No.: __________

## Questionnaire For The Relationship Between Green Supply Chain and Sustainability Performance

Dear Sir / Madam,

My name is **_______,** and I am international business student at FPT University. I am doing research on the relationship between GSCM and SP. I need to collect approximately 600 respondents to carry out my thesis.

In the next pages you will find a short questionnaire related to sustainable development. There are some questions on basic information such as your age and gender. Most questions will obviously focus on GSCM and SP. Hopefully, you can spare 5-7 minutes to complete this questionnaire. Your help is necessary and will be very much appreciated!

**PART 1: GENERAL INFORMATION**

**1.** Full name: ________________________

**2**. Age: ________________ **3.** Gender: ☐ Male ☐ Female

**4.** Marriage: ☐ Single ☐ Married ☐ Other: ________________

**5**. Your level of education is:

☐High school
☐College
☐University
☐Other (please specify): ______________________

**6.** Your major is:

☐ Economics
☐Hospitality management
☐Media communication
☐Tourism
☐Information technology
☐Other (please specify): ______________________

**PART 2: SUSTAINABILITY PERFORMANCE**

Please read the following statement and indicate your opinion. Please only mark **X** in the one column that you have chosen for each statement

**(1 = totally disagree 2 = disagree 3 = no idea 4 = agree 5 = completely agree)**

| Scale | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Why should enterprises carry out their business strategy towards sustainability?** | | | | | |
| 1.Reduce cost for environmentally friendly input procurement | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2.Reduce cost of delivery and inventory | ☐ | ☐ | ☐ | ☐ | ☐ |
| 3.Reduce fee to waste discharge | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4.Reduce fine for environment accidents | ☐ | ☐ | ☐ | ☐ | ☐ |
| 5.Increase demand flexibility, delivery flexibility, and production flexibility | ☐ | ☐ | ☐ | ☐ | ☐ |
| 6.Ensure procurement and delivery on time | ☐ | ☐ | ☐ | ☐ | ☐ |
| 7.Optimize process for waste and emission reduction, pollution control | ☐ | ☐ | ☐ | ☐ | ☐ |
| 8.Recognize products of ecolabeling, recycled material, and design-for-assembly | ☐ | ☐ | ☐ | ☐ | ☐ |
| 9.Save energy consumption and recycling process | ☐ | ☐ | ☐ | ☐ | ☐ |
| 10.Encourage green and clean technologies use | ☐ | ☐ | ☐ | ☐ | ☐ |
| 11.Increase social and environmental responsibility | ☐ | ☐ | ☐ | ☐ | ☐ |
| 12.Increase organizational capability | ☐ | ☐ | ☐ | ☐ | ☐ |
| 13.Increase employees’ motivation, health and safety | ☐ | ☐ | ☐ | ☐ | ☐ |
| 14.Increase customer interest and satisfaction from green products | ☐ | ☐ | ☐ | ☐ | ☐ |
| 15.Promote green image, global marketing and competitiveness | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | |
|---|---|---|---|---|---|
| 16.Capture demand for environmentally friendly product market | ☐ | ☐ | ☐ | ☐ | ☐ |
| 17.Obtain certificate for green product warranty | ☐ | ☐ | ☐ | ☐ | ☐ |
| 18.Attract investors and shareholders | ☐ | ☐ | ☐ | ☐ | ☐ |
| 19.Increase green business strategies | ☐ | ☐ | ☐ | ☐ | ☐ |
| 20.Increase efficiency in scarcity of resources, higher waste generation and waste disposal problem | ☐ | ☐ | ☐ | ☐ | ☐ |
| 21.Adapt to global climate pressure and ecological change | ☐ | ☐ | ☐ | ☐ | ☐ |
| 22.Contribute to government rules and legislation system related to sustainability | ☐ | ☐ | ☐ | ☐ | ☐ |
| 23.Support from green movement activism by non-government organization | ☐ | ☐ | ☐ | ☐ | ☐ |
| 24.Create trust to society or public | ☐ | ☐ | ☐ | ☐ | ☐ |
| 25.Get government support for enforcement | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Which main barriers must enterprises confront with when they conduct business strategy towards sustainability?** | | | | | |
| 26.Constrain finance/capital | ☐ | ☐ | ☐ | ☐ | ☐ |
| 27.Lack organization encouragement | ☐ | ☐ | ☐ | ☐ | ☐ |
| 28.Lack IT implementation | ☐ | ☐ | ☐ | ☐ | ☐ |
| 29.Hesitate to convert to new systems | ☐ | ☐ | ☐ | ☐ | ☐ |
| 30.Hesitate to change GSCM from supplier | ☐ | ☐ | ☐ | ☐ | ☐ |
| 31.Lack sustainable guidance | ☐ | ☐ | ☐ | ☐ | ☐ |
| 32.Lack sustainability training courses/consultancy/mentor | ☐ | ☐ | ☐ | ☐ | ☐ |
| 33.Lack corporate social responsibility | ☐ | ☐ | ☐ | ☐ | ☐ |
| 34.Lack top management commitment | ☐ | ☐ | ☐ | ☐ | ☐ |
| 35.Do not want technology advancement adoption | ☐ | ☐ | ☐ | ☐ | ☐ |
| 36.Impact economic uncertainty | ☐ | ☐ | ☐ | ☐ | ☐ |
| 37.Impact market competition | ☐ | ☐ | ☐ | ☐ | ☐ |
| 38.Need big investment | ☐ | ☐ | ☐ | ☐ | ☐ |
| 39.Poor legislation related to sustainability | ☐ | ☐ | ☐ | ☐ | ☐ |
| 40.Lack effective environmental measures | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | |
|---|---|---|---|---|---|
| 41.Lack government support system | ☐ | ☐ | ☐ | ☐ | ☐ |
| 42.Weak pressure from society | ☐ | ☐ | ☐ | ☐ | ☐ |
| 43.Lack quality human resources | ☐ | ☐ | ☐ | ☐ | ☐ |

**PART 3: GREEN SUPPLY CHAIN**

Green supply chain in this study focuses on internal environment management, green procurement, green manufacturing, green distribution, environmental education

Please only mark **X** in the one column that you have chosen for each statement

**(1 = totally disagree; 2 = disagree; 3 = no idea; 4 = agree; 5 = completely agree)**

| Scale | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Internal environment management** | ☐ | ☐ | ☐ | ☐ | ☐ |
| 44.Commit GSCM from senior managers | ☐ | ☐ | ☐ | ☐ | ☐ |
| 45.Support to GSCM from mid-level managers | ☐ | ☐ | ☐ | ☐ | ☐ |
| 46.Establish cross-functional cooperation team | ☐ | ☐ | ☐ | ☐ | ☐ |
| 47.Take criteria to measure green quality | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Green procurement** | ☐ | ☐ | ☐ | ☐ | ☐ |
| 48.Ensure suppliers meet their environmental objectives | ☐ | ☐ | ☐ | ☐ | ☐ |
| 49.Require suppliers to have ISO 14000 | ☐ | ☐ | ☐ | ☐ | ☐ |
| 50.Purchase materials with green attributes | ☐ | ☐ | ☐ | ☐ | ☐ |
| 51.Purchase equipment that saves energy | ☐ | ☐ | ☐ | ☐ | ☐ |
| 52.Purchase goods with eco-labeling | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Green manufacturing** | ☐ | ☐ | ☐ | ☐ | ☐ |
| 53.Ensure product have recyclable contents | ☐ | ☐ | ☐ | ☐ | ☐ |
| 54.Minimize the use of materials in packaging | ☐ | ☐ | ☐ | ☐ | ☐ |
| 55.Encourage reuse of products and recycled materials | ☐ | ☐ | ☐ | ☐ | ☐ |
| 56.Use Life Cycle Assessment to evaluate environmental load | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Green distribution** | ☐ | ☐ | ☐ | ☐ | ☐ |
| 57.Recyclable whether reusable package or containers in logistics | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | |
|---|---|---|---|---|---|
| 58.Reuse of valuable components of an end-of life product | ☐ | ☐ | ☐ | ☐ | ☐ |
| 59.Select a method about cleaner transportation | ☐ | ☐ | ☐ | ☐ | ☐ |
| 60.Use routing systems to reduce travel activity | ☐ | ☐ | ☐ | ☐ | ☐ |
| 61.Identify defective merchandise to reuse | ☐ | ☐ | ☐ | ☐ | ☐ |
| **Environmental education** | ☐ | ☐ | ☐ | ☐ | ☐ |
| 62.Participate in non-government and government subsidized program about GSCM and sustainability | ☐ | ☐ | ☐ | ☐ | ☐ |
| 63.Participate training courses on GSCM and sustainability for executives | ☐ | ☐ | ☐ | ☐ | ☐ |
| 64.Participate training courses on GSCM and sustainability for managers and members | ☐ | ☐ | ☐ | ☐ | ☐ |

**Thank you for your answer!**

## 2. Letter of Acceptance

FORESIGHT
AND STI GOVERNANCE
INTERNATIONAL JOURNAL

20, Myasnitskaya str, Moscow 101000, Russia. Tel.. +7(495) 621-40-38. E-mail: foresight-journal.hse.ru.
Web: http://foresight-journal.hse.ru

**Kiet Hong Vo Tuan Truong,**
Lecturer, FPT University, Can Tho campus, Vietnam

**ARTICLE ACCEPTANCE LETTER**

Title of the journal: ***Foresight and STI Governance***

Article Title: **Corporate Strategy for Sustainability: Thinking of Prospective Businesspeople**

Corresponding Author: Kiet Hong Vo Tuan Truong

All Authors: Van Pham Huynh, Kiet Hong Vo Tuan Truong, Huy Dang Nguyen, Huyen My Ngo, Yen Bao Ho, Qui Van Le

Article Type: Original Article

Dear Mr. Kiet Hong Vo Tuan Truong,

Thank you very much for your submission to our journal. Herewith we inform that your paper is generally approved for publishing. After revision according to the reviewer proposals, it is scheduled for the Issue 2 of 2023, and will be published in June 2023.

Thank you for making the journal a vehicle for your research interests.

Best Wishes,
Marina Boykova
Executive Editor
***Foresight and STI Governance***

18.04.2023

GCBSS

GLOBAL CONFERENCE ON BUSINESS AND SOCIAL SCIENCES SERIES

GATR Global Academy of Training and Research

# LETTER OF ACCEPTANCE

## 15th Global Conference on Business & Social Sciences

*"Contemporary Issues in Management and Social Sciences Research"*

**Dates: 14-15 SEPTEMBER 2023 (IN-PERSON & ONLINE)**

**NOVOTEL BANGKOK PLATINUM PRATUNAM, BANGKOK, THAILAND**

Date: 9th April 2023

**Authors:** Huy Dang Nguyen, Van Pham Huynh,
**Affiliation:** Department of Business Administration, FPT University, Can Tho City, Vietnam.
**Paper Title:** Understanding of Economic Student On The Relationship Between Green Supply Chain Management And Sustainability.

Dear Huy Dang Nguyen,

Congratulations! We are pleased to confirm that the GCBSS committee has accepted your submitted paper abstract based on a double-blind peer review for an oral presentation at the 15th Global Conference on Business and Social Sciences in Novotel Bangkok Platinum Pratunam, Bangkok, Thailand.

**Please note the following important guidelines:**

1. Your paper abstract number is **CIMSSR-00225**, and please quote this number for all future correspondence. Please double-check the accuracy of the abstract title, address, and spelling of the author's name and name of the university and send us the corrected abstract, if necessary, by **10th April 2023**.
2. Your paper abstract will be published in the Refereed Conference Proceedings, which will be published online and in a CD form with ISBN 978-967-13147-0-8. All submitted conference full papers will go through a double-blind peer-review process by two to three competent reviewers. **All accepted** full articles would be published in any **WOS/Scopus/A-Category-indexed** journals with revisions. (Journals list available at Publication Opportunity).
3. You must send us the enclosed completed registration form and a payment slip **on or before 3rd May 2023 to avail early bird fee discount**. For more details, click here
4. The 15th GCBSS conference program will be sent to registered participants after **6th September 2023**. Two parallel presentations: Abstract-based presentation duration is 12-15 Minutes, including Discussions, and the full paper-based presentation duration is 15-20 minutes, including discussions. Please bring your flash drive, pen drive, or USB containing PowerPoint slides. We will provide an LCD projector and a computer at the venue for in-person guests. All online presentations will be conducted through Zoom.
5. Please visit the 15th GCBSS web and read all information related to Venue, Accommodation, Academic Discussion Session, Publishing in ABS & ABDC Workshop, and all other details. We look forward to meeting you at the conference.

Yours sincerely
*Prof Abd Rahim*
GCBSS Conference Team

***Collaborators:***

**GLOBAL ACADEMY OF TRAINING AND RESEARCH (GATR)** (Registration No. 002360364-P)

**Address:** Suite 15, Taman Bukit Angkasa, Jalan Pantai Dalam, 59200, Kuala Lumpur, Malaysia
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**Email:** info@gcbss.org/ info@gatrenterprise.com; **URL:** www.gcbss.org; www.gatrenterprise.com

### 3. Data fields

### DESCRIPTIVE STATISTIC

**Q3. Gender**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 | 196 | 36.7 | 36.7 | 36.7 |
| | 2 | 338 | 63.3 | 63.3 | 100.0 |
| | Total | 534 | 100.0 | 100.0 | |

**Q7. Major**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | IB/BA | 393 | 73.6 | 73.6 | 73.6 |
| | HM | 46 | 8.6 | 8.6 | 82.2 |
| | MC | 95 | 17.8 | 17.8 | 100.0 |
| | Total | 534 | 100.0 | 100.0 | |

**Gender**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 75 | 73.5 | 73.5 | 73.5 |
| | Female | 27 | 26.5 | 26.5 | 100.0 |
| | Total | 102 | 100.0 | 100.0 | |

**Marital status**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Not Married | 15 | 14.7 | 14.7 | 14.7 |
| | Get Married | 87 | 85.3 | 85.3 | 100.0 |
| | Total | 102 | 100.0 | 100.0 | |

**Academic level**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | University | 11 | 10.8 | 10.8 | 10.8 |
| | Master | 35 | 34.3 | 34.3 | 45.1 |
| | PhD Degree | 43 | 42.2 | 42.2 | 87.3 |
| | 4 | 13 | 12.7 | 12.7 | 100.0 |
| | Total | 102 | 100.0 | 100.0 | |

**Type Scholar**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Domestic Scholer | 57 | 55.9 | 55.9 | 55.9 |
| | Foreign scholar | 23 | 22.5 | 22.5 | 78.4 |
| | Transporter/Logistics | 22 | 21.6 | 21.6 | 100.0 |
| | Total | 102 | 100.0 | 100.0 | |

**Descriptives**

F.IEM

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1546 | .70854 | .03574 | 4.0843 | 4.2248 | 1.00 | 5.00 |
| HM | 46 | 4.3804 | .41076 | .06056 | 4.2585 | 4.5024 | 3.00 | 5.00 |
| MC | 95 | 4.4237 | .58354 | .05987 | 4.3048 | 4.5426 | 2.75 | 5.00 |
| Total | 534 | 4.2219 | .67549 | .02923 | 4.1645 | 4.2793 | 1.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| F.IEM | Based on Mean | 7.875 | 2 | 531 | .000 |
| | Based on Median | 7.861 | 2 | 531 | .000 |
| | Based on Median and with adjusted df | 7.861 | 2 | 510.002 | .000 |
| | Based on trimmed mean | 7.943 | 2 | 531 | .000 |

**ANOVA**

F.IEM

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 6.805 | 2 | 3.403 | 7.643 | .001 |
| Within Groups | 236.398 | 531 | .445 | | |
| Total | 243.204 | 533 | | | |

**Robust Tests of Equality of Means**

F.IEM

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 10.005 | 2 | 126.022 | .000 |

a. Asymptotically F distributed.

**Descriptives**

F.GP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1064 | .81715 | .04122 | 4.0253 | 4.1874 | 1.00 | 5.00 |
| HM | 46 | 4.0565 | .78843 | .11625 | 3.8224 | 4.2907 | 2.00 | 5.00 |
| MC | 95 | 4.1789 | .83206 | .08537 | 4.0094 | 4.3484 | 1.20 | 5.00 |
| Total | 534 | 4.1150 | .81655 | .03534 | 4.0456 | 4.1844 | 1.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| F.GP | Based on Mean | .467 | 2 | 531 | .627 |
| | Based on Median | .520 | 2 | 531 | .595 |
| | Based on Median and with adjusted df | .520 | 2 | 527.354 | .595 |
| | Based on trimmed mean | .467 | 2 | 531 | .627 |

**ANOVA**

F.GP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | .575 | 2 | .288 | .430 | .651 |
| Within Groups | 354.805 | 531 | .668 | | |
| Total | 355.380 | 533 | | | |

**Robust Tests of Equality of Means**

F.GP

Double-click to activate

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | .426 | 2 | 103.443 | .654 |

a. Asymptotically F distributed.

**Descriptives**

F.GM

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.0776 | .76350 | .03851 | 4.0019 | 4.1533 | 1.00 | 5.00 |
| HM | 46 | 4.0978 | .78613 | .11591 | 3.8644 | 4.3313 | 1.00 | 5.00 |
| MC | 95 | 4.2105 | .71115 | .07296 | 4.0657 | 4.3554 | 2.00 | 5.00 |
| Total | 534 | 4.1030 | .75672 | .03275 | 4.0387 | 4.1673 | 1.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| F.GM | Based on Mean | .303 | 2 | 531 | .739 |
| | Based on Median | .647 | 2 | 531 | .524 |
| | Based on Median and with adjusted df | .647 | 2 | 521.166 | .524 |
| | Based on trimmed mean | .576 | 2 | 531 | .562 |

**ANOVA**

F.GM

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1.353 | 2 | .676 | 1.182 | .307 |
| Within Groups | 303.857 | 531 | .572 | | |
| Total | 305.210 | 533 | | | |

**Robust Tests of Equality of Means**

F.GM

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 1.292 | 2 | 103.245 | .279 |

a. Asymptotically F distributed.

•

**Descriptives**

F.GD

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1491 | .74069 | .03736 | 4.0757 | 4.2226 | 1.00 | 5.00 |
| HM | 46 | 4.3130 | .56040 | .08263 | 4.1466 | 4.4795 | 3.00 | 5.00 |
| MC | 95 | 4.1853 | .84261 | .08645 | 4.0136 | 4.3569 | 1.00 | 5.00 |
| Total | 534 | 4.1697 | .74656 | .03231 | 4.1062 | 4.2331 | 1.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| F.GD | Based on Mean | 1.332 | 2 | 531 | .265 |
| | Based on Median | 1.156 | 2 | 531 | .316 |
| | Based on Median and with adjusted df | 1.156 | 2 | 503.597 | .316 |
| | Based on trimmed mean | 1.345 | 2 | 531 | .261 |

# Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: F.GD

Tukey HSD

| (I) Q7. Major | (J) Q7. Major | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | -.16393 | .11633 | .337 | -.4374 | .1095 |
| | MC | -.03615 | .08535 | .906 | -.2368 | .1644 |
| HM | IB/BA | .16393 | .11633 | .337 | -.1095 | .4374 |
| | MC | .12778 | .13410 | .607 | -.1874 | .4429 |
| MC | IB/BA | .03615 | .08535 | .906 | -.1644 | .2368 |
| | HM | -.12778 | .13410 | .607 | -.4429 | .1874 |

**Descriptives**

F.EE

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1561 | .80704 | .04071 | 4.0760 | 4.2361 | 1.00 | 5.00 |
| HM | 46 | 4.1739 | .73950 | .10903 | 3.9543 | 4.3935 | 2.33 | 5.00 |
| MC | 95 | 4.2456 | .79925 | .08200 | 4.0828 | 4.4084 | 1.00 | 5.00 |
| Total | 534 | 4.1735 | .79937 | .03459 | 4.1056 | 4.2415 | 1.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| F.EE | Based on Mean | .016 | 2 | 531 | .984 |
| | Based on Median | .008 | 2 | 531 | .992 |
| | Based on Median and with adjusted df | .008 | 2 | 525.112 | .992 |
| | Based on trimmed mean | .002 | 2 | 531 | .998 |

**ANOVA**

F.EE

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | .614 | 2 | .307 | .479 | .620 |
| Within Groups | 339.972 | 531 | .640 | | |
| Total | 340.586 | 533 | | | |

**Robust Tests of Equality of Means**

F.EE

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | .475 | 2 | 105.132 | .623 |

a. Asymptotically F distributed.

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: F.EE
Tukey HSD

| (I) Q7. Major | (J) Q7. Major | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | -.0178 | Double-click to activate | .989 | -.3109 | .2752 |
| | MC | -.0895 | | .591 | -.3046 | .1255 |
| HM | IB/BA | .01785 | .12469 | .989 | -.2752 | .3109 |
| | MC | -.07170 | .14373 | .872 | -.4095 | .2661 |
| MC | IB/BA | .08955 | .09148 | .591 | -.1255 | .3046 |
| | HM | .07170 | .14373 | .872 | -.2661 | .4095 |

## PHÂN TÍCH ANOVA SUSTAINBILITY PERFORMANCE

**Descriptives**

Double-click to activate

I.EP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.0906 | .57648 | .02908 | 4.0334 | 4.1478 | 1.00 | 5.00 |
| HM | 46 | 3.9391 | .56783 | .08372 | 3.7705 | 4.1078 | 2.40 | 5.00 |
| MC | 95 | 4.1800 | .53566 | .05496 | 4.0709 | 4.2891 | 2.50 | 5.00 |
| Total | 534 | 4.0934 | .57065 | .02469 | 4.0449 | 4.1420 | 1.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| I.EP | Based on Mean | .127 | 2 | 531 | .880 |
| | Based on Median | .138 | 2 | 531 | .871 |
| | Based on Median and with adjusted df | .138 | 2 | 525.725 | .871 |
| | Based on trimmed mean | .150 | 2 | 531 | .861 |

## ANOVA

I.EP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1.810 | 2 | .905 | 2.798 | .062 |
| Within Groups | 171.757 | 531 | .323 | | |
| Total | 173.567 | 533 | | | |

## Robust Tests of Equality of Means

I.EP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 2.922 | 2 | 104.257 | .058 |

a. Asymptotically F distributed.

## Post Hoc Tests

### Multiple Comparisons

Dependent Variable: I.EP

Tukey HSD

| (I) Q7. Major | (J) Q7. Major | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | .15145 | .08863 | .203 | -.0568 | .3598 |
| | MC | -.08941 | .06502 | .355 | -.2422 | .0634 |
| HM | IB/BA | -.15145 | .08863 | .203 | -.3598 | .0568 |
| | MC | -.24087* | .10216 | .049 | -.4810 | -.0008 |
| MC | IB/BA | .08941 | .06502 | .355 | -.0634 | .2422 |
| | HM | .24087* | .10216 | .049 | .0008 | .4810 |

*. The mean difference is significant at the 0.05 level.

**Descriptives**

I.ENP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound | | |
| IB/BA | 393 | 4.0465 | .55985 | .02824 | 3.9910 | 4.1021 | 2.00 | 5.00 |
| HM | 46 | 3.9783 | .45572 | .06719 | 3.8429 | 4.1136 | 2.29 | 4.71 |
| MC | 95 | 4.2316 | .52765 | .05414 | 4.1241 | 4.3391 | 2.86 | 5.00 |
| Total | 534 | 4.0736 | .55038 | .02382 | 4.0268 | 4.1204 | 2.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| I.ENP | Based on Mean | 3.513 | 2 | 531 | .031 |
| | Based on Median | 3.528 | 2 | 531 | .030 |
| | Based on Median and with adjusted df | 3.528 | 2 | 526.690 | .030 |
| | Based on trimmed mean | 3.627 | 2 | 531 | .027 |

**ANOVA**

I.ENP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 3.077 | 2 | 1.539 | 5.158 | .006 |
| Within Groups | 158.380 | 531 | .298 | | |
| Total | 161.457 | 533 | | | |

**Robust Tests of Equality of Means**

I.ENP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 5.689 | 2 | 109.310 | .004 |

a. Asymptotically F distributed.

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: I.ENP
Tukey HSD

| (I) Q7. Major | (J) Q7. Major | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | .06827 | .08511 | .702 | -.1318 | .2683 |
| | MC | -.18505* | .06244 | .009 | -.3318 | -.0383 |
| HM | IB/BA | -.06827 | .08511 | .702 | -.2683 | .1318 |
| | MC | -.25332* | .09810 | .027 | -.4839 | -.02 |
| MC | IB/BA | .18505* | .06244 | .009 | .0383 | .33 |
| | HM | .25332* | .09810 | .027 | .0228 | .4839 |

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*. The mean difference is significant at the 0.05 level.

## Homogeneous Subsets

**Descriptives**

I.SP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1287 | .50544 | .02550 | 4.0786 | 4.1788 | 2.43 | 5.00 |
| HM | 46 | 4.1025 | .49273 | .07265 | 3.9562 | 4.2488 | 2.29 | 4.86 |
| MC | 95 | 4.2271 | .47081 | .04830 | 4.1312 | 4.3230 | 3.29 | 5.00 |
| Total | 534 | 4.1439 | .49903 | .02160 | 4.1015 | 4.1863 | 2.29 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| I.SP | Based on Mean | .084 | 2 | 531 | .919 |
| | Based on Median | .065 | 2 | 531 | .937 |
| | Based on Median and with adjusted df | .065 | 2 | 523.226 | .937 |
| | Based on trimmed mean | .069 | 2 | 531 | .933 |

## ANOVA

I.SP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | .827 | 2 | .414 | 1.665 | .190 |
| Within Groups | 131.907 | 531 | .248 | | |
| Total | 132.734 | 533 | | | |

## Robust Tests of Equality of Means

I.SP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 1.807 | 2 | 104.460 | .169 |

a. Asymptotically F distributed.

## Post Hoc Tests

### Multiple Comparisons

Dependent Variable: I.SP

Tukey HSD

| (I) Q7. Major | (J) Q7. Major | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | .02620 | .07767 | .939 | -.1563 | .2087 |
| | MC | -.09839 | .05698 | .196 | -.2323 | .0355 |
| HM | IB/BA | -.02620 | .07767 | .939 | -.2087 | .1563 |
| | MC | -.12458 | .08953 | .346 | -.3350 | .0858 |
| MC | IB/BA | .09839 | .05698 | .196 | -.0355 | .2323 |
| | HM | .12458 | .08953 | .346 | -.0858 | .3350 |

**Descriptives**

E.EP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1792 | .58309 | .02941 | 4.1214 | 4.2370 | 1.00 | 5.00 |
| HM | 46 | 4.0248 | .45306 | .06680 | 3.8903 | 4.1594 | 2.86 | 5.00 |
| MC | 95 | 4.2526 | .49507 | .05079 | 4.1518 | 4.3535 | 2.71 | 5.00 |
| Total | 534 | 4.1790 | .56002 | .02423 | 4.1314 | 4.2266 | 1.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| E.EP | Based on Mean | 1.270 | 2 | 531 | .282 |
| | Based on Median | 1.148 | 2 | 531 | .318 |
| | Based on Median and with adjusted df | 1.148 | 2 | 501.738 | .318 |
| | Based on trimmed mean | 1.121 | 2 | 531 | .327 |

**ANOVA**

E.EP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1.608 | 2 | .804 | 2.579 | .077 |
| Within Groups | 165.552 | 531 | .312 | | |
| Total | 167.161 | 533 | | | |

**Robust Tests of Equality of Means**

E.EP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 3.682 | 2 | 112.354 | .028 |

a. Asymptotically F distributed.

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: E.EP

Tukey HSD

| (I) Q7. Major | (J) Q7. Major | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | .15436 | .08701 | .179 | -.0501 | .3589 |
| | MC | -.07342 | .06384 | .484 | -.2235 | .0766 |
| HM | IB/BA | -.15436 | .08701 | .179 | -.3589 | .0501 |
| | MC | -.22779 | .10030 | .061 | -.4635 | .0079 |
| MC | IB/BA | .07342 | .06384 | .484 | -.0766 | .2235 |
| | HM | .22779 | .10030 | .061 | -.0079 | .4635 |

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## PHÂN TÍCH ANOVA E.ENP

**Descriptives**

E.ENP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1378 | .64130 | .03235 | 4.0742 | 4.2014 | 1.43 | 5.00 |
| HM | 46 | 4.0963 | .49309 | .07270 | 3.9498 | 4.2427 | 2.71 | 5.00 |
| MC | 95 | 4.3113 | .56952 | .05843 | 4.1953 | 4.4273 | 2.29 | 5.00 |
| Total | 534 | 4.1651 | .62045 | .02685 | 4.1123 | 4.2178 | 1.43 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| E.ENP | Based on Mean | 1.723 | 2 | 531 | .180 |
| | Based on Median | 1.811 | 2 | 531 | .165 |
| | Based on Median and with adjusted df | 1.811 | 2 | 517.948 | .165 |
| | Based on trimmed mean | 1.799 | [illegible] | [illegible] | .166 |

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**ANOVA**

E.ENP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 2.541 | 2 | 1.271 | 3.330 | .037 |
| With | 202.644 | 531 | .382 | | |
| Tota | 205.186 | 533 | | | |

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**Robust Tests of Equality of Means**

E.ENP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 3.906 | 2 | 112.090 | .023 |

a. Asymptotically F distributed.

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: E.ENP
Tukey HSD

| (I) Q7. Major | (J) Q7. Major | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | .04149 | .09627 | .903 | -.1848 | .2678 |
| | MC | -.17351* | .07063 | .038 | -.3395 | -.0075 |
| HM | IB/BA | -.04149 | .09627 | .903 | -.2678 | .1848 |
| | MC | -.21500 | .11097 | .129 | -.4758 | .0458 |
| MC | IB/BA | .17351* | .07063 | .038 | .0075 | .3395 |
| | HM | .21500 | .11097 | .129 | -.0458 | .4758 |

*. The mean difference is significant at the 0.05 level.

**Descriptives**

E.SP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1374 | .54027 | .02725 | 4.0838 | 4.1910 | 1.40 | 5.00 |
| HM | 46 | 4.1261 | .47396 | .06988 | 3.9853 | 4.2668 | 3.00 | 4.80 |
| MC | 95 | 4.2905 | .48358 | .04961 | 4.1920 | 4.3890 | 3.00 | 5.00 |
| Total | 534 | 4.1637 | .52761 | .02283 | 4.1188 | 4.2085 | 1.40 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| E.SP | Based on Mean | .504 | 2 | 531 | .604 |
| | Based on Median | .552 | 2 | 531 | .576 |
| | Based on Median and with adjusted df | .552 | 2 | 521.196 | .576 |
| | Based on trimmed mean | .482 | 2 | 531 | .618 |

**ANOVA**

E.SP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1.865 | 2 | .932 | 3.379 | .035 |
| Within Groups | 146.510 | 531 | .276 | | |
| Total | 148.375 | 533 | | | |

**Robust Tests of Equality of Means**

E.SP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 3.836 | 2 | 107.765 | .025 |

a. Asymptotically F distributed.

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: E.SP
Tukey HSD

| (I) Q7. Major | (J) Q7. Major | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | .01132 | .08185 | .990 | -.1811 | .2037 |
| | MC | -.15312* | .06005 | .030 | -.2943 | -.0120 |
| HM | IB/BA | -.01132 | .08185 | .990 | -.2037 | .1811 |
| | MC | -.16444 | .09435 | .190 | -.3862 | .0573 |
| MC | IB/BA | .15312* | .06005 | .030 | .0120 | .2943 |
| | HM | .16444 | .09435 | .190 | -.0573 | .3862 |

*. The mean difference is significant at the 0.05 level.

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**Descriptives**

I.EP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.0906 | .57648 | .02908 | 4.0334 | 4.1478 | 1.00 | 5.00 |
| HM | 46 | 3.9391 | .56783 | .08372 | 3.7705 | 4.1078 | 2.40 | 5.00 |
| MC | 95 | 4.1800 | .53566 | .05496 | 4.0709 | 4.2891 | 2.50 | 5.00 |
| Dometic Scholar | 57 | 3.8456 | .48737 | .06455 | 3.7163 | 3.9749 | 2.20 | 4.70 |
| Foreign Scholar | 23 | 4.5565 | .33416 | .06968 | 4.4120 | 4.7010 | 3.90 | 5.00 |
| Tranporter/Logistic | 22 | 3.9364 | .55338 | .11798 | 3.6910 | 4.1817 | 2.80 | 4.80 |
| Total | 636 | 4.0825 | .56771 | .02251 | 4.0383 | 4.1268 | 1.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| I.EP | Based on Mean | 1.176 | 5 | 630 | .319 |
| | Based on Median | 1.214 | 5 | 630 | .301 |
| | Based on Median and with adjusted df | 1.214 | 5 | 612.763 | .301 |
| | Based on trimmed mean | 1.189 | 5 | 630 | .313 |

## ANOVA

I.EP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 10.711 | 5 | 2.142 | 6.958 | .000 |
| Within Groups | 193.946 | 630 | .308 | | |
| Total | 204.656 | 635 | | | |

## Robust Tests of Equality of Means

I.EP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 12.879 | 5 | 94.480 | .000 |

a. Asymptotically F distributed.

Post Hoc Tests

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: I.EP
Tukey HSD

| (I) Type Scholar | (J) Type Scholar | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| IB/BA | HM | .15145 | .08646 | .498 | -.0957 | .3986 |
| | MC | -.08941 | .06343 | .721 | -.2707 | .0919 |
| | Dometic Scholar | .24497* | .07864 | .024 | .0202 | .4698 |
| | Foreign Scholar | -.46594* | .11903 | .001 | -.8062 | -.1257 |
| | Tranporter/Logistic | .15422 | .12156 | .802 | -.1933 | .5017 |
| HM | IB/BA | -.15145 | .08646 | .498 | -.3986 | .0957 |
| | MC | -.24087 | .09966 | .152 | -.5258 | .0440 |
| | Dometic Scholar | .09352 | .10997 | .958 | -.2208 | .4079 |
| | Foreign Scholar | -.61739* | .14169 | .000 | -1.0224 | -.2124 |
| | Tranporter/Logistic | .00277 | .14382 | 1.000 | -.4084 | .4139 |
| MC | IB/BA | .08941 | .06343 | .721 | -.0919 | .2707 |
| | HM | .24087 | .09966 | .152 | -.0440 | .5258 |
| | Dometic Scholar | .33439* | .09296 | .005 | .0687 | .6001 |
| | Foreign Scholar | -.37652* | .12894 | .042 | -.7451 | -.0079 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dometic Scholar | IB/BA | -.24497* | .07864 | .024 | -.4698 | -.0202 |
| | HM | -.09352 | .10997 | .958 | -.4079 | .2208 |
| | MC | -.33439* | .09296 | .005 | -.6001 | -.0687 |
| | Foreign Scholar | -.71091* | .13706 | .000 | -1.1027 | -.3191 |
| | Tranporter/Logistic | -.09075 | .13926 | .987 | -.4888 | .3073 |
| Foreign Scholar | IB/BA | .46594* | .11903 | .001 | .1257 | .8062 |
| | HM | .61739* | .14169 | .000 | .2124 | 1.0224 |
| | MC | .37652* | .12894 | .042 | .0079 | .7451 |
| | Dometic Scholar | .71091* | .13706 | .000 | .3191 | 1.1027 |
| | Tranporter/Logistic | .62016* | .16546 | .003 | .1472 | 1.0931 |
| Tranporter/Logistic | IB/BA | -.15422 | .12156 | .802 | -.5017 | .1933 |
| | HM | -.00277 | .14382 | 1.000 | -.4139 | .4084 |
| | MC | -.24364 | .13128 | .431 | -.6189 | .1316 |
| | Dometic Scholar | .09075 | .13926 | .987 | -.3073 | .4888 |
| | Foreign Scholar | -.62016* | .16546 | .003 | -1.0931 | -.1472 |

*. The mean difference is significant at the 0.05 level.

**Anova I.ENP STUDENT AND SCHOLAR.**

**Descriptives**

I.ENP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound | | |
| IB/BA | 393 | 4.0465 | .55985 | .02824 | 3.9910 | 4.1021 | 2.00 | 5.00 |
| HM | 46 | 3.9783 | .45572 | .06719 | 3.8429 | 4.1136 | 2.29 | 4.71 |
| MC | 95 | 4.2316 | .52765 | .05414 | 4.1241 | 4.3391 | 2.86 | 5.00 |
| Dometic Scholar | 57 | 4.1529 | .49107 | .06504 | 4.0226 | 4.2832 | 2.29 | 5.00 |
| Foreign Scholar | 23 | 4.5466 | .26430 | .05511 | 4.4323 | 4.6609 | 3.86 | 5.00 |
| Tranporter/Logistic | 22 | 3.9935 | .48591 | .10360 | 3.7781 | 4.2089 | 2.86 | 5.00 |
| Total | 636 | 4.0950 | .54239 | .02151 | 4.05 | 372 | 2.00 | 5.00 |

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**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| I.ENP | Based on Mean | 3.648 | 5 | 630 | .003 |
| | Based on Median | 3.489 | 5 | 630 | .004 |
| | Based on Median and with adjusted df | 3.489 | 5 | 612.199 | .004 |
| | Based on trimmed mean | 3.682 | 5 | 630 | .003 |

**ANOVA**

I.ENP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 8.430 | 5 | 1.686 | 5.955 | .000 |
| Within Groups | 178.379 | 630 | .283 | | |
| Total | 186.809 | 635 | | | |

**Robust Tests of Equality of Means**

I.ENP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 14.810 | 5 | 97.360 | .000 |

a. Asymptotically F distributed.

## Post Hoc Tests

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: I.ENP

Tukey HSD

| (I) Type Scholar | (J) Type Scholar | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | 95% Confidence Interval Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | .06827 | .08292 | .963 | -.1688 | .3053 |
| | MC | -.18505* | .06084 | .029 | -.3589 | -.0112 |
| | Dometic Scholar | -.10635 | .07542 | .721 | -.3219 | .1092 |
| | Foreign Scholar | -.50006* | .11415 | .000 | -.8264 | -.1737 |
| | Tranporter/Logistic | .05302 | .11658 | .998 | -.2802 | .3863 |
| HM | IB/BA | -.06827 | .08292 | .963 | -.3053 | .1688 |
| | MC | -.25332 | .09558 | .087 | -.5265 | .0199 |
| | Dometic Scholar | -.17462 | .10546 | .562 | -.4761 | .1268 |
| | Foreign Scholar | -.56832* | .13589 | .000 | -.9568 | -.1799 |
| | Tranporter/Logistic | -.01525 | .13793 | 1.000 | -.4095 | .3790 |
| MC | IB/BA | .18505* | .06084 | .029 | .0112 | .3589 |
| | HM | .25332 | .09558 | .087 | -.0199 | .5265 |
| | Dometic Scholar | .07870 | .08915 | .951 | -.1761 | .3335 |
| | Foreign Scholar | -.31500 | .12366 | .112 | -.6685 | .0385 |
| | Tranporter/Logistic | .23807 | .12590 | .409 | -.1218 | .5980 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dometic Scholar | IB/BA | .10635 | .07542 | .721 | -.1092 | .3219 |
| | HM | .17462 | .10546 | .562 | -.1268 | .4761 |
| | MC | -.07870 | .08915 | .951 | -.3335 | .1761 |
| | Foreign Scholar | -.39370* | .13145 | .034 | -.7694 | -.0180 |
| | Tranporter/Logistic | .15938 | .13356 | .840 | -.2224 | .5411 |
| Foreign Scholar | IB/BA | .50006* | .11415 | .000 | .1737 | .8264 |
| | HM | .56832* | .13589 | .000 | .1799 | .9568 |
| | MC | .31500 | .12366 | .112 | -.0385 | .6685 |
| | Dometic Scholar | .39370* | .13145 | .034 | .0180 | .7694 |
| | Tranporter/Logistic | .55308* | .15868 | .007 | .0995 | 1.0067 |
| Tranporter/Logistic | IB/BA | -.05302 | .11658 | .998 | -.3863 | .2802 |
| | HM | .01525 | .13793 | 1.000 | -.3790 | .4095 |
| | MC | -.23807 | .12590 | .409 | -.5980 | .1218 |
| | Dometic Scholar | -.15938 | .13356 | .840 | -.5411 | .2224 |
| | Foreign Scholar | -.55308* | .15868 | .007 | -1.0067 | -.0995 |

## ANOVA I.SP STUDENT AND SCHOLAR

**Descriptives**

I.SP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound | | |
| IB/BA | 393 | 4.1287 | .50544 | .02550 | 4.0786 | 4.1788 | 2.43 | 5.00 |
| HM | 46 | 4.1025 | .49273 | .07265 | 3.9562 | 4.2488 | 2.29 | 4.86 |
| MC | 95 | 4.2271 | .47081 | .04830 | 4.1312 | 4.3230 | 3.29 | 5.00 |
| Dometic Scholar | 57 | 4.0551 | .41716 | .05525 | 3.9445 | 4.1658 | 2.86 | 4.86 |
| Foreign Scholar | 23 | 4.4472 | .30550 | .06370 | 4.3151 | 4.5793 | 3.71 | 4.86 |
| Tranporter/Logistic | 22 | 3.9935 | .55500 | .11833 | 3.7474 | 4.2396 | 2.86 | 4.71 |
| Total | 636 | 4.1417 | .49256 | .01953 | 4.1034 | 4.1801 | 2.29 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| I.SP | Based on Mean | 1.746 | 5 | 630 | .122 |
| | Based on Median | 1.625 | 5 | 630 | .151 |
| | Based on Median and with adjusted df | 1.625 | 5 | 606.996 | .151 |
| | Based on trimmed mean | 1.673 | 5 | 630 | .139 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| I.SP | Based on Mean | 1.746 | 5 | 630 | .122 |
| | Based on Median | 1.625 | 5 | 630 | .151 |
| | Based on Median and with adjusted df | 1.625 | 5 | 606.996 | .151 |
| | Based on trimmed mean | 1.673 | 5 | 630 | .139 |

**ANOVA**

I.SP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 3.887 | 5 | .777 | 3.261 | .006 |
| Within Groups | 150.174 | 630 | .238 | | |
| Total | 154.060 | 635 | | | |

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: I.SP
Tukey HSD

| (I) Type Scholar | (J) Type Scholar | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| IB/BA | HM | .02620 | .07608 | .999 | -.1913 | .2437 |
| | MC | -.09839 | .05582 | .491 | -.2579 | .0612 |
| | Dometic Scholar | .07354 | .06920 | .896 | -.1243 | .2713 |
| | Foreign Scholar | -.31852* | .10474 | .029 | -.6179 | -.0191 |
| | Tranporter/Logistic | .13517 | .10697 | .805 | -.1706 | .4409 |
| HM | IB/BA | -.02620 | .07608 | .999 | -.2437 | .1913 |
| | MC | -.12458 | .08770 | .715 | -.3753 | .1261 |
| | Dometic Scholar | .04735 | .09677 | .997 | -.2293 | .3240 |
| | Foreign Scholar | -.34472 | .12468 | .065 | -.7011 | .0117 |
| | Tranporter/Logistic | .10898 | .12656 | .955 | -.2528 | .4707 |
| MC | IB/BA | .09839 | .05582 | .491 | -.0612 | .2579 |
| | HM | .12458 | .08770 | .715 | -.1261 | .3753 |
| | Dometic Scholar | .17193 | .08180 | .288 | -.0619 | .4058 |
| | Foreign Scholar | -.22014 | .11346 | .379 | -.5445 | .1042 |
| | Tranporter/Logistic | .23356 | .11552 | .331 | -.0966 | .5638 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dometic Scholar | IB/BA | -.07354 | .06920 | .896 | -.2713 | .1243 |
| | HM | -.04735 | .09677 | .997 | -.3240 | .2293 |
| | MC | -.17193 | .08180 | .288 | -.4058 | .0619 |
| | Foreign Scholar | -.39207* | .12061 | .015 | -.7368 | -.0473 |
| | Tranporter/Logistic | .06163 | .12254 | .996 | -.2887 | .4119 |
| Foreign Scholar | IB/BA | .31852* | .10474 | .029 | .0191 | .6179 |
| | HM | .34472 | .12468 | .065 | -.0117 | .7011 |
| | MC | .22014 | .11346 | .379 | -.1042 | .5445 |
| | Dometic Scholar | .39207* | .12061 | .015 | .0473 | .7368 |
| | Tranporter/Logistic | .45370* | .14560 | .023 | .0375 | .8699 |
| Tranporter/Logistic | IB/BA | -.13517 | .10697 | .805 | -.4409 | .1706 |
| | HM | -.10898 | .12656 | .955 | -.4707 | .2528 |
| | MC | -.23356 | .11552 | .331 | -.5638 | .0966 |
| | Dometic Scholar | -.06163 | .12254 | .996 | -.4119 | .2887 |
| | Foreign Scholar | -.45370* | .14560 | .023 | -.8699 | -.0375 |

*. The mean difference is significa[illegible]el.

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## Anova E.EP STUDENT AND SCHOLAR

**Descriptives**

E.EP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound | | |
| IB/BA | 393 | 4.1792 | .58309 | .02941 | 4.1214 | 4.2370 | 1.00 | 5.00 |
| HM | 46 | 4.0248 | .45306 | .06680 | 3.8903 | 4.1594 | 2.86 | 5.00 |
| MC | 95 | 4.2526 | .49507 | .05079 | 4.1518 | 4.3535 | 2.71 | 5.00 |
| Dometic Scholar | 57 | 4.1529 | .39389 | .05217 | 4.0484 | 4.2574 | 3.14 | 4.86 |
| Foreign Scholar | 23 | 4.5280 | .28387 | .05919 | 4.4052 | 4.6507 | 3.86 | 5.00 |
| Tranporter/Logistic | 22 | 3.9675 | .59465 | .12678 | 3.7039 | 4.2312 | 2.57 | 4.71 |
| Total | 636 | 4.1819 | .54537 | .02163 | 4.1395 | 4.2244 | 1.00 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| E.EP | Based on Mean | 3.322 | 5 | 630 | .006 |
| | Based on Median | 2.807 | 5 | 630 | .016 |
| | Based on Median and with adjusted df | 2.807 | 5 | 576.746 | .016 |
| | Based on trimmed mean | 3.055 | 5 | 630 | .010 |

**ANOVA**

E.EP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 5.426 | 5 | 1.085 | 3.727 | .002 |
| Within Groups | 183.439 | 630 | .291 | | |
| Total | 188.865 | 635 | | | |

**Robust Tests of Equality of Means**

E.EP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 8.404 | 5 | 96.799 | .000 |

a. Asymptotically F distributed.

## Post Hoc Tests

**Multiple Comparisons**

Dependent Variable: E.EP
Tukey HSD

| (I) Type Scholar | (J) Type Scholar | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| IB/BA | HM | .15436 | .08409 | .443 | -.0860 | .3947 |
| | MC | -.07342 | .06169 | .842 | -.2498 | .1029 |
| | Dometic Scholar | .02633 | .07648 | .999 | -.1923 | .2449 |
| | Foreign Scholar | -.34874* | .11576 | .032 | -.6796 | -.0178 |
| | Tranporter/Logistic | .21168 | .11822 | .473 | -.1263 | .5496 |
| HM | IB/BA | -.15436 | .08409 | .443 | -.3947 | .0860 |
| | MC | -.22779 | .09693 | .176 | -.5049 | .0493 |
| | Dometic Scholar | -.12804 | .10695 | .838 | -.4338 | .1777 |
| | Foreign Scholar | -.50311* | .13780 | .004 | -.8970 | -.1092 |
| | Tranporter/Logistic | .05731 | .13987 | .999 | -.3425 | .4571 |
| MC | IB/BA | .07342 | .06169 | .842 | -.1029 | .2498 |
| | HM | .22779 | .09693 | .176 | -.0493 | .5049 |
| | Dometic Scholar | .09975 | .09041 | .880 | -.1587 | .3582 |
| | Foreign Scholar | -.27532 | .12540 | .241 | -.6338 | .0831 |
| | Tranporter/Logistic | .28510 | .12767 | .224 | -.0799 | .6501 |
| Dometic Scholar | IB/BA | -.02633 | .07648 | .999 | -.2449 | .1923 |
| | HM | .12804 | .10695 | .838 | -.1777 | .4338 |
| | MC | -.09975 | .09041 | .880 | -.3582 | .1587 |
| | Foreign Scholar | -.37507 | .13330 | .057 | -.7561 | .0060 |
| | Tranporter/Logistic | .18535 | .13544 | .746 | -.2018 | .5725 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dometic Scholar | IB/BA | -.02633 | .07648 | .999 | -.2449 | .1923 |
| | HM | .12804 | .10695 | .838 | -.1777 | .4338 |
| | MC | -.09975 | .09041 | .880 | -.3582 | .1587 |
| | Foreign Scholar | -.37507 | .13330 | .057 | -.7561 | .0060 |
| | Tranporter/Logistic | .18535 | .13544 | .746 | -.2018 | .5725 |
| Foreign Scholar | IB/BA | .34874* | .11576 | .032 | .0178 | .6796 |
| | HM | .50311* | .13780 | .004 | .1092 | .8970 |
| | MC | .27532 | .12540 | .241 | -.0831 | .6338 |
| | Dometic Scholar | .37507 | .13330 | .057 | -.0060 | .7561 |
| | Tranporter/Logistic | .56042* | .16092 | .007 | .1004 | 1.0204 |
| Tranporter/Logistic | IB/BA | -.21168 | .11822 | .473 | -.5496 | .1263 |
| | HM | Double-click to activate | .13987 | .999 | -.4571 | .3425 |
| | MC | | .12767 | .224 | -.6501 | .0799 |
| | Dometic Scholar | -.18535 | .13544 | .746 | -.5725 | .2018 |
| | Foreign Scholar | -.56042* | .16092 | .007 | -1.0204 | -.1004 |

*. The mean difference is significant at the 0.05 level.

## ANOVA E.ENP STUDEN AND SCHOLAR.

**Descriptives**

E.ENP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1378 | .64130 | .03235 | 4.0742 | 4.2014 | 1.43 | 5.00 |
| HM | 46 | 4.0963 | .49309 | .07270 | 3.9498 | 4.2427 | 2.71 | 5.00 |
| MC | 95 | 4.3113 | .56952 | .05843 | 4.1953 | 4.4273 | 2.29 | 5.00 |
| Dometic Scholar | 57 | 4.0426 | .42513 | .05631 | 3.9298 | 4.1554 | 3.29 | 5.00 |
| Foreign Scholar | 23 | 4.6584 | .24646 | .05139 | 4.5518 | 4.7650 | 4.14 | 5.00 |
| Tranporter/Logistic | 22 | 4.1104 | .49277 | .10506 | 3.8919 | 4.3289 | 2.86 | 5.00 |
| Total | 636 | 4.1700 | .59953 | .02377 | 4.1234 | 4.2167 | 1.43 | 5.00 |

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| E.ENP | Based on Mean | 4.469 | 5 | 630 | .001 |
| | Based on Median | 4.729 | 5 | 630 | .000 |
| | Based on Median and with adjusted df | 4.729 | 5 | 578.257 | .000 |
| | Based on trimmed mean | 4.547 | 5 | 630 | .000 |

**ANOVA**

E.ENP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 9.044 | 5 | 1.809 | 5.198 | .000 |
| Within Groups | 219.201 | 630 | .348 | | |
| Total | 228.244 | 635 | | | |

**Robust Tests of Equality of Means**

E.ENP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 18.570 | 5 | 100.839 | .000 |

a. Asymptotically F distributed.

Double-click to activate

**Multiple Comparisons**

Dependent Variable: E.ENP
Tukey HSD

| (I) Type Scholar | (J) Type Scholar | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval Lower Bound | Upper Bound |
|---|---|---|---|---|---|---|
| IB/BA | HM | .04149 | .09192 | .998 | -.2213 | .3042 |
| | MC | -.17351 | .06744 | .106 | -.3663 | .0193 |
| | Dometic Scholar | .09516 | .08360 | .865 | -.1438 | .3341 |
| | Foreign Scholar | -.52062* | .12654 | .001 | -.8823 | -.1589 |
| | Tranporter/Logistic | .02738 | .12923 | 1.000 | -.3420 | .3968 |
| HM | IB/BA | -.04149 | .09192 | .998 | -.3042 | .2213 |
| | MC | -.21500 | .10595 | .327 | -.5179 | .0879 |
| | Dometic Scholar | .05367 | .11691 | .997 | -.2805 | .3879 |
| | Foreign Scholar | -.56211* | .15064 | .003 | -.9927 | -.1315 |
| | Tranporter/Logistic | -.01412 | .15290 | 1.000 | -.4512 | .4230 |
| MC | IB/BA | .17351 | .06744 | .106 | -.0193 | .3663 |
| | HM | .21500 | .10595 | .327 | -.0879 | .5179 |
| | Dometic Scholar | .26867 | .09883 | .073 | -.0138 | .5512 |
| | Foreign Scholar | -.34711 | .13708 | .116 | -.7389 | .0447 |
| | Tranporter/Logistic | .20089 | .13956 | .703 | -.1981 | .5998 |
| Dometic Scholar | IB/BA | -.09516 | .08360 | .865 | -.3341 | .1438 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dometic Scholar | IB/BA | -.09516 | .08360 | .865 | -.3341 | .1438 |
| | HM | -.05367 | .11691 | .997 | -.3879 | .2805 |
| | MC | -.26867 | .09883 | .073 | -.5512 | .0138 |
| | Foreign Scholar | -.61578* | .14571 | .000 | -1.0323 | -.1993 |
| | Tranporter/Logistic | -.06778 | .14805 | .997 | -.4910 | .3554 |
| Foreign Scholar | IB/BA | .52062* | .12654 | .001 | .1589 | .8823 |
| | HM | .56211* | .15064 | .003 | .1315 | .9927 |
| | MC | .34711 | .13708 | .116 | -.0447 | .7389 |
| | Dometic Scholar | .61578* | .14571 | .000 | .1993 | 1.0323 |
| | Tranporter/Logistic | .54800* | .17591 | .023 | .0452 | 1.0508 |
| Tranporter/Logistic | IB/BA | -.02738 | .12923 | 1.000 | -.3968 | .3420 |
| | HM | .01412 | .15290 | 1.000 | -.4230 | .4512 |
| | MC | -.20089 | .13956 | .703 | -.5998 | [illegible] |
| | Dometic Scholar | .06778 | .14805 | .997 | -.3554 | [illegible] |
| | Foreign Scholar | -.54800* | .17591 | .023 | -1.0508 | -.0452 |

*. The mean difference is significant at the 0.05 level.

Double-click to activate

## ANOVA E.SP STUDENT VÀ SCHOLAR.

**Descriptives**

E.SP

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | 95% Confidence Interval for Mean Upper Bound | Minimum | Maximum |
|---|---|---|---|---|---|---|---|---|
| IB/BA | 393 | 4.1374 | .54027 | .02725 | 4.0838 | 4.1910 | 1.40 | 5.00 |
| HM | 46 | 4.1261 | .47396 | .06988 | 3.9853 | 4.2668 | 3.00 | 4.80 |
| MC | 95 | 4.2905 | .48358 | .04961 | 4.1920 | 4.3890 | 3.00 | 5.00 |
| Dometic Scholar | 57 | 4.1789 | .45148 | .05980 | 4.0592 | 4.2987 | 3.20 | 5.00 |
| Foreign Scholar | 23 | 4.5043 | .37596 | .07839 | 4.3418 | 4.6669 | 3.60 | 5.00 |
| Tranporter/Logistic | 22 | 4.0273 | .61812 | .13178 | 3.7532 | 4.3013 | 2.80 | 5.00 |
| Total | 636 | 4.1726 | .52341 | .02075 | [illegible] | 4.2134 | 1.40 | 5.00 |

Double-click to activate

**Test of Homogeneity of Variances**

| | | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| E.SP | Based on Mean | 1.089 | 5 | 630 | .365 |
| | Based on Median | 1.105 | 5 | 630 | .356 |
| | Based on Median and with adjusted df | 1.105 | 5 | 603.305 | .356 |
| | Based on trimmed mean | 1.050 | 5 | 630 | .387 |

## ANOVA

E.SP

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 4.906 | 5 | .981 | 3.656 | .003 |
| Within Groups | 169.058 | 630 | .268 | | |
| Total | 173.964 | 635 | | | |

## Robust Tests of Equality of Means

E.SP

| | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|
| Welch | 5.113 | 5 | 92.830 | .000 |

a. Asymptotically F distributed.

# Post Hoc Tests

## Multiple Comparisons

Dependent Variable: E.SP

Tukey HSD

| (I) Type Scholar | (J) Type Scholar | Mean Difference (I-J) | Std. Error | Sig. | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound |
| IB/BA | HM | .01132 | .08072 | 1.000 | -.2194 | .2421 |
| | MC | -.15312 | .05922 | .102 | -.3224 | .0162 |
| | Dometic Scholar | -.04154 | .07342 | .993 | -.2514 | .1683 |
| | Foreign Scholar | -.36694* | .11113 | .013 | -.6846 | -.0493 |
| | Tranporter/Logistic | .11013 | .11349 | .927 | -.2143 | .4345 |
| HM | IB/BA | -.01132 | .08072 | 1.000 | -.2421 | .2194 |
| | MC | -.16444 | .09305 | .488 | -.4304 | .1015 |
| | Dometic Scholar | -.05286 | .10267 | .996 | -.3463 | .2406 |
| | Foreign Scholar | -.37826* | .13229 | .050 | -.7564 | -.0001 |
| | Tranporter/Logistic | .09881 | .13428 | .977 | -.2850 | .4827 |
| MC | IB/BA | .15312 | .05922 | .102 | -.0162 | .3224 |
| | HM | .16444 | .09305 | .488 | -.1015 | .4304 |
| | Dometic Scholar | .11158 | .08679 | .793 | -.1365 | .3597 |
| | Foreign Scholar | -.21382 | .12038 | .482 | -.5579 | .1303 |
| | Tranporter/Logistic | .26325 | .12257 | .264 | -.0871 | .6136 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dometic Scholar | IB/BA | .04154 | .07342 | .993 | -.1683 | .2514 |
| | HM | .05286 | .10267 | .996 | -.2406 | .3463 |
| | MC | -.11158 | .08679 | .793 | -.3597 | .1365 |
| | Foreign Scholar | -.32540 | .12797 | .113 | -.6912 | .0404 |
| | Tranporter/Logistic | .15167 | .13002 | .853 | -.2200 | .5233 |
| Foreign Scholar | IB/BA | .36694* | .11113 | .013 | .0493 | .6846 |
| | HM | .37826* | .13229 | .050 | .0001 | [illegible] |
| | MC | .21382 | .12038 | .482 | -.1303 | [illegible] |
| | Dometic Scholar | .32540 | .12797 | .113 | -.0404 | .6912 |
| | Tranporter/Logistic | .47708* | .15448 | .026 | .0355 | .9187 |
| Tranporter/Logistic | IB/BA | -.11013 | .11349 | .927 | -.4345 | .2143 |
| | HM | -.09881 | .13428 | .977 | -.4827 | .2850 |
| | MC | -.26325 | .12257 | .264 | -.6136 | .0871 |
| | Dometic Scholar | -.15167 | .13002 | .853 | -.5233 | .2200 |
| | Foreign Scholar | -.47708* | .15448 | .026 | -.9187 | -.0355 |

Double-click to activate

*. The mean difference is significant at the 0.05 level.

## CROBACH APPHA.

### Reliability Statistics

| Cronbach's Alpha | N of Items |
|---|---|
| .937 | 7 |

### Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| EP1 | 24.77 | 22.483 | .816 | .925 |
| EP2 | 24.84 | 22.267 | .826 | .924 |
| EP3 | 24.81 | 22.189 | .807 | .926 |
| EP4 | 24.80 | 22.526 | .813 | .926 |
| EP5 | 24.91 | 22.405 | .760 | .931 |
| EP6 | 24.74 | 22.949 | .767 | .930 |
| EP7 | 24.82 | 22.702 | .775 | .929 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .828 | 5 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| ENP1 | 16.20 | 8.642 | .672 | .781 |
| ENP2 | 16.39 | 8.899 | .603 | .800 |
| ENP3 | 16.32 | 8.722 | .640 | .790 |
| ENP4 | 16.25 | 8.441 | .681 | .777 |
| ENP5 | 16.27 | 9.232 | .531 | .820 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .820 | 6 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| SP1 | 20.96 | 9.516 | .606 | .787 |
| SP2 | 20.90 | 9.828 | .626 | .784 |
| SP3 | 20.92 | 9.913 | .622 | .785 |
| SP4 | 20.94 | 9.640 | .633 | .781 |
| SP5 | 21.00 | 9.908 | .443 | .827 |
| SP6 | 20.94 | 9.627 | .616 | .785 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .834 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| IEM1 | 12.63 | 4.407 | .686 | .782 |
| IEM2 | 12.69 | 4.365 | .683 | .783 |
| IEM3 | 12.64 | 4.316 | .678 | .784 |
| IEM4 | 12.71 | 4.245 | .617 | .815 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .929 | 5 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| GP1 | 16.49 | 10.900 | .802 | .915 |
| GP2 | 16.47 | 10.857 | .809 | .914 |
| GP3 | 16.42 | 11.036 | .827 | .911 |
| GP4 | 16.47 | 10.583 | .823 | .911 |
| GP5 | 16.45 | 10.909 | .808 | .914 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .826 | 4 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| GM4 | 12.23 | 5.894 | .560 | .820 |
| GM2 | 12.37 | 5.324 | .673 | .770 |
| GM3 | 12.33 | 5.194 | .714 | .751 |
| GM1 | 12.31 | 5.398 | .659 | .777 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .914 | 5 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| GD1 | 16.70 | 9.361 | .745 | .903 |
| GD2 | 16.72 | 8.908 | .760 | .900 |
| GD3 | 16.66 | 9.258 | .775 | .897 |
| GD4 | 16.68 | 9.206 | .798 | .892 |
| GD5 | 16.64 | 8.809 | .833 | .884 |

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .904 | 3 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| EE1 | 8.31 | 2.720 | .802 | .869 |
| EE2 | 8.34 | 2.705 | .821 | .853 |
| EE3 | 8.39 | 2.611 | .805 | .867 |

**Analysis EFE GSCM and Sustainbility performance**

**Rotated Component Matrix[a]**

| | Component | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| EP2 | .817 | | | | | | | |
| EP5 | .796 | | | | | | | |
| EP1 | .794 | | | | | | | |
| EP4 | .788 | | | | | | | |
| EP3 | .768 | | | | | | | |
| EP7 | .697 | | | | | | | |
| EP6 | .685 | | | | | | | |
| GP4 | | .809 | | | | | | |
| GP3 | | .795 | | | | | | |
| GP2 | | .792 | | | | | | |
| GP1 | | .781 | | | | | | |
| GP5 | | .777 | | | | | | |
| GD5 | | | .894 | | | | | |
| GD4 | | | .863 | | | | | |
| GD3 | | | .848 | | | | | |
| GD2 | | | .840 | | | | | |
| GD1 | | | .815 | | | | | |
| SP2 | | | | .771 | | | | |
| SP3 | | | | .720 | | | | |
| SP1 | | | | .707 | | | | |
| SP4 | | | | .684 | | | | |
| SP6 | | | | .683 | | | | |
| SP5 | | | | .509 | | | | |
| ENP4 | | | | | .779 | | | |
| ENP1 | | | | | .768 | | | |
| ENP3 | | | | | .762 | | | |
| ENP2 | | | | | .689 | | | |
| ENP5 | | | | | .680 | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| IEM1 | | | | | | .821 | | |
| IEM2 | | | | | | .769 | | |
| IEM3 | | | | | | .761 | | |
| IEM4 | | | | | | .634 | | |
| EE2 | | | | | | | .837 | |
| EE1 | | | | | | | .813 | |
| EE3 | | | | | | | .810 | |
| GM3 | | | | | | | | .823 |
| GM2 | | | | | | | | .735 |
| GM1 | | | | | | | | .723 |

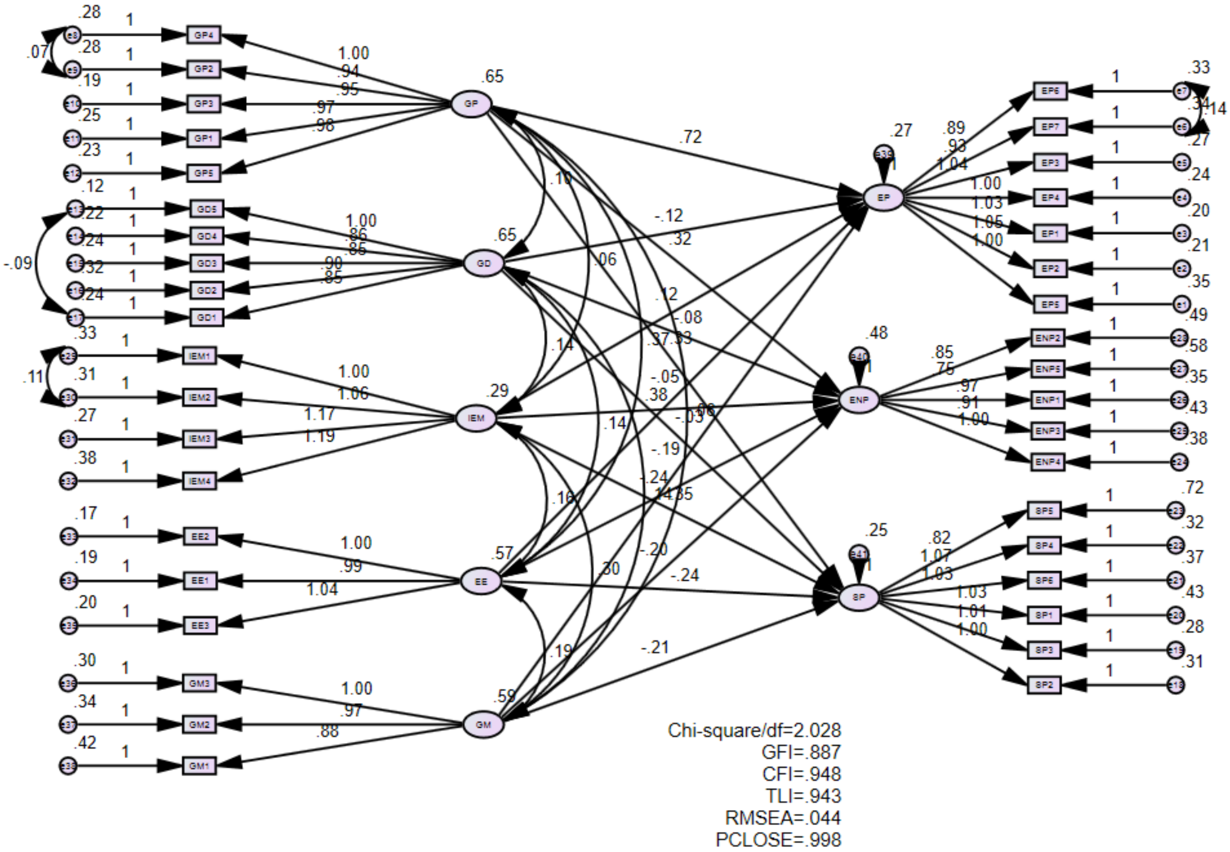
Extraction Method: Principal Component Analysis.

## KMO and Bartlett's Test

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .908 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 12969.596 |
| | df | 703 |
| | Sig. | .000 |

**Total Variance Explained**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 9.376 | 24.674 | 24.674 | 9.376 | 24.674 | 24.674 | 5.052 | 13.294 | 13.294 |
| 2 | 5.750 | 15.131 | 39.806 | 5.750 | 15.131 | 39.806 | 3.960 | 10.421 | 23.715 |
| 3 | 3.603 | 9.481 | 49.286 | 3.603 | 9.481 | 49.286 | 3.833 | 10.087 | 33.801 |
| 4 | 2.793 | 7.349 | 56.636 | 2.793 | 7.349 | 56.636 | 3.326 | 8.753 | 42.554 |
| 5 | 1.665 | 4.382 | 61.017 | 1.665 | 4.382 | 61.017 | 3.113 | 8.193 | 50.747 |
| 6 | 1.238 | 3.257 | 64.274 | 1.238 | 3.257 | 64.274 | 2.811 | 7.396 | 58.143 |
| 7 | 1.142 | 3.005 | 67.280 | 1.142 | 3.005 | 67.280 | 2.348 | 6.179 | 64.323 |
| 8 | 1.113 | 2.928 | 70 Double-click to | 3 | 2.928 | 70.208 | 2.236 | 5.885 | 70.208 |


Chi-square/df=2.028
GFI=.887
CFI=.948
TLI=.943
RMSEA=.044
PCLOSE=.998

| | | | Estimate | S.E. | C.R. | P | Label |
|---|---|---|---|---|---|---|---|
| EP | <--- | GP | .723 | .054 | 13.401 | *** | |
| ENP | <--- | GD | -.082 | .047 | -1.754 | .079 | |
| SP | <--- | IEM | .354 | .096 | 3.669 | *** | |
| EP | <--- | EE | -.054 | .052 | -1.044 | .297 | |
| ENP | <--- | EE | -.242 | .070 | -3.459 | *** | |
| SP | <--- | EE | -.237 | .053 | -4.503 | *** | |
| EP | <--- | GM | -.188 | .062 | -3.026 | .002 | |
| ENP | <--- | GM | -.203 | .083 | -2.450 | .014 | |
| SP | <--- | GM | -.212 | .062 | -3.391 | *** | |
| EP | <--- | IEM | .125 | .093 | 1.336 | .181 | |
| ENP | <--- | IEM | .379 | .128 | 2.973 | .003 | |
| ENP | <--- | GP | .316 | .060 | 5.244 | *** | |
| SP | <--- | GP | .327 | .047 | 7.028 | *** | |
| EP | <--- | GD | -.121 | .035 | -3.437 | *** | |
| SP | <--- | GD | -.033 | .034 | -.945 | .345 | |
| EP5 | <--- | EP | 1.000 | | | | |

**Squared Multiple Correlations: (Group number 1 - Default model)**

| | Estimate |
|---|---|
| ENP | .109 |
| SP | .194 |
| EP | .541 |