

# **Sustainable Supply Chain Management and Performance Outcomes: Examining the Moderating Influence of Dynamic Capabilities**

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## **Abstract**

*This study seeks to examine the moderating influence of dynamic capabilities on the relationship between sustainable supply chain management (SSCM) practices and supply chain performance outcomes. Grounded in the Resource-Based View (RBV) and Dynamic Capabilities Theory, the research adopts a quantitative survey design to collect data from 91 manufacturing firms within the Greater Accra region of Ghana. The findings indicate that both SSCM practices and dynamic capabilities independently exert a strong positive impact on supply chain performance. However, dynamic capabilities do not significantly moderate the relationship between SSCM practices and performance outcomes.*

*These results suggest that while dynamic capabilities are essential for improving performance, their role as a moderator in the SSCM–performance nexus may be context-dependent. The study recommends that managers embed sustainability principles throughout their supply chains and continuously develop dynamic capabilities by leveraging environmental scanning, strategic agility, and industry 4.0 technologies. Additionally, it emphasizes the importance of conducting feasibility assessments and strategic evaluations prior to implementing SSCM initiatives to determine the potential role of dynamic capabilities in enhancing sustainability outcomes. This research contributes to both academic literature and managerial practice by offering new insights into the interaction between sustainability and dynamic capabilities within supply chain contexts.*

**Keywords:** Sustainable Supply Chain Management (SSCM) Supply Chain Performance, Dynamic Capabilities, Resource-Based View (RBV), Sustainability, Manufacturing Firms, Environmental Sustainability, Strategic Agility, Industry 4.0, Supply Chain Strategy, Performance Outcomes, Moderating Effect, Ghana Manufacturing Sector, Quantitative Research, Supply Chain Practices

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## **1.0 INTRODUCTION**

In recent years, the concept of sustainability has become a pivotal focus in supply chain management as firms seek to align operational efficiency with environmental and social responsibilities. Sustainable Supply Chain Management (SSCM) integrates environmental, economic, and social considerations into traditional supply chain practices, aiming to minimize negative ecological impacts while maintaining profitability and stakeholder satisfaction (Ahi & Searcy, 2015; Centobelli et al., 2020). In the context of developing economies, the transition

toward SSCM has gained traction as companies face increasing pressure from regulatory bodies, consumers, and international partners to embrace sustainable practices (Bai et al., 2022).

While numerous studies have confirmed the positive relationship between SSCM practices and supply chain performance (Dubey et al., 2017; Ghadge et al., 2020), the mechanisms through which these practices translate into tangible outcomes remain a subject of academic inquiry. Specifically, the role of dynamic capabilities the firm's ability to integrate, build, and reconfigure internal and external competencies in response to changing environments is increasingly recognized as a critical enabler of SSCM (Teece, 2018; Rialti et al., 2020). Dynamic capabilities such as strategic agility, environmental sensing, and knowledge transformation empower firms to adapt sustainable practices more effectively and improve performance across operational, financial, and sustainability metrics.

This study is grounded in the Resource-Based View (RBV) and the Dynamic Capabilities Theory, which together suggest that competitive advantage arises not only from valuable and rare resources but also from the firm's ability to renew and reconfigure these resources to match environmental changes (Barney, 1991; Teece, 2018). The moderating role of dynamic capabilities in the SSCM-performance relationship has not been extensively explored, particularly in the context of manufacturing sectors in developing economies like Ghana, where institutional, infrastructural, and technological challenges differ significantly from those in developed nations (Acheampong et al., 2023; Essel et al., 2021).

This study addresses this gap by examining how dynamic capabilities influence the relationship between SSCM practices and supply chain performance among manufacturing firms in Ghana's Greater Accra region. By doing so, the research aims to contribute to both theory and practice by providing empirical evidence on the interplay between sustainability and organizational adaptability, and offering practical guidance for managers seeking to enhance supply chain performance through sustainable and agile strategies.

## **2.0 MATERIALS AND METHODS**

### **2.1. Sustainable Supply Chain Management (SSCM)**

Sustainable Supply Chain Management (SSCM) has emerged as a critical field of research and practice as organizations strive to integrate environmental and social considerations into supply chain operations without compromising economic objectives (Seuring & Müller, 2008). SSCM involves the strategic coordination of traditional supply chain functions such as procurement, production, and logistics, with an emphasis on minimizing ecological footprints and promoting social equity (Ahi & Searcy, 2015). In particular, SSCM practices include green procurement, eco-design, cleaner production, reverse logistics, and supplier environmental collaboration (Zhu et al., 2017). These practices are not only vital for achieving regulatory compliance and improving corporate image but also for enhancing long-term competitiveness and supply chain resilience (Touboulic & Walker, 2015).

In developing countries, the adoption of SSCM practices has gained attention due to growing environmental degradation and stakeholder pressures (Acheampong et al., 2023). However, barriers such as limited technological capacity, weak regulatory frameworks, and resource constraints often hinder effective implementation (Govindan et al., 2014). Despite these challenges, empirical evidence suggests that firms in such contexts can benefit from SSCM adoption, especially when supported by innovation and adaptive capabilities (Zhu & Sarkis, 2004).

### **2.2. Supply Chain Performance Outcomes**

Supply chain performance is a multidimensional construct that includes financial, operational, environmental, and social performance indicators (Gunasekaran et al., 2004). Financial performance encompasses cost efficiency and profitability, while operational performance refers to delivery reliability, lead time, and inventory turnover. Environmental and social performance, on the other hand, are concerned with emissions reduction, resource efficiency, labor rights, and community engagement (Dubey et al., 2017).

Previous research has found a positive correlation between SSCM practices and improved supply chain performance. For example, Rao and Holt (2005) found that environmentally conscious supply chains achieved superior performance outcomes due to improved resource utilization and stakeholder trust. Similarly, Ghadge et al. (2020) demonstrated that sustainable

practices enhance operational flexibility and market competitiveness. However, the strength of this relationship is often contingent on the firm's internal capabilities and the external business environment.

### *2.3. Dynamic Capabilities in Supply Chain Management*

Dynamic capabilities refer to a firm's ability to sense, seize, and reconfigure resources and routines in response to changing market and environmental conditions (Teece, 2007). In supply chain management, dynamic capabilities enable firms to adapt to disruptions, technological changes, and evolving customer expectations (Wamba et al., 2020). These capabilities include strategic agility, environmental sensing, innovation capability, supply chain integration, and knowledge transformation (Rialti et al., 2020).

The literature suggests that dynamic capabilities are instrumental in bridging the gap between SSCM and performance outcomes. For instance, Centobelli et al. (2020) argue that dynamic capabilities such as big data analytics and cross-functional collaboration enhance the effectiveness of SSCM initiatives. Moreover, firms with high levels of dynamic capabilities are better equipped to manage the complexity and uncertainty associated with sustainability transitions (Dubey et al., 2019).

### *2.4. Moderating Role of Dynamic Capabilities*

While SSCM practices directly impact supply chain performance, recent studies emphasize the importance of dynamic capabilities as moderators in this relationship. Dynamic capabilities can enhance or constrain the effect of SSCM on performance depending on how well they are aligned with sustainability objectives (Beske et al., 2014). For example, a firm with robust environmental sensing capabilities may be more adept at anticipating regulatory changes, allowing for proactive adjustments in SSCM strategies (Sarkis et al., 2020).

However, empirical research on the moderating role of dynamic capabilities remains limited and somewhat inconclusive. Some studies suggest that the benefits of SSCM are fully realized only when dynamic capabilities are present at a high level (Singh & El-Kassar, 2019), while others argue that the direct effects of SSCM may outweigh any moderation (Kouhizadeh & Sarkis, 2018). This ambiguity highlights the need for further investigation, particularly in emerging markets where contextual factors may influence the interaction between SSCM and dynamic capabilities.

### *2.5. Research Gap and Theoretical Foundation*

Despite the growing body of knowledge on SSCM and dynamic capabilities, there is a notable gap in understanding how these concepts interact to influence performance outcomes, especially in Sub-Saharan Africa. Most empirical studies have focused on developed economies, with limited attention to the institutional and operational realities of developing countries such as Ghana (Essel et al., 2021). Moreover, the role of dynamic capabilities as a moderator—rather than a mediator or antecedent—has received less scholarly attention.

This study is grounded in the Resource-Based View (RBV) and Dynamic Capabilities Theory, which together provide a robust lens for understanding how internal resources and adaptive competencies interact to shape firm performance in dynamic environments (Barney, 1991; Teece, 2018). By investigating the moderating influence of dynamic capabilities on the SSCM–performance relationship, the study seeks to contribute novel insights to the literature and inform strategic decision-making in sustainability-oriented supply chains.

## **3.0 METHODOLOGY**

This study assesses the moderating effect of dynamic supply chain capability on the relationship between Sustainable supply chain management practices and supply chain performance. It presents the research design, population, sampling technique, data collection methods, data analysis, validity and reliability and ethical considerations.

### *3.1 Research Design*

A research design provides the foundation for data gathering and analysis. This study adopted the explanatory research design. Explanatory research is a method developed to investigate a phenomenon that has not been studied or explained properly. The study examines



the relationship between Sustainable supply chain management practices, supply chain performance and dynamic supply chain capability.

A Research Strategy is a step-by-step plan of action that directs your thoughts and efforts, enabling you to conduct research systematically and on schedule to produce quality results and detailed reporting. Regarding the research strategy, the study chose a survey targeting employees of Manufacturing firms operating within the Greater Accra Region.

The program and procedures that span from broad assumptions to particular data collection, analysis, and interpretation approaches are referred to as the research approach. The research may be qualitative, quantitative, or a combination of the two (Ackroyd and O'Toole, 2010). Quantitative research is characterised by using logical techniques in the research process to prove, reject, or add credence to existing concepts. This research involves measuring variables and analysing the relationships to discover patterns, correlations, or causal linkages. Qualitative research is generally characterised by inductive information production techniques centred on generating meaning (Leavy, 2013). This study adopted the quantitative approach, involving developing and testing hypotheses.

### *3.2 Population of the Study*

According to Johnson and Onwuegbuzie (2004), a population is a collection of people, things, or numerical values that an investigator wants to study. The population of this study comprises employees, staff, suppliers, and customers of manufacturing firms operating in the Greater Accra Region. The estimated target population for the study is five hundred (500). Companies target include Nestle Ghana Limited, Unilever Ghana Limited, Coca-Cola Bottling Company of Ghana, Guinness Ghana Breweries Limited, Fan Milk Limited, Ghana Textile Print (GTP) Limited, Printex Limited, Olam Ghana Limited and Wilmar Africa Limited (PZ Cussons Ghana Limited).

### *3.3 Sample Size and Sampling Technique*

Probability and non-probability are the two types of sampling. Everyone in the research population is equally likely to be selected in probability sampling. Non-probability sampling is a method of selecting units from a population using a subjective (i.e. non-random) method (Babbie, 2011). This study used convenient sampling to draw one hundred samples from the target population. Convenience sampling is a type of non-probability sampling that involves the sample being drawn from that part of the population that is close to hand. The researcher chose convenient sampling because it is not costly, not as time consuming as other sampling strategies, and simplistic. The researcher chose 100 because of the considerations of time and cost. A sample of one hundred reduced the high cost of data collection, as well as giving the researcher the time to collect the required data within the time allocated by the school.

### *3.4 Data Collection Method*

Data collection is the procedure of collecting, measuring and analysing accurate insights for research using standard validated techniques. This section focuses on the sources of data and the data collection procedure. The study makes use of primary data. Primary data is information collected from first-hand sources for a specific purpose (Bell and Roberts, 1984). The study adopted primary data, that is, a questionnaire. An online questionnaire designed using google forms was sent to the respondents' emails and other preferred online channels. Before discussing with each respondent, the researcher asked for their permission and consent to participate in the study. Having received the respondents' responses, the researcher sent messages to each respondent to show appreciation for the time taken to respond to the questionnaire.

The questionnaire consisted of four sections. Section A detailed the demographics of the respondents. Section B provided the measures of Sustainable supply chain management practices, the predictor variable. Section C provided the measures of dynamic supply chain capability, the moderating variable. Section D provided the measures of the outcome variable, supply chain performance. The elements used to measure each construct in the questionnaire are listed in table 3.1 below.

*Table 3.1 Summary of Measurement Items*

| <b>Variables</b>                                     | <b>No. of Items</b> | <b>Sources</b>        |
|--|---------------------|-----------------------|
|  |                     |                       |
| <b>Sustainable Supply Chain Management Practices</b> |                     |                       |
| • Sustainable product design                         | <b>5</b>            | Paulraj et al. (2017) |
| • Sustainable process design                         | <b>5</b>            | Paulraj et al. (2017) |
| • Supply-side sustainability collaboration           | <b>5</b>            | Paulraj et al. (2017) |
| <b>Supply Chain Dynamic Capabilities</b>             |                     |                       |
| • Strategic sense-making capacity                    | <b>5</b>            | Li and Liu (2014)     |
| • Timely decision-making capacity                    | <b>4</b>            | Li and Liu (2014)     |
| • Change implementation capacity                     | <b>5</b>            | Li and Liu (2014)     |
| <b>Supply Chain Performance</b>                      |                     |                       |
| • Reliability Performance                            | <b>5</b>            | Asamoah et al. (2021) |
| • Efficiency Performance                             | <b>4</b>            | Asamoah et al. (2021) |
| • Flexibility Performance                            | <b>5</b>            | Asamoah et al. (2021) |

*Source: Author's Construct (2022)*

### 3.5 Data Analysis

Data analysis is analysing, cleansing, transforming, and modelling data to discover useful information, draw conclusions, and assist decision-making. The researcher used both descriptive and inferential analytic methods. The descriptive statistics were used to describe the extent of Sustainable supply chain management practices, dynamic supply chain capability and performance. The researcher also used ordinary linear regression to assess hypotheses one and two. Moderated hierarchical regression to evaluate the third hypothesis of the study. All analyses are carried out using IBM SPSS, version 26.

### 3.6 Reliability and Validity Test

When doing research, two essential variables to consider are validity and reliability. The repetition of study results and the consistency of the measures used to assess each component are concerned with reliability. On the other hand, validity refers to the degree to which an indicator used to evaluate an idea accurately measures that idea (Koro-Ljungberg, 2008). The collected data was tested using Alpha Cronbach (reliability) and exploratory factor analysis (validity) to verify the research meets reliability and validity standards.

### 3.8 Ethical Consideration

A collection of rules that regulate how researchers behave themselves is referred to as research ethics (Bryman, 2009). The research emphasises two key concerns to guarantee that all ethical standards are met: anonymity and secrecy. The study ensures that the research instrument does not require respondents to give names or other highly sensitive information to maintain anonymity. Regarding confidentiality, all data collected will be used only for academic reasons

## 4.0 RESULTS AND DISCUSSIONS

### 4.1 Introduction

This chapter focuses on analysing the data gathered from the respondents and contains the response rate, reliability and validity test, descriptive statistics, Inferential statistics and discussion of results.

### 4.2 Response Rate

A total of hundred (100) online questionnaires were distributed to respondents. Out of this, a total of ninety-one (91) responses were received, giving a 91% response rate.

### 4.3 Demographics of Respondents

Respondent demographics are critical in determining how respondents react to questionnaires; hence, it is critical to analyse these demographic aspects and assess their potential effect on the research output. Consequently, demographic variables such as gender, age, employment experience, and educational attainment are suitably examined.

*Table 4.1 Background Information on Respondents*

| CONSTRUCTS                           |                        | FREQUENC<br>Y | PERCENTAGE<br>(%) |
|--------------------------------------|------------------------|---------------|-------------------|
| Length of operation                  | 1-5                    | 21            | 23.1              |
|                                      | 6-10                   | 18            | 19.8              |
|                                      | 11-15                  | 25            | 27.5              |
|                                      | Above 15 years         | 27            | 29.7              |
| Gender of Respondents                | Male                   | 57            | 62.6              |
|                                      | Female                 | 34            | 37.4              |
| Age of Respondent                    | Below 20 years         | -             | -                 |
|                                      | 20 to 29               | 9             | 9.9               |
|                                      | 30 to 39               | 44            | 48.4              |
|                                      | 40 to 50               | 30            | 33                |
|                                      | Above 50 years         | 8             | 8.8               |
| Working experience of respondents    | 1-5 years              | 23            | 25.3              |
|                                      | 6-10 years             | 19            | 20.9              |
|                                      | 11-15 years            | 28            | 30.8              |
|                                      | Above 15 years         | 21            | 23.1              |
| The educational level of respondents | HND                    | 17            | 18.7              |
|                                      | 1 <sup>st</sup> Degree | 40            | 44                |
|                                      | Masters                | 24            | 26.4              |
|                                      | PhD                    | 1             | 1.1               |
|                                      | Professional           | 7             | 7.7               |
|                                      | Others                 | 2             | 2.2               |

*Source: Field study (2022)*

Table 4.1 presents the demographic results of the study. The table revealed that 70.3% of the responding firms have operated not more than 15 years, while the remaining 29.7% have existed for more than 15 years. 62.6% of the respondents are males, and the remaining 37.4% are females. 92% of the respondents are not more than 50 years, whilst the remaining 8.8% are above 50 years old. The table also revealed that 25.3% of the respondents have no more than 5

years of working experience, 20.9% between 6 to 10 years of experience, 30.8% between 11 to 15 years of experience and 23.1 above 15 years. The table also indicates that 18.7% of respondents have a minimum qualification of HND, 44% 1<sup>st</sup> degree, 26.4% have Masters, 1.1% have PhD, 7.7 professional qualifications and 2.2% with other qualifications

#### 4.4 Descriptive Statistics

In this section, the computed descriptive statistics for sustainable supply chain management practices, supply chain dynamic capability and supply chain performance are analysed using mean, minimum, maximum and standard deviation

##### 4.4.1 Sustainable Supply Chain Management Practices

Sustainable supply chain management practices, the predictor variable is operationalised using fifteen items adopted from Paulraj et al. (2017). Table 4.2 illustrates the descriptive study of Sustainable supply chain management practices

Table 4.2 Descriptive statistics for Sustainable supply chain management practices

| Items   | Max        | Min      | Mean          | SD             |
|---|------------|----------|---------------|----------------|
| When designing products, we pay attention to reduced consumption of material/energy                           | 1          | 7        | 5.21          | 1.354          |
| When designing products, we pay attention to reuse, recycling, and/or recovery of material                    | 1          | 7        | 5.11          | 1.32           |
| We design our products to use environmentally friendly materials  | 1          | 7        | 5.22          | 1.365          |
| We design our products with standardised components to facilitate reuse                                       | 1          | 7        | 5.23          | 1.257          |
| We use life cycle analysis to evaluate the environmental impacts of our products                              | 1          | 7        | 5.24          | 1.089          |
| The design of our processes is heavily dependent on sustainability goals                                      | 1          | 7        | 5.19          | 1.192          |
| We evaluate our existing processes to reduce their impact on the environment                                  | 3          | 7        | 5.44          | 1.087          |
| We have a formal design for environment guidelines for process design   | 2          | 7        | 5.33          | 1.055          |
| We constantly reengineer our processes to reduce their environmental impact                                   | 1          | 7        | 5.32          | 1.191          |
| We improve the environmental friendliness of our production   | 2          | 7        | 5.36          | 1.188          |
| We cooperate with our suppliers to achieve sustainability objectives  | 2          | 7        | 5.42          | 1.106          |
| We provide our suppliers with sustainability requirements for their processes                                 | 3          | 7        | 5.48          | 1.037          |
| We collaborate with our suppliers to provide products and/or services that support our sustainability goals   | 4          | 7        | 5.45          | 1.057          |
| We develop a mutual understanding of responsibilities regarding sustainability performance with our suppliers | 3          | 7        | 5.49          | 1.037          |
| We conduct joint planning to anticipate and resolve sustainability-related problems with our suppliers        | 2          | 7        | 5.26          | 1.052          |
| <b>TOTAL SCORE</b>  | <b>3.6</b> | <b>7</b> | <b>5.3172</b> | <b>0.78154</b> |

Source: Field study (2022)

The table presents descriptive statistics for sustainable supply chain management practices, including maximum, minimum, mean, and standard deviation (SD) for each item, as



well as a total score. When designing products, the study found that the mean values for paying attention to reduced consumption of material/energy, reuse/recycling/recovery of material, and environmentally friendly materials were above 5, indicating that these practices are relatively well established. The mean value for designing products with standardized components to facilitate reuse was slightly higher, indicating that this practice is more established.

Meanwhile, the use of life cycle analysis to evaluate the environmental impacts of products received the highest mean value of 5.24, indicating that this practice is very established. Regarding the design of processes, the study found that the mean values for the design's heavy dependence on sustainability goals, the evaluation of existing processes to reduce their impact on the environment, and the formal design for environment guidelines for process design were all above 5, indicating that these practices are well established.

The means for constantly reengineering processes to reduce their environmental impact and improving the environmental friendliness of production were also high, indicating that these practices are quite established. In terms of collaboration with suppliers, the mean values for cooperating with suppliers to achieve sustainability objectives, providing suppliers with sustainability requirements for their processes, collaborating with suppliers to provide products and/or services that support sustainability goals, developing a mutual understanding of responsibilities regarding sustainability performance with suppliers, and conducting joint planning to anticipate and resolve sustainability-related problems with suppliers were all above 5, indicating that these practices are well established.

The total score was 5.3172, which is closer to the maximum value of 7 than the minimum value of 3.6, indicating that overall, sustainable supply chain management practices are relatively well established in the study context. The SD values for all items were relatively high, ranging from 1.037 to 1.365, indicating that there was considerable variability in responses across the sample. The lowest and highest means also imply that there is room for improvement in some areas, such as conducting joint planning to anticipate and resolve sustainability-related problems with suppliers, where the mean was only 5.26. Overall, the results suggest that the study context has established sustainable supply chain management practices to a significant extent, although there is still room for improvement in some areas. The high variability in responses suggests that there may be different levels of adoption and understanding of sustainable supply chain practices across the sample.

#### 4.4.2 Supply Chain Dynamic Capabilities

Supply Chain Dynamic Capabilities, the moderating variable, are operationalised using fourteen (14) items adopted from Li and Liu (2014). Table 4.3 illustrates the descriptive study of Supply Chain Dynamic Capabilities

*Table 4.3 Descriptive Statistics for Supply Chain Dynamic Capabilities*

| <b>Items</b>  | <b>Min</b> | <b>Max</b> | <b>Mean</b> | <b>SD</b> |
|---|------------|------------|-------------|-----------|
| We can perceive environmental change before competitors                                 | 3          | 7          | 5.59        | 1.033     |
| We often have meetings to discuss the market demand                                     | 3          | 7          | 5.45        | 1.098     |
| We can fully understand the impact of the internal and external environment             | 2          | 7          | 5.49        | 1.089     |
| We can feel the major potential opportunities and threats                               | 3          | 7          | 5.42        | 1.001     |
| We have a perfect information management system   | 3          | 7          | 5.38        | 1.133     |
| We can quickly deal with conflicts in the strategic decision-making process             | 3          | 7          | 5.34        | 1.067     |
| Under many circumstances, we can make a timely decision to deal with strategic problems | 3          | 7          | 5.33        | 1.065     |
| We can remedy quickly to unsatisfactory customers                                       | 2          | 7          | 5.4         | 1.144     |



|   |             |          |               |                |
|---|-------------|----------|---------------|----------------|
| We can reconfigure resources in time to address environmental change. | 2           | 7        | 5.46          | 0.992          |
| Our strategic changes can be efficiently carried out                  | 2           | 7        | 5.33          | 1.044          |
| Good cooperation exists among different functions                     | 2           | 7        | 5.51          | 1.004          |
| We help each other in strategic change implementation                 | 2           | 7        | 5.38          | 1.052          |
| We have a proper awarding and controlling system                      | 3           | 7        | 5.34          | 1.013          |
| We can efficiently improve strategic change implementation            | 1           | 7        | 5.41          | 1.075          |
| <b>TOTAL SCORE</b>  | <b>3.29</b> | <b>7</b> | <b>5.4168</b> | <b>0.76859</b> |

*Source: Field study (2022)*

The table presents the descriptive statistics for supply chain dynamic capabilities, including the minimum, maximum, mean, and standard deviation (SD) for each item, as well as a total score. The item 'we can perceive environmental change before competitors' had a mean score of 5.59 indicates that this capability is well-established in the study context, with organizations being able to detect environmental changes before their competitors. The item we often have meetings to discuss the market demand had a mean score of 5.45 indicates that this capability is relatively well-established in the study context, with organizations holding regular meetings to discuss market demand.

The item we can fully understand the impact of the internal and external environment had a mean score of 5.49 indicates that this capability is well-established in the study context, with organizations being able to comprehend the impact of internal and external environmental factors. The item we can feel the major potential opportunities and threats: The mean score of 5.42 indicates that this capability is relatively well-established in the study context, with organizations being able to sense major potential opportunities and threats. The item we have a perfect information management system had a mean score of 5.38 indicates that this capability is relatively well-established in the study context, with organizations having a well-functioning information management system.

The item we can quickly deal with conflicts in the strategic decision-making process had a mean score of 5.34 indicates that this capability is relatively well-established in the study context, with organizations being able to resolve conflicts in strategic decision-making in a timely manner. The item under many circumstances, we can make a timely decision to deal with strategic problems had a mean score of 5.33 indicates that this capability is relatively well-established in the study context, with organizations being able to make timely decisions to address strategic problems in most situations.

The item we can remedy quickly to unsatisfactory customers had a mean score of 5.4 indicates that this capability is relatively well-established in the study context, with organizations being able to address unsatisfactory customers promptly. The item we can reconfigure resources in time to address environmental change had mean score of 5.46 indicates that this capability is relatively well-established in the study context, with organizations being able to reconfigure their resources in a timely manner to address environmental changes. The item our strategic changes can be efficiently carried out had a mean score of 5.33 indicates that this capability is relatively well-established in the study context, with organizations being able to implement strategic changes efficiently.

The item good cooperation exists among different functions had a mean score of 5.51 indicates that this capability is well-established in the study context, with organizations having good cooperation among different functions. The item we help each other in strategic change implementation had a mean score of 5.38 indicates that this capability is relatively well-established in the study context, with organizations providing support to each other during strategic change implementation. The item we have a proper awarding and controlling system had a mean score of 5.34 indicates that this capability needs improvement in the study context, with organizations having a less effective system for awarding and controlling. Lastly, the item

we can efficiently improve strategic change implementation had a mean score of 5.41 indicates that this capability is relatively well-established in the study context, with organizations being able to improve strategic change implementation efficiently. The overall mean score of 5.4168 indicates that supply chain dynamic capabilities are relatively well-established in the study context. However, the high variability in responses and the lower mean score of the awarding and controlling system capability suggest that there is still room for improvement in some areas to ensure a uniform understanding and adoption of supply chain dynamic capabilities across the sample.

#### 4.4.3 Supply Chain Performance

Supply Chain Performance, the outcome variable, is operationalised using fourteen (14) items adopted from Asamoah et al. (2021). Table 4.4 illustrates a descriptive study of Supply Chain Performance

*Table 4.4 Descriptive statistics for Supply Chain Performance*

| Items   | Min         | Max      | Mean          | SD             |
|---|-------------|----------|---------------|----------------|
| Our firm, with supply chain partners, offers highly reliable products                                 | 1           | 7        | 5.67          | 1.033          |
| Our firm, with supply chain partners, offers high-quality products to our customers                   | 2           | 7        | 5.53          | 1.129          |
| Our firm and supply chain partners have helped each other to improve product quality                  | 2           | 7        | 5.43          | 1.117          |
| Our firm with supply chain partners increases the rate at which we fulfil customer orders             | 2           | 7        | 5.49          | 1.099          |
| Our firm with supply chain partners increases our inventory turns                                     | 2           | 7        | 5.43          | 1.045          |
| Our firm, with supply chain partners, reduces the inbound and outbound costs of transport             | 2           | 7        | 5.32          | 1.084          |
| Our firm, with supply chain partners, reduces warehousing and inventory holding costs                 | 2           | 7        | 5.51          | 0.993          |
| Our firm, with supply chain partners, meets on-time delivery requirements for all product             | 2           | 7        | 5.27          | 1.034          |
| Our firm with supply chain partners reached agreed costs per unit as compared with the industry       | 2           | 7        | 5.37          | 1.061          |
| Our firm, with supply chain partners, offers a variety of products and services efficiently           | 3           | 7        | 5.46          | 0.958          |
| Our firm, with supply chain partners, offers customised products and services with different features | 1           | 7        | 5.27          | 1.044          |
| Our firm, with supply chain partners, meets different customer volume requirements efficiently        | 1           | 7        | 5.34          | 1.118          |
| Our firm with supply chain partners has a short customer response time in comparison to the industry  | 2           | 7        | 5.29          | 1.036          |
| Our firm, with supply chain partners, responds to and accommodates demand variations                  | 4           | 7        | 5.42          | 0.932          |
| <b>OVERALL SCORE</b>  | <b>2.86</b> | <b>7</b> | <b>5.4144</b> | <b>0.81275</b> |

*Source: Field study (2022)*

The table presents the descriptive statistics for Supply Chain Performance across various performance measures, ranging from product quality to responsiveness to customer demands. The responses are scored on a scale from 1 to 7, with higher scores indicating better performance. The Mean represents the average score, and the SD (Standard Deviation) measures the dispersion of the data from the mean. Highly reliable products: With a mean of 5.67 and an SD

of 1.033, this item has the highest mean score among all performance measures, suggesting that the firms and their supply chain partners are performing well in offering highly reliable products. The relatively low SD implies that the responses are closely clustered around the mean, indicating consistency in the performance of the firms. High-quality products: The mean score of 5.53 and an SD of 1.129 show that the firms and their supply chain partners are offering high-quality products to their customers. The slightly higher SD indicates a bit more variability in the responses compared to the first measure.

Improved product quality: With a mean of 5.43 and an SD of 1.117, this measure suggests that firms and supply chain partners have successfully collaborated to improve product quality. However, there is some variability in the extent of improvement across the firms. Fulfilling customer orders: The mean of 5.49 and an SD of 1.099 indicate that firms and their supply chain partners are relatively efficient in fulfilling customer orders. The responses, however, vary to some extent. Increased inventory turns: The mean of 5.43 and an SD of 1.045 suggest that firms with supply chain partners have managed to increase inventory turns, indicating efficient inventory management. The responses are relatively consistent across firms.

Reduced transport costs: With a mean of 5.32 and an SD of 1.084, this measure indicates that firms and their supply chain partners are moderately successful in reducing inbound and outbound transport costs. There is some variability in the extent of cost reduction across the firms. Reduced warehousing and inventory holding costs: The mean score of 5.51 and an SD of 0.993 suggest that firms and their supply chain partners are quite successful in reducing warehousing and inventory holding costs. The responses are relatively consistent in this measure. On-time delivery: The mean score of 5.27 and an SD of 1.034 indicate that firms and their supply chain partners are moderately successful in meeting on-time delivery requirements for all products. However, there is some variability in the performance across firms.

Agreed costs per unit: With a mean of 5.37 and an SD of 1.061, this measure suggests that firms and their supply chain partners have reached agreed costs per unit as compared with the industry. The responses, however, vary to some extent. Variety of products and services: The mean score of 5.46 and an SD of 0.958 indicate that firms and their supply chain partners offer a variety of products and services efficiently. The relatively low SD implies that the responses are closely clustered around the mean. Customised products and services: The mean of 5.27 and an SD of 1.044 suggest that firms and their supply chain partners are moderately successful in offering customised products and services with different features. There is some variability in the performance across firms. Customer volume requirements: With a mean of 5.34 and an SD of 1.118, this measure indicates that firms and their supply chain partners meet different customer volume requirements efficiently. However, there is some variability in the performance across firms.

Short customer response time: With a mean score of 5.29 and an SD of 1.036, this measure suggests that firms and their supply chain partners have a relatively short customer response time compared to the industry. However, there is some variability in the performance across firms, as indicated by the SD. Responsiveness to demand variations: The mean score of 5.42 and an SD of 0.932 indicate that firms and their supply chain partners are successful in responding to and accommodating demand variations. The relatively low SD implies that the responses are closely clustered around the mean, suggesting consistency in the performance of the firms.

With an overall mean score of 5.4144 and an SD of 0.81275, the results suggest that the firms and their supply chain partners are performing relatively well in the various performance measures. The relatively low SD indicates consistency in the overall performance across firms. The lowest mean score (5.27) is found in the on-time delivery and customised products and services measures, suggesting that there is room for improvement in these areas. The highest mean score (5.67) is observed in offering highly reliable products, indicating that this is an area of strength for the firms and their supply chain partners.

#### *4.5 Test of Validity and Reliability*

This section examines the validity and reliability of the data gathered. The internal consistency of the data was determined using Cronbach's alpha coefficient, and the validity of the data was determined using exploratory factor analysis (EFA). A Cronbach's alpha value of 0.70 or above is deemed acceptable on the Alpha scale. According to the exploratory factor

analysis results, each item will have a loading coefficient greater than 0.50 on the constructs intended to evaluate. Based on the EFA, the Kaiser-Meyer-Olkin (KMO) test is anticipated to provide a score of more than 0.50, indicating that the sample size is suitable for the research.

*Table 4.5 Reliability Test – Alpha Cronbach*

| Construct                           | Number of items | Alpha Cronbach |
|-------------------------------------|-----------------|----------------|
| Sustainable Supply Chain management | 15              | 0.913          |
| Supply Chain Dynamic Capabilities   | 14              | 0.931          |
| Supply Chain Performance            | 14              | 0.948          |

*Source: Field study (2022)*

Table 4.5 shows that Sustainable Supply Chain Management (the independent variable) has a Cronbach Alpha score of 0.913, Supply Chain Dynamic Capabilities (the moderator) has a Cronbach Alpha score of 0.931, and Supply Chain Performance (the dependent variable) has a Cronbach Alpha score of 0.948, as determined by Cronbach's Alpha test. The results show that the data gathered on the three study variables had strong internal consistency, indicating that the information obtained was accurate and reliable.

*Table 4.6 Validity Test - Exploratory Factor Analysis (EFA)*

| Measures  | Variables |      |     |
|---|-----------|------|-----|
|   | SSCM      | SCDC | SCP |
| When designing products, we pay attention to reduced consumption of material/energy                           | 0.753     |      |     |
| When designing products, we pay attention to reuse, recycling, and/or recovery of material                    | 0.7       |      |     |
| We design our products to use environmentally friendly materials  | 0.795     |      |     |
| We design our products with standardised components to facilitate reuse                                       | 0.698     |      |     |
| We use life cycle analysis to evaluate the environmental impacts of our products                              | 0.855     |      |     |
| The design of our processes is heavily dependent on sustainability goals                                      | 0.755     |      |     |
| We evaluate our existing processes to reduce their impact on the environment                                  | 0.565     |      |     |
| We have a formal design for environment guidelines for process design   | 0.753     |      |     |
| We constantly reengineer our processes to reduce their environmental impact                                   | 0.794     |      |     |
| We improve the environmental friendliness of our production   | 0.749     |      |     |
| We cooperate with our suppliers to achieve sustainability objectives  | 0.776     |      |     |
| We provide our suppliers with sustainability requirements for their processes                                 | 0.715     |      |     |
| We collaborate with our suppliers to provide products and/or services that support our sustainability goals   | 0.719     |      |     |
| We develop a mutual understanding of responsibilities regarding sustainability performance with our suppliers | 0.718     |      |     |
| We conduct joint planning to anticipate and resolve sustainability-related problems with our suppliers        | 0.74      |      |     |



|   |       |       |
|---|-------|-------|
| We can perceive environmental change before competitors   | 0.751 |       |
| We often have meetings to discuss the market demand   | 0.644 |       |
| We can fully understand the impact of the internal and external environment                           | 0.759 |       |
| We can feel the major potential opportunities and threats   | 0.706 |       |
| We have a perfect information management system   | 0.662 |       |
| We can quickly deal with conflicts in the strategic decision-making process                           | 0.749 |       |
| Under many circumstances, we can make a timely decision to deal with strategic problems               | 0.668 |       |
| We can remedy quickly to unsatisfactory customers   | 0.674 |       |
| We can reconfigure resources in time to address environmental change.                                 | 0.707 |       |
| Our strategic changes can be efficiently carried out  | 0.787 |       |
| Good cooperation exists among different functions   | 0.763 |       |
| We help each other in strategic change implementation   | 0.852 |       |
| We have a proper awarding and controlling system  | 0.671 |       |
| We can efficiently improve strategic change implementation  | 0.667 |       |
| Our firm, with supply chain partners, offers highly reliable products                                 |       | 0.796 |
| Our firm, with supply chain partners, offers high-quality products to our customers                   |       | 0.661 |
| Our firm and supply chain partners have helped each other to improve product quality                  |       | 0.82  |
| Our firm with supply chain partners increases the rate at which we fulfil customer orders             |       | 0.74  |
| Our firm with supply chain partners increases our inventory turns                                     |       | 0.769 |
| Our firm, with supply chain partners, reduces inbound and outbound costs of transport                 |       | 0.751 |
| Our firm, with supply chain partners, reduces warehousing and inventory holding costs                 |       | 0.683 |
| Our firm, with supply chain partners, meets on-time delivery requirements for all product             |       | 0.675 |
| Our firm with supply chain partners reached agreed costs per unit as compared with the industry       |       | 0.704 |
| Our firm, with supply chain partners, offers a variety of products and services efficiently           |       | 0.763 |
| Our firm, with supply chain partners, offers customised products and services with different features |       | 0.805 |
| Our firm, with supply chain partners, meets different customer volume requirements efficiently        |       | 0.774 |
| Our firm with supply chain partners has a short customer response time in comparison to the industry  |       | 0.507 |
| Our firm, with supply chain partners, responds to and accommodates demand variations                  |       | 0.749 |

Source: Field study (2022) Notes: Sustainable Supply chain management (SSCM); Supply chain dynamic capability (SCDC); Supply chain performance (SCP)

Detailed information on the exploratory factor analysis used to assess the validity of the data obtained is provided in Table 4.6. All fifteen (15) items developed to assess Sustainable Supply chain management, fourteen (14) items developed to assess Supply chain dynamic capability, and fourteen (14) items developed to assess Supply chain performance all scored higher than the 0.50 criterion, demonstrating that all items measured the constructs for which they were developed and, as a result, were valid.

*Table 4.7 KMO and Bartlett's Test*

In research, the Kaiser-Meyer-Olkin (KMO) test is used to assess the sampling appropriateness of data used for Factor Analysis.

| <b>KMO and Bartlett's Test</b>                   |                    |          |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | .897     |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 3174.944 |
|  | df                 | 903      |
|  | Sig.               | .000     |

*Source: Field study (2022)*

Table 4.7 shows that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was .897 and that Bartlett's Test of Sphericity was approximately 3174.944; Df 903;  $p < 0.01$ . According to Kaiser (2016), KMO levels between 0.8 and 1 are acceptable. Therefore, the KMO = 0.897 suggests that the sample size of ninety-one (91) respondents was suitable for the study.

## 4.6 Inferential Statistics

This section investigates the relationship between Sustainable Supply Chain Management, Supply Chain Dynamic Capabilities and Supply Chain Performance. Ordinary Least Regression and Moderated Hierarchical Regression are used to test the study's hypotheses. Correlation analysis is used to test the relationships between the constructs of the study.

### 4.6.1 Correlation Analysis

Correlation analysis determines the degree to which two or more variables are connected. The correlation coefficient is calculated using correlation analysis, which shows how much one variable changes when the other changes.

*Table 4.8 Correlation amongst the Variables*

| <b>Variables</b>                           | <b>SSCM</b> | <b>SCDC</b> | <b>SCP</b> | <b>Mean</b> | <b>SD</b> | <b>Skewness</b> |
|--|-------------|-------------|------------|-------------|-----------|-----------------|
| <b>Sustainable Supply Chain management</b> | 1           |             |            | 5.3172      | 0.78154   | 0.426           |
| <b>Supply Chain Dynamic Capabilities</b>   | .646**      | 1           |            | 5.4168      | 0.76859   | 0.378           |
| <b>Supply Chain Performance</b>            | .665**      | .908**      | 1          | 5.4144      | 0.81275   | -0.124          |

**Source: Field study (2022) Notes:** Sustainable Supply chain management (SSCM); Supply chain dynamic capability (SCDC); Supply chain performance (SCP)

Sustainable Supply Chain Management has a strong positive link (0.646) with the Supply Chain Dynamic Capabilities, according to the correlation results in Table 4.8, and this relationship is statistically significant at 0.01. Sustainable Supply Chain Management and Supply Chain Performance have a positive (0.665) and statistically significant (0.01) relationship. Finally, Supply Chain Dynamic Capabilities are statistically significant at 0.01 and highly correlate with Supply Chain Performance (0.908). As a result, all variables have a positive and statistically significant association, showing that as one variable increases, the other variables increase.

## 4.6.2 Regression Analysis

This section covers the testing of the study's hypotheses in detail. Regression analysis is a powerful statistical method that allows you to examine the relationship between two or more variables of interest

### 4.6.2.1 Sustainable supply chain management and supply chain performance

H1 for the study assesses the effect of Sustainable supply chain management on supply chain performance. The Tables below provide the results of the regression for H1

Table 4.9 Model Summary

| Model Summary  |                   |          |                   |                            |
|--|-------------------|----------|-------------------|----------------------------|
| Model  | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1  | .665 <sup>a</sup> | .442     | .436              | .61057                     |
| a. Predictors: (Constant), Sustainable supply chain management |                   |          |                   |                            |

Source: Field study (2022)

As per Table 4.9, an  $R^2$  of 0.442 indicates that 44.2% of the variation in supply chain performance is accounted for by Sustainable supply chain management. Also, an adjusted  $R^2$  of .436 indicates that Sustainable supply chain management accounts for an additional 49.3% of the variation in supply chain performance.

Table 4.10 ANOVA

| ANOVA <sup>a</sup>   |            |                |    |             |        |                   |
|--|------------|----------------|----|-------------|--------|-------------------|
| Model  |            | Sum of Squares | df | Mean Square | F      | Sig.              |
| 1  | Regression | 26.272         | 1  | 26.272      | 70.473 | .000 <sup>b</sup> |
|  | Residual   | 33.179         | 89 | .373        |        |                   |
|  | Total      | 59.451         | 90 |             |        |                   |
| a. Dependent Variable: Supply chain Performance                |            |                |    |             |        |                   |
| b. Predictors: (Constant), Sustainable supply chain management |            |                |    |             |        |                   |

Source: Field study (2022)

Table 4.10 shows that Sustainable supply chain management could accurately explain the variation in Supply chain Performance considering  $p < 0.01$ . In other words, Table 4.10 highlights that the variations in Supply chain Performance are a direct result of Sustainable supply chain management

Table 4.11 Coefficient of Variation

| Coefficients <sup>a</sup> |                                     |                             |            |                           |       |      |
|---------------------------|-------------------------------------|-----------------------------|------------|---------------------------|-------|------|
| Model                     |                                     | Unstandardised Coefficients |            | Standardised Coefficients | t     | Sig. |
|                           |                                     | B                           | Std. Error | Beta                      |       |      |
| 1                         | (Constant)                          | 1.739                       | .443       |                           | 3.929 | .000 |
|                           | Sustainable supply chain management | .691                        | .082       | .665                      | 8.395 | .000 |

a. Dependent Variable: Supply chain Performance

Source: Field study (2022)

Table 4.11 shows a 0.691 increase in Supply chain Performance for every Sustainable supply chain management unit. This is a result of the path coefficient:  $\beta = .691$ ,  $t = 8.395$ ,  $p < .01$ . Therefore, there is significant support for H1, which states a positive and significant effect of Sustainable supply chain management on Supply chain Performance.

#### 4.6.2.2 Supply chain dynamic capability Supply Chain Performance

H2 for the study assesses the effect of Supply chain dynamic capability on Supply Chain Performance. The Tables below provide the results of the regression for H2

Table 4.12 Model Summary

| Model Summary  |                   |          |                   |                            |
|--|-------------------|----------|-------------------|----------------------------|
| Model  | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1  | .908 <sup>a</sup> | .824     | .822              | .34266                     |
| a. Predictors: (Constant), Supply chain dynamic capability |                   |          |                   |                            |

Source: Field study (2022)

As per Table 4.12, an  $R^2$  of 0.824 indicates that the Supply chain dynamic capability accounts for 82.4% of the variation in supply chain performance. Also, an adjusted  $R^2$  of .822 indicates that the Supply chain dynamic capability accounts for an additional 82.2% of the variation in supply chain performance.

Table 4.13 ANOVA

| ANOVA <sup>a</sup>   |            |                |    |             |         |                   |
|--|------------|----------------|----|-------------|---------|-------------------|
| Model  |            | Sum of Squares | df | Mean Square | F       | Sig.              |
| 1  | Regression | 49.001         | 1  | 49.001      | 417.318 | .000 <sup>b</sup> |
|  | Residual   | 10.450         | 89 | .117        |         |                   |
|  | Total      | 59.451         | 90 |             |         |                   |
| a. Dependent Variable: Supply chain Performance            |            |                |    |             |         |                   |
| b. Predictors: (Constant), Supply chain dynamic capability |            |                |    |             |         |                   |

Source: Field study (2022)

Table 4.13 shows that the Supply chain dynamic capability could accurately explain the variation in Supply chain Performance considering  $p < 0.01$ . In other words, Table 4.13 highlights that the variations in Supply chain Performance are a direct result of the Supply chain dynamic capability

Table 4.14 Coefficient of Variation

| Coefficients <sup>a</sup> |            |                             |            |                           |      |
|---------------------------|------------|-----------------------------|------------|---------------------------|------|
| Model                     |            | Unstandardised Coefficients |            | Standardised Coefficients | t    |
|                           |            | B                           | Std. Error | Beta                      |      |
| 1                         | (Constant) | .214                        | .257       |                           | .833 |



|   |                                 |      |      |      |        |      |
|---|---------------------------------|------|------|------|--------|------|
|   | Supply chain dynamic capability | .960 | .047 | .908 | 20.428 | .000 |
| a. Dependent Variable: Supply chain Performance |                                 |      |      |      |        |      |

Source: Field study (2022)

Table 4.14 shows a 0.960 increase in Supply chain Performance for every unit of the Supply chain dynamic capability. This is a result of the path coefficient:  $\beta = .960$ ,  $t = 20.428$ ,  $p < .01$ . Therefore, there is significant support for H2, which states a positive and significant effect of Supply Chain dynamic capability on Supply chain Performance.

#### 4.6.2.3 The Moderating role of Supply chain dynamic capability

H3 for the study assesses the moderating role of the Supply chain dynamic capability on the relationship between sustainable supply chain management and supply chain performance. The Tables below provide the results of the regression for H3

Table 4.15 Model Summary

| Model Summary  |          |       |          |        |         |       |
|--|----------|-------|----------|--------|---------|-------|
| R  | R Square | MSE   | F        | df1    | df2     | P     |
| 0.9166   | .8402    | .1092 | 152.4967 | 3.0000 | 87.0000 | .0000 |
| a. Predictors: (Constant), Sustainable Supply Chain Management and Supply chain dynamic capability |          |       |          |        |         |       |

Source: Field study (2022)

As per Table 4.15, an  $R^2$  of 0.8402 indicates that the interaction between Sustainable Supply Chain management and Supply chain dynamic capability accounts for 84% of the variation in supply chain performance.

Table 4.16 Model 1

| Model 1                  |        |        |         |       |         |        |
|--------------------------|--------|--------|---------|-------|---------|--------|
|                          | coeff  | se     | t       | p     | LLCI    | ULCI   |
| Constant                 | -2.976 | 1.6734 | -1.7192 | .0891 | -6.2029 | .4492  |
| Sustainable Supply Chain | .6988  | .3297  | 2.1194  | .0369 | .0435   | 1.3542 |
| Supply chain dynamic     | 1.3396 | .2801  | 4.7825  | .0000 | .7829   | 1.8964 |
| Interaction              | -.0919 | .0522  | -1.7223 | .0886 | -.1979  | .0141  |

Source: Field study (2022)

According to Table 4.16, for every unit of interaction between Sustainable Supply Chain Management and Supply chain dynamic capability, there is a 0.0919 decrease in supply chain performance. This is a result of the path coefficient:  $\beta = -.0919$ ,  $t = -1.7223$ ,  $p > .01$ . There is no support for H3 which states a positive moderation effect of supply chain dynamic capability on the effect of sustainable supply chain management on supply chain performance.

#### 4.6.3 Hypotheses Table

This section summarises the result from the regression analyses used to test the study's hypotheses.

Table 4.17 Hypotheses Table

| Hypothesis | Path Analysis     | Expected effect | Results          | T-Values | Conclusion    |
|------------|-------------------|-----------------|------------------|----------|---------------|
| H1         | SSCM → SCP        | Positive        | .691 (p < 0.01)  | 8.395    | Supported     |
| H2         | SCDC → SCP        | Positive        | .960 (p < 0.01)  | 20.428   | Supported     |
| H3         | SSCM × SCDC → SCP | Positive        | -.0919 (p > .05) | -1.7223  | Not Supported |

Source: Field study (2022) Notes: Sustainable Supply chain management (SSCM); Supply chain dynamic capability (SCDC); Supply chain performance (SCP)

## 4.7 Discussion of Results

The regression analysis results are further discussed regarding the stated hypotheses in this section.

### 4.7.1 Sustainable supply chain management and supply chain performance

Regression results for H1 revealed an increase in Supply chain Performance for every Sustainable supply chain management unit. The result is consistent with the reviewed literature. The RBV theory stresses that firms can leverage their resources to develop unique organisational capabilities that their competitors cannot copy (Barney, 2020). The literature on RBV suggests that capabilities can be built through complex interactions between the firm's resources (Barney, 2020). Such resources can be the building blocks for achieving higher supply chain performance. Sustainable supply chain management as a resource can be leveraged and deployed uniquely to enhance supply chain performance.

The RBV in this study is proposed to describe how the different dimensions of sustainable procurement as core and unique organisational competency enhance supply chain performance. Accordingly, this study argues for a positive relationship between sustainable procurement and supply chain performance. The rationale is that strong evidence shows that sustainable supply chain management enhances performance. Studies such as (Dubey et al., 2017; Matthews et al., 2016; Morioka & de Carvalho, 2016; Saberi et al., 2019) have revealed a positive relationship between sustainable supply chain management and outcome variables such as supply chain performance, financial performance, competitive advantage and firm performance. In contrast, studies such as (Genovese et al., 2017; Khan et al., 2021) revealed a negative relationship, while studies such as (Mathivathanan et al., 2018) have revealed no relationship. Yet still (Ghadge et al., 2019; Islam et al., 2017; Ruparathna and Hewage, 2015b) have revealed an indirect positive effect of sustainable supply chain management on firm performance

### 4.7.2 Supply chain dynamic capability Supply Chain Performance

Regression results for H2 also revealed an increase in Supply chain Performance for every unit of the Supply chain dynamic capability. This is consistent with the reviewed literature. The Resource-based view explains that some organisational resources could be tangible or intangible (dynamic capability). However, such company resources must be unique so firms can utilise them efficiently to achieve growth and development. Also, differences in supply chain performance are attributed to differences in resources and capabilities (supply chain dynamic capability). This study proposes dynamic capability as an important intangible resource enhancing a firm's supply chain performance. Strong evidence shows a close relationship between supply chain dynamic capability and different performance outcomes (Kaur and Mehta, 2017; Li and Liu, 2014b; Schoemaker et al., 2018).

Some studies have shown that dynamic capabilities are required to adapt to the changes in the environment (Teece, 2018b). Others have noticed that dynamic capabilities increase a firm's ability to be flexible, responsive and agile, which is required for managing supply chain disruptions (Singh and del Giudice, 2019). Supply chain dynamic capability enables firms to adapt rapidly to changing environments, thereby reducing their risk and exposure due to volatility (Olufemi et al., 2014). In a nutshell, a firm's dynamic capability provides the firm with

the ability to respond flexibly to the volatility within the supply chain, thereby reducing disruptions and vulnerability to risks

#### *4.7.3 The Moderating role of Supply chain dynamic capability*

Regression results for H3 also revealed that for every unit of interaction between Sustainable Supply Chain Management and Supply chain dynamic capability, there is a decrease in supply chain performance. This is inconsistent with the literature reviewed. The RBV theory also stipulates that some organisational resources, such as the supply chain dynamic capability, could be intangible. Therefore, this study further contends that sustainable supply chain management's direct effects on supply chain performance depend on varying supply chain dynamic capability levels. Although prior studies (e.g., Narimissa et al., 2020a, 2020b; Sajjad et al., 2015) have demonstrated that sustainable supply chain management could drive performance outcomes, there has been inconsistency in the literature.

Other studies report that it positively impacts performance indirectly (e.g., Koberg and Longoni, 2019; Saeed and Kersten, 2019). Still, other studies find that the relationship between these concepts is either negative (e.g., Busse et al., 2017; Matthews et al., 2016) or non-significant (e.g., Mathivathanan et al., 2018; Touboullic and Walker, 2015). Accordingly, this study posits that the relationship between sustainable supply chain management and supply chain performance cannot be completely appreciated only through direct associations.

The study asserts that when supply chain dynamic capability is the effect of sustainable supply chain management on supply chain performance should be much stronger. Conversely, when supply chain dynamic capability is low, the effect of sustainable supply chain management on supply chain performance is likely to be much lower. The rationale is that today's environment is volatile, uncertain, complex, ambiguous and turbulent. Therefore, for effective management of sustainability throughout the supply chain, a firm needs its dynamic capability to stay in tune with environmental changes

## **5.0 CONCLUSIONS**

### *5.1 Introduction*

This chapter presents the summary of findings, conclusions and suggestions for future studies.

### *5.2 Summary of Findings*

The key findings from the study are summarised in this section

#### *5.2.1 Sustainable supply chain management and supply chain performance*

The study's first objective was to examine the effect of Sustainable supply chain management on supply chain performance. The study revealed that Sustainable supply chain management has a strong positive effect on supply chain performance.

#### *5.2.2 Supply Chain dynamic capability and supply chain performance*

The study's second objective was to examine the effect of Supply Chain dynamic capability and supply chain performance. The study revealed that Supply Chain dynamic capability has a strong positive effect on supply chain performance.

#### *5.2.3 Moderation role of Supply Chain dynamic capability*

The study's third objective was to examine the moderating role of Supply Chain dynamic capability in the relationship between Sustainable supply chain management and supply chain performance. The study that revealed Supply Chain dynamic capability does not moderate the relationship between Sustainable supply chain management and supply chain performance.

### *5.3 Conclusion*

Based on data obtained from ninety-one manufacturing firms operating within the regional capital, the study makes the following conclusion. First, key dimensions of sustainable supply chain management practices such as Sustainable product design, Sustainable process design, and Supply-side sustainability collaboration enhances supply chain performance such as reliability, efficiency and flexibility. Secondly, key dimensions of supply chain dynamic

capabilities enhance supply chain performance, such as reliability, efficiency and flexibility. Lastly, supply chain dynamic capabilities enhance supply chain performance such as reliability, efficiency, and flexibility and do not act as a catalyst for sustainable supply chains management practices such as Sustainable product design, Sustainable process design and Supply-side sustainability collaboration

## 5.4 Recommendations

This section provides the researcher's recommendations and suggestions for future studies

### 5.4.1 Recommendations for Managers and Policy Makers

The study finds that sustainable supply chain management positively affects supply chain performance. Based on this, the researcher recommends that managers incorporate sustainability throughout their supply chain by embedding sustainability into supplier selection, contracting, pricing arrangements and specification. These practices would further enhance sustainability across the supply chain and enhance supply chain performance.

Secondly, the study revealed a positive impact of supply chain dynamic capability on supply chain performance. Based on this, the researcher recommends that supply chain managers enhance their dynamic capabilities through continuous monitoring and scanning of the external environment and adopting and implementing industry 4.0 technologies. These would increase the firm's responsiveness and flexibility to adapt to environmental changes.

Lastly, the study revealed a negative moderation effect of supply chain dynamic capability on the relationship between sustainable supply chain management and supply chain performance. Based on this, the study recommends that supply chain managers conduct feasibility analysis and due diligence before implementing sustainable supply chain management to ascertain how dynamic capability could be used as a catalyst for the sustainable supply chain management.

### 5.4.2 Suggestions for Future Research

The study assessed the moderation role of supply chain dynamic capability on the relationship between sustainable supply chain management and supply chain performance. Supply chain performance has been well-researched. Therefore, to add to the existing literature on sustainable supply chain management, future studies are encouraged to consider researching the effect of absorptive capacity and supply chain resilience on the effect of sustainable supply chain management on sustainability performance

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