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Examining the factors influencing Sustainability Performance in the UK Food Industry

Martin Boakye Osei ^a (corresponding author), Thanos Papadopoulos ^b, Adolf Acquaye ^c

^a Bournemouth University Business School, Bournemouth University, Talbot Campus, Bournemouth, Dorset, United Kingdom, mosei@bournemouth.ac.uk.

^b Kent Business School, University of Kent, Medway Campus, Chatham, United Kingdom

^c Department of Management Science and Engineering, Khalifa University, Abu Dhabi, UAE

ABSTRACT

This research examines the role of organisational culture (OC) and supply chain integration (SCI) in improving sustainable supply chain performance (SSCP) in the food manufacturing industry in the UK. A competing Value Framework (CVF) was used to categorise OC into developmental, group, rational and hierarchical cultures. Qualitative interviews with 11 senior managers in the UK food industry were conducted and manually analysed. We found that three competing values in developmental, group, and hierarchical cultures are effective in implementing and achieving higher SSCP. The values inherent in these cultures also trigger internal and external integration through which the firms acquire sustainability ideas, knowledge, training, and skills from customers and suppliers to improve SSCP. We also found that within the context of sustainability, internal integration is critical to a successful external integration. The study contributes immensely to sustainability literature by highlighting the actual OC values relevant to achieving higher SSCP and establishing SCI's mediating role. The study further assesses how SCI is established and formed by firms on the verge of achieving higher SSCP. Managers are advised to adopt blended competing values (developmental, group and hierarchical culture) and strengthen and heighten systemic SCI to implement sustainability practices, improve SSCP as well as overcome sustainability challenges.

Keywords

Sustainable supply chain performance, Sustainability, Organisational Culture, Supply Chain Integration, Competing value framework.

1.0 Introduction

For the past decade, manufacturing firms have experienced pressure from various stakeholders on the attainment of higher sustainability performance in their supply chains (Meixell and Luoma 2015; Dubey et al. 2017; Pagell and Wu 2017). Nonetheless, several manufacturing firms around the globe are still facing challenges in implementing sustainability practices both at the firm and supply chain levels (Jabbour et al. 2019). The UK's food manufacturing industry which is considered very crucial to the economy has received several criticisms regarding the lower levels of sustainable supply chain performance (SSCP) (Ghadge et al. 2020). The issue is exacerbated by; the cross-border nature of the supply chains which as a result causes negative environmental impact in several nations; low economic performance due to high capital intensity and reduced levels of social practices especially for employees and other stakeholders (Ghadge et al. 2020; Carter et al. 2020). Consequently, researchers (e.g., Wijethilake et al. 2023; Osei et al. 2023) have been calling for a study into the factors capable of improving the SSCP. Within the context of sustainability, previous research has focused on examining the effect of formal or institutional factors with minimal emphasis on contextual or informal factors such as organisational culture (OC) (Miska et al. 2018). Linnenluecke and Griffiths (2010) and Wijethilake et al. (2023) highlighted the significance of harnessing the strength of OC in building resilient supply chains to effectively respond to social and environmental challenges. Thus, adopting a sustainability-oriented culture is key to achieving SSCP of several global supply chains.

A plethora of research (e.g., Kumar et al. 2020; Ghadge et al. 2020) has identified the various approaches to improving SSCP in the food industry. Due to this, food manufacturing firms are gradually reacting to the sustainability threats of stakeholders and harnessing sustainability as a competitive strategy (Kumar et al. 2020). The implementation of sustainability requires gradual changes to the operations, processes, and products in the firms which may be successful when a sustainability-supportive culture is in place (Linnenluecke and Griffith 2010; Wijethilake et al. 2023). Moreover, since OC constitutes the hub of the operations of manufacturing firms, introducing a new phenomenon such as sustainability warrants the support of appropriate cultural values (Cadden et al. 2020; Osei et al. 2023). A well-structured and supportive culture is very pertinent to ensuring employees and supply chain partners are sensitised towards working collaboratively for the achievement of a desired sustainability performance. Nonetheless, like this research, studies examining what constitutes the actual sustainability-supportive values and how food manufacturing firms and their supply chains can harness OC to improve SSCP are still underdeveloped. In this research, we operationalise the OC of the firms using the competing value framework (CVF) developed by (Quinn and Rohrbaugh 1983). This model is suitable for assessing the value orientations of organisations and accurately measuring firm-specific culture (Dubey et al. 2019). Using the CVF, we categorise OC into developmental, group, rational and hierarchical cultures. Using the CVF, Wijethilake et al. (2023) confirmed that all the dimensions of the CVF are conducive to organisational behaviour towards adopting sustainability practices. Osei et al. (2023) further confirmed that developmental, group and hierarchical cultures can enable firms to implement

sustainability practices and eventually achieve higher SSCP. However, none of this astounding research focused on the practical values critical to implementing sustainability practices to achieve higher SSCP and how these values enable the achievement of higher SSCP.

Further, Han and Huo (2020) examined the significance of supply chain integration (SCI) between downstream customers (customer integration (CI)) and upstream suppliers (supplier integration (SI)) to the reduction of environmental risk of supply chains. Their study further highlighted that effective external integration is dependent on strong internal integration. Impliedly, food manufacturing firms and their supply chains could exploit the skills, information, knowledge and expertise of internal employees, supply chain customers and suppliers in measuring and achieving higher SSCP. A plethora of studies (e.g., Blome et al. 2015; Weingarten et al. 2015; Kang et al. 2018; Osei et al. 2023) stressed the relevance of collaborating with customers and suppliers to enhancing the sustainability performance of firms. However, unlike this study, none of this existing research highlighted how and the extent to which the firms should collaborate with their customers and suppliers to enhance sustainability. Glavin et al. (2021) indicated that transformational partnership is critical to forming SCI to achieve higher SSCP. This means, there should be a transformational collaboration and systemic investment into SCI to make it highly effective for SSCP enhancement. However, studies demonstrating this are still lacking in literature requiring the need for more research to comprehensively examine how firms must form internal, customer and supplier integration to create an enabling environment for manufacturing firms to improve their SSCP.

Against this backdrop, this study seeks to provide answers to the following questions.

- (1) How can manufacturing firms harness the various values in the CVF to improve SSCP?
- (2) How do food manufacturing firms collaborate with their customers and suppliers across the supply chain to improve SSCP?

To provide answers to these questions, we adopt an inductive approach to conduct a thorough investigation into the OC, SCI and SSCP of the food manufacturing supply chains in the UK. Data through semi-structured interviews are collected from eleven (11) food manufacturing firms. Based on in-depth analysis, the study identifies the actual OC values and how SCI is established in the industry. The various measures of SSCP are also highlighted and the study further reveals how each of the OC values and the dimensions of SCI assist in the implementation and achievement of higher SSCP. Additionally, the research identifies the factors influencing sustainability performance in the industry.

The paper is structured as follows; Section 2 presents the literature review which has subsections focusing on SSCP and its influential factors, OC, SCI, and the relationship between each of the variables. Section 3 discusses the research methodology used in the study. Section 4 reveals the findings of the study, and the next section discusses the results in detail and further highlights the implications of the research to theory and practice. Finally, Section 6 concludes the study and reveals the limitations of the research.

2.0 Theoretical Underpinnings and Review

2.1 Sustainability and Sustainable Supply Chain Performance

The Brundtland Commission from the WCED defined sustainability as the “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987 p. 43). According to Rhadari et al. (2016), the infusion of environmental, social, and economic issues constitutes the triple bottom line. Explicitly, instilling environmental, economic, and social consciousness into the supply chain entails sustainable supply chain management (SSCM). SSCM ensures that a supply chain is socially just, eco-efficient and ethical. In other words, a sustainable supply chain takes reasonable steps to mitigate the environmental impact and implement measures to ensure the safety of the relevant stakeholders while at the same time remaining economically viable. Currently, sustainability in the supply chain has become a crucial element for competing in the global market (Marshall et al. 2015; Laosirihongthong et al. 2020). Existing research such as (Fung et al. 2020) has projected that failure to fully embrace sustainability in supply chains could lead to product boycotts, fines or even dissolution. As a result, firms have no option other than to achieve increased levels of SSCP necessitating integration of sustainability into their organisational objectives. SSCP, therefore, involves improving the environmental, economic, and social performance of supply chains. In this study, higher SSCP is considered as the achievement of higher environmental, social, and economic performance.

Manufacturing firms embracing environmentally-friendly practices such as green purchasing, green logistics, recycling, reduction of carbon footprint, reduction in the discharge of waste, toxic materials, reduction in the emission of pollutants and environmental accidents, re-use of recyclable and reusable packages, green packaging, compliance to environmental standards, eco-design, reduction of green gas emissions, environmental consciousness and substitution of hazardous material (Hassini et al. 2012) could lead to an improvement in environmental performance. Furthermore, implementation of social practices spanning around avoidance of inequity, improvement in welfare and living conditions of employees, providing social amenities, and introducing societal developmental projects could help firms improve social performance (Zhu et al. 2016; Das 2017; Mani et al. 2018). Economic performance is demonstrated in the firms’ ability to improve both financial and operational performance through the reduction in cost and improvement in the overall profitability (Das 2017) across the supply chain. Since the implementation of sustainability practices requires restructuring of the processes, operations, systems, and products in firms, it poses enormous system and implementation challenges to several manufacturing firms. Extant literature (e.g., Linnenluecke and Griffith 2010; Globocnik et al. 2020; Wijethilake et al. 2023) have asserted that, adopting supportive cultural values could be one way-or one of many ways- to easily ingrain and build sustainability practices into their operations and across the supply chain. This suggests the need for more research into the factors enhancing sustainability practices and SSCP of firms.

2.1.1 Influential factors of SSCP

Most of the essential factors that have been identified as having an impact on SSCP can be classified into internal and external. Internal factors often arise within the internal boundaries of firms and can include top management support, human resource management, environmental training, employee empowerment, reward systems and OC (Linnenluecke and Griffiths 2010; Hassini et al. 2012). Among these factors, management, behavioural and operational factors are very pertinent to the implementation of sustainability practices (Luthra et al. 2017; Kumar et al. 2020). Implementation of sustainability practices requires high levels of top management support, sustainability-knowledgeable-and-trained managers, proper interpretation, and enactment of long-term sustainability goals in the firm can achieve high levels of SSCP (Ghadge et al. 2017; Sehnem et al. 2019). These factors are highly relevant due to the serious consequences misinterpretation of sustainability could have on the environmental, social, and economic performance of firms (Ghadge et al. 2020). To a larger extent, the behavioural and operational factors of sustainability could be enabled and integrated into the firms and eventually the supply chain through the enactment and adoption of suitable and supportive cultural values.

External pressures from outside firms, groups and institutions could potentially include suppliers, customers, governmental agencies, regulations, and pressure groups. The presence of these external pressures has made it very relevant for firms to adopt ways of communicating and responding to the sustainability plans of stakeholders (Duan et al. 2022). Suppliers and customers are integral to the achievement of higher SSCP in food manufacturing firms. The main customers of the food manufacturing firms are the mainstream retailing firms in the UK, therefore, the sustainability pressure from their customers is likely to be passed onto the focal manufacturing firms. Implementing sustainability practices begins with the supply of sustainable materials, therefore, suppliers are likely to bear the ‘weight’ of the sustainability pressure from the customers. This means a high level of collaboration between food manufacturing; customers and suppliers is relevant for the achievement of a better SSCP necessitating more studies into the area. Studies such as (Kang et al. 2018; Donkor et al. 2022; Osei et al. 2023) have examined the importance of SCI and OC in achieving high levels of SSCP. Other studies (e.g., Awudu and Zhang 2012; Jraisat et al. 2023) have studied how formal factors such as technology including blockchain, demand and supply uncertainties could influence sustainability performance. However, further studies are needed to comprehend how contextual factors such as OC and SCI could influence SSCP.

2.2. Organisational Culture

Culture is deeply rooted in the life of every firm and even in its supply chain and cannot be treated in isolation. OC has interestingly gained traction in academia and has received attention across several academic disciplines (Braunscheidel et al. 2010; Cao et al. 2010). In operations management literature, the most widely cited definition was provided by Schein (1988 p.7) who defined OC as “a pattern of basic assumptions; invented, discovered, or developed by a given group; as it learns to cope with its problems of external adaptation and internal integration; that has worked well enough to be considered valid and therefore, is to be taught

to new members as the correct way to perceive, think and feel in relation to those problems”. This definition suits the aim of this research as it depicts how essential OC is and underpins every organisational phenomenon such as integration and sustainability. Cadden et al. (2020) indicated the need for appropriate values to be in place before the introduction of a supply chain strategy. Formentini and Taticchi (2016) admonished firms to instil a sustainability-oriented culture into the governance mechanisms to enable the implementation of sustainability practices. This means adopting appropriate or sustainability-oriented cultural values could result in a successful sustainability implementation and achievement of a higher SSCP. Furthermore, new organisational alignments and initiatives require the adoption of new values that can generate the required strategic outcome or performance (Formentini and Taticchi 2016; Porter 2019). This implies that the introduction of a new phenomenon such as sustainability requires restructuring of culture to ensure its success. Though studies on the impact OC on SSCP are gaining prominence in literature (see Table 1), more research is needed to explore what constitutes the sustainability-oriented cultural values and how these values influence the implementation of sustainability practices and subsequent achievement of higher SSCP which is the focus of this research.

Table 1. Organisational Culture and Sustainability Performance

Authors (year)	Research Goals	Outcome
Linnenluecke and Griffith (2010)	Examined the linkage between culture and sustainability using literature review and CVF	All the dimensions of culture, except hierarchical culture are conducive for sustainability implementation
Gupta and Kumar (2013)	Sustainability as a culture for corporate success	Sustainability is necessary for enhanced performance
Marshall et al. (2015)	Assessing sustainability culture and entrepreneurial orientation to social sustainability	Culture is important social sustainability
Formentini and Taticchi (2016)	Corporate sustainability and governance mechanisms	Sustainability requires appropriate culture
Al-Siwdi, Gelaidan and Saleh (2021)	Examines the determinants and outcomes of green organisational culture and employee’s green behaviour.	Organisational culture had a positive impact of green behaviour and environmental performance
Osei et al. (2023)	Impact of organisational culture (using CVF) and sustainability performance.	Organisational culture is good sustainability performance
Wijethilake et al. (2023)	Explores the role of organisational culture in change towards sustainability.	Organisational culture is a predicate towards moving the

		organisation for sustainability.
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In operations management literature, the most widely accepted model for evaluating the OC of firms is the flexibility-control dichotomy CVF model developed by Quinn and Rohrbaugh in 1983. The CVF categorises the OC of every firm into four main dimensions; developmental (Adhocracy), group (clan), rational (market) and hierarchical culture (See Figure 1.0) each with its values. Figure 1.0 presents the various values present in each dimension. Firms adopting developmental culture (top right quadrant) often adopt flexibility values and focus on gaining external control. Under such type of culture, members are encouraged to be long-term oriented, dynamic, risk takers, innovative and entrepreneurial. Like developmental culture, group culture (top left quadrant) is also characterised by flexibility but focuses on gaining internal control with the main objective of using teamwork and coordination to achieve both the firm and supply chain objectives. Rational (bottom right quadrant) and hierarchical (bottom left quadrant) cultures adopt strict control and values; however, rational culture uses incentives to influence the behaviour of members whilst focusing on gaining external control. Hierarchical culture, on the other hand, uses a strict and centralised authority system to achieve internal control and stated objectives. In this research, the dimensions of CVF are expected to reveal the type (s) of culture, which greatly influences the SSCP of firms.

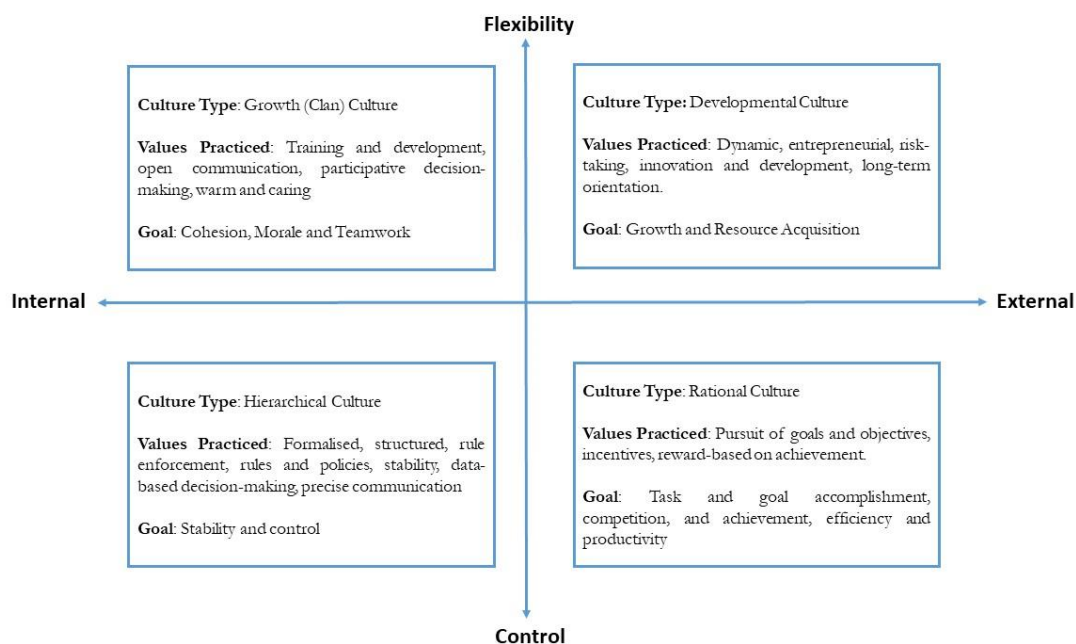


Figure 1.0. Competing Values Framework. Source: Cameron and Quinn (2011).

2.3 Supply Chain Integration

SCI has been considered as one of the enabling factors for the implementation of supply chain strategies (Pagell and Wu 2009; Kumar et al. 2020; Porter 2019). Recently, supply chain researchers (e.g. Mani et al. 2018; Wijethilake et al. 2023) have tried linking the various dimensions of SCI; internal and external integration (customer and supplier) to the implementation and achievement of sustainability performance. Research (e.g., Weingarten

and Longoni 2015; Han and Huo 2020) also reported on the importance of full integration to the improvement of the environmental and sustainability performance of supply chains. Inferring from this, global supply chains like the food supply chains need a strong working integration within the firms and between external partners (customers and suppliers) for the implementation, measurement, and achievement of a better SSCP. Based on this, SCI manifests in two forms: internal integration (II) and external (customer integration (CI) and supplier integration (SI)). II explains the collaboration which exists within a firm in the form of cross-departmental collaborations or cross-functional teams. CI focuses on the collaboration between a firm and its supply chain customers whereas SI explains the working collaboration between a firm and its suppliers. Customers of the food manufacturing firms are mostly retailers, who suggest environmentally friendly innovations such as green packaging and joint design of sustainable products (Kang et al. 2018; Marty and Tosi 2023) which are critical to SSCP. Similarly, across the supply chain, the non-sustainable activities of suppliers are mostly calamitous to the environment and society (Adesanya et al. 2020), collaborating with suppliers to undertake activities such as Life Cycle Assessment (LCA) and sustainable extraction of raw materials are pertinent for SSCP. A plethora of research has examined the impact of SCI on sustainability performance (see Table 2), however, none of this research explored how SCI should be harnessed and dispensed to achieve higher SSCP. We argue that, for the food manufacturing firms to be successful at achieving a higher SSCP, a strong systemic collaboration with customers (retailers) and suppliers is highly essential.

Table 2. Supply Chain Integration and Sustainability Performance

Authors (year)	Research Goals	Outcome
Blome, Paulraj and Schuetz (2014)	Analysis of the deviation from an optimal profile of supply chain collaboration and its detrimental effect on performance	Alignment of integration with sustainability pays off for the firms.
Formentini and Taticchi (2016)	Corporate sustainability and governance mechanisms	Collaboration and formalisation are necessary for sustainability
Wiengarten and Longoni (2015)	Examining the width and depth supply chain integration on operational. Environmental, social sustainability performance	Supply chain integration depth leads to operational and sustainability performance
Osei et al. (2023)	Examined the impact of external integration on sustainable supply chain performance	Both customer and supplier integration have a positive impact on sustainability performance
Wang et al. (2022)	Provide literature review on the supply chain integration and sustainability performance	Supply chain integration has a positive impact on sustainability performance
Han and Huo (2020)	Explore green supply chain integration on sustainable	Internal integration lays a foundation for

	(environmental, social, and economic) performance	external integration, and both are good green supply chain performance
Kang et al. (2018)	Examine the role of Supply chain integration in improving sustainability performance	Both customer and supplier integration are enablers for sustainable practice implementation.

2.4 The Food Industry in the UK

The food manufacturing industry is considered one of the largest manufacturing sectors, employing more than 4 million people and contributing enormously (around £120 billion) to the UK economy. The supply chains in the industry have gradually extended with most of the firms sourcing and importing raw materials and products globally (Ferguson-Aikins and Ramanathan 2020). For instance, most of the chocolate manufacturing firms obtain inputs from certain parts of Africa. Consequently, the complex nature and the rigorous farming, manufacturing, distribution, retailing and transportation practices in the industry pose negative implications for economic, social, and environmental sustainability (Garnet 2011; Ehgartner 2020). Similarly, dairy manufacturers and manufacturers of highly perishable foods contribute enormously to climate change due to the usage of temperature-controlled and energy-intensive processes in production, storage, transportation, and preservation (Aikins and Ramanathan 2020; Ghadge et al. 2020). Ehgartner (2020) also revealed that the practices in the industry are creating challenges in the areas of resource scarcity, waste, social justice, public health, and ecosystems. These have minimised the ability of the firms and their supply chains to implement sustainability practices. As a result, the sustainability issues in the industry have received a vast volume of attention and criticism from the public, policymakers, interest groups and the government. This suggests the need for more research into the factors likely to help the supply chains achieve a better SSCP (Ghadge et al. 2020). In this study, we argue that adopting a sustainability-supportive culture in the food manufacturing firms should be the first approach towards achieving SSCP while at the same time striving to maintain a strong collaboration between all the partners across the supply chain.

2.5 Exploratory Conceptual Framework

Figure 2 showcases the conceptual framework employed in this study. SSCP of the firms is categorised into environmental, social, and economic performance while SCI was operationalised into internal, customer and supplier integration. As indicated earlier, firms with a dominant developmental and group culture are characterised by flexibility and change with a focus on achieving high levels of control (Hartnell et al. 2011). The main goal of adopting such cultures is geared towards maintaining high levels of growth, resource acquisition, innovation, creativity, adaptation, change, responsiveness, and teamwork. Even though, Linnenluecke and Griffiths (2010) argued that the inclusion of sustainability in the supply chain would divert the profit maximization objective, thereby, leading to low economic performance. The stimulation of employee satisfaction, continuous training and development and high levels of teamwork

increase productivity, enabling the firm to obtain creative ideas, knowledge, and skills through strong integration for the attainment of higher environmental and social performance practices while at the same time maximizing profit. We argue that firms with high levels of developmental and group cultures can easily integrate internally and externally leading to high levels of SSCP.

Firms with strong levels of hierarchical culture have strict authority procedures and structures (Zu et al. 2010). Several authors (e.g., Linnenluecke and Griffith 2010) have objected that this type of culture could alleviate the creativity of employees, however, due to the pressure from customers and the government, food manufacturing firms with this type of culture would still take reasonable measures to protect the environment, society and make profit. Since SCI has been classified as an enabler of sustainability, hierarchical culture-intensive firms would pursue high levels of SCI to achieve SSCP. Cao et al. (2015) defined rational culture as shared beliefs and using incentives to motivate employees to fulfil the objectives of the firm. Rational culture enables firms to respond to internal pressures and customers' needs while at the same time, responding to environmental and societal needs. Pagell and Wu (2009) indicated the need for organisational commitment and effort for the implementation of sustainability in supply chains. This means rewarding employees could create an avenue for channelling employees' behaviour to sustainability practices, achieving higher coordination while benefitting from their creative ideas and skills. Therefore, rational culture can improve integration to achieve high SSCP.

According to Table 2, past research (e.g., Weingarten and Longoni 2015; Kang et al. 2018) have established the significance of customer and supplier integration to sustainability performance. More research is needed to explore how SCI should be dispensed to achieve higher SSCP. We argue that even though OC could trigger the achievement of higher SSCP, the values in the various OC create an environment for the firms to fully collaborate internally and with customers and suppliers across the supply chain to obtain the needed assistance, knowledge, skills, and resources for improvement in SSCP.

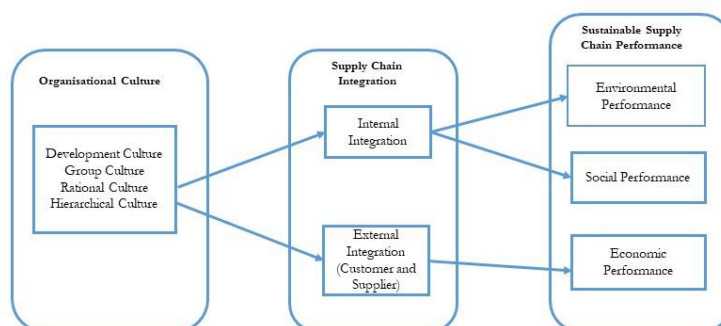


FIGURE 2: CONCEPTUAL FRAMEWORK

3.0 Research Methodology

In this study, we aimed to gain a deeper insight into sustainability practices by directly obtaining the views, opinions, and perceptions of managers (Silverman 2006; Manville et al. 2019) on factors influencing sustainability, therefore, the qualitative research approach through interviews was appropriate.

3.1 Data Collection

Thematic (for the interview) and content (for secondary data) analyses were used (Braun and Clarke 2006; Donkor et al. 2022). Since the main context of the research was the food manufacturing industry, it was useful to adopt multiple firms. The initial list of the firms was obtained from the Financial Analysis Made Easy (FAME) database which contains comprehensive information on companies. The firms, were, therefore, selected based on the number of employees, sales, and the availability of a valid contact (most of the firms had no contact information). We randomly selected 35 firms and the top senior managers (see Table 3) were contacted, out of which only 11 agreed to the interview. This number was not surprising as the research was conducted during the COVID-19 pandemic and the food manufacturing industry was particularly busy during that period. The managers were initially contacted, -and the date and mode of interview were agreed. Semi-structured interviews with an interview guide were held, -and the interview guide covered questions on OC, SCI and SSCP (Appendix 1). On average, the interviews lasted for 30 minutes (see Table 4) and were conducted by the researchers. Most of the interviews were conducted remotely due to the location, cost, and restrictions of the COVID-19 pandemic (see Table 4). With the permission of the participants, the interviews were tape-recorded, and field notes were taken.

Table 3. Profile and Information of Companies and Respondents used for the interviews

Respondents	Position of the Respondent	Years of Experience	Type and Profile of Company	Locations of Company
Rep 1	CEO	16 years	Type: SME Company profile: Manufacturer and distributor of pancake	England
Rep 2	Chief Operations Manager	27 years	Type: Large scale Manufacturer Company Profile: Manufacturer and processor of potatoes, chips and other ready-made meals.	Scotland
Rep 3	Chief Manufacturing Manager	10 years	Type: Large Scale Manufacturer Company Profile: Manufacturer and distributor of own-brand food cooking products.	England
Rep 4	Owner and Managing Director	29 years	Type: SME Company Profile: Producer of frozen and ready-made foods for retailers.	Scotland
Rep 5	Operations Director	20 years	Type: SME Company Profile: The firm manufactures tasting foods, meat products and other ready-made foods	Scotland
Rep 6	Director	26 years	Type: SME Company Profile: Manufacturer of chocolate-related products.	England
Rep 7	Production Support Manager	10 years	Type: Large Scale Manufacturer	England

				Company Profile: It is a dairy manufacturing company with very famous products.	
Rep 8	Managing Director	26 years		Type: SME Company Profile: The firm specialises in making and developing retailer label prepared foods.	England
Rep 9	Account Manager	19 years		Type: SME Company Profile: Deals in the processing of Seafish products	Scotland
Rep 10	Managing Director	39 years		Type: Large Scale Manufacturer Company Profile: Privately Owned manufacturer of cookies and biscuits.	Wales
Rep 11	Supply Chain Director	10 years		Type: Large Scale Manufacturer Company Profile: Deals in the manufacturing of assorted consumer goods	England

Table 4. Information about interviews and other sources of information

Respondents	Mode of Interview	Interview Time	Other Sources of Data
Rep 1	Face-To-Face	45 minutes	Website, financial report, database
Rep 2	Telephone	30 minutes	Website, business and sustainability report, newsletter
Rep 3	Telephone	30 minutes	Website, business and sustainability report, newsletter and notes taken during interviews
Rep 4	Telephone	25 minutes	Website, business and sustainability report, newsletter, journals, FAME database
Rep 5	Telephone	45 minutes	Website, business and sustainability report, newsletter, FAME database, journals
Rep 6	Telephone	1 hour	Company website, technical newsletters, business report
Rep 7	Telephone	40 minutes	Company website, technical newsletters, business report, FAME database
Rep 8	Telephone	52 minutes	Company website, sustainability report technical newsletters, business report
Rep 9	Telephone	25 minutes	Company website, business and sustainability report, technical newsletters, notes taken during interview
Rep 10	Telephone	28 minutes	Company website, sustainability report, technical newsletters, notes taken during interview
Rep 11	Skype	25 minutes	Company website, sustainability report, technical newsletters, notes taken during interview

For anonymity, we refer to the respondents as REP 1, REP 2...REP 11 and the profile of each of the companies and information about the participants can be found in Table 3. Since data triangulation is highly crucial in qualitative studies (Eisenhardt 1989), we combined the interviews with information from the companies' websites, published reports and notes taken

during the interview. Only top senior managers (see Table 3) were targeted for the interview since information on especially OC, SCI and sustainability is exclusive to those in the top rank of management in organisations. We triangulated both the interviews and the secondary sources (see Table 4) to improve the reliability and validity of the study. To further improve the reliability and validity, the transcribed interviews were sent to the various participants for confirmation.

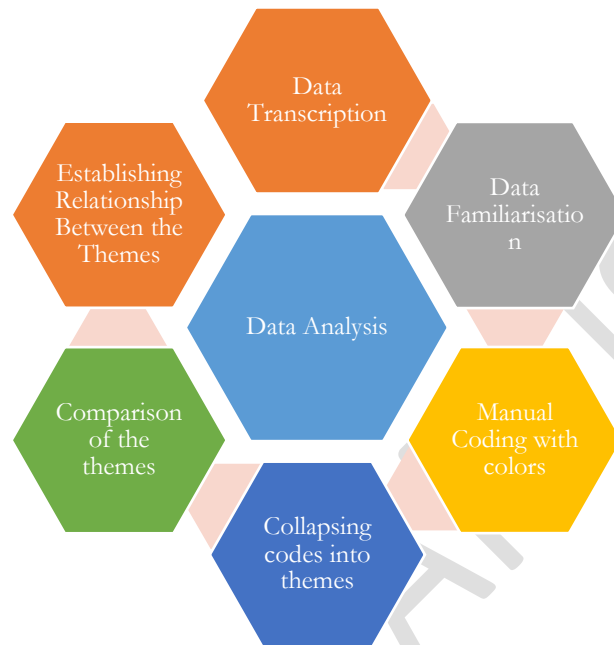


Figure 3. *Data Analysis procedure.* Source: Miles et al. (2014)

3.2 Data Analysis

Thematic and content analyses were utilised in analysing the interview and secondary data (Braun and Clarke 2006). This was necessary to crosscheck the validity and accuracy of the interview data. In this study, we adopted the process suggested by Miles et al. (2014) which includes (1) transcription of the interviews; (2) in-depth exploration of the transcribed interviews and other notes or written memos for familiarisation with the data; (3) manual coding of the data using different colours for easy identification and analysis; (4) developing themes; (5) connecting and interrelating themes; (6) analysing the relationships and constructing the framework (see Fig. 3) in analysing the data. Due to the objectives of the research and the smaller number of interviews, manual coding was considered appropriate (Basit 2003). The structure of the questions in the interview guide was used as a pathway for the transcription of the recorded interviews. This made coding highly effective and relatively easier. In coding the transcripts from the interviews, simultaneous coding namely, process, in-vivo, descriptive and causation coding (Miles et al. 2014) were employed purposely to suit the aims and objectives of the research.

After transcribing the interviews and familiarising with the transcripts, the coding process began. The coding process was performed in three stages (Donkor et al. 2022) while effectively adopting the different types of coding during each of the stages (see Fig. 4). At the first-order

coding stage, the transcripts from the interviews were thoroughly read and codes were applied line-by-line basis. Examples of some of the first codes assigned to culture are “Honesty and Transparency” and “Teamwork”. Next, all the first codes were further coded to generate the second set of codes. For example, “Honesty and Transparency” were further coded under developmental culture and “Teamwork” was coded under group culture. The same processes were followed in coding all the codes relating to SCI, and SSCP. Then we grouped all the similar 1st codes under the second codes to form categories to establish the sub-themes. Finally, we began the third coding process by grouping all the related second codes under the headings (the variables of the study) to establish the themes. For example, all the values associated with developmental, group, hierarchical and rational culture into OC (main theme), and all the second codes related to internal, external, and external integration were grouped into SCI (main theme). Similarly, all the codes highlighting sustainability practices and performance are grouped under SSCP. The respondents were later asked to comment on how OC and SCI influence SSCP and codes relating to the relationship were developed. All the codes examining the relationship between the variables were coded as “relationship between the named variables”. The emerging themes were inter-linked, to understand the relationship between the various concepts in the study.

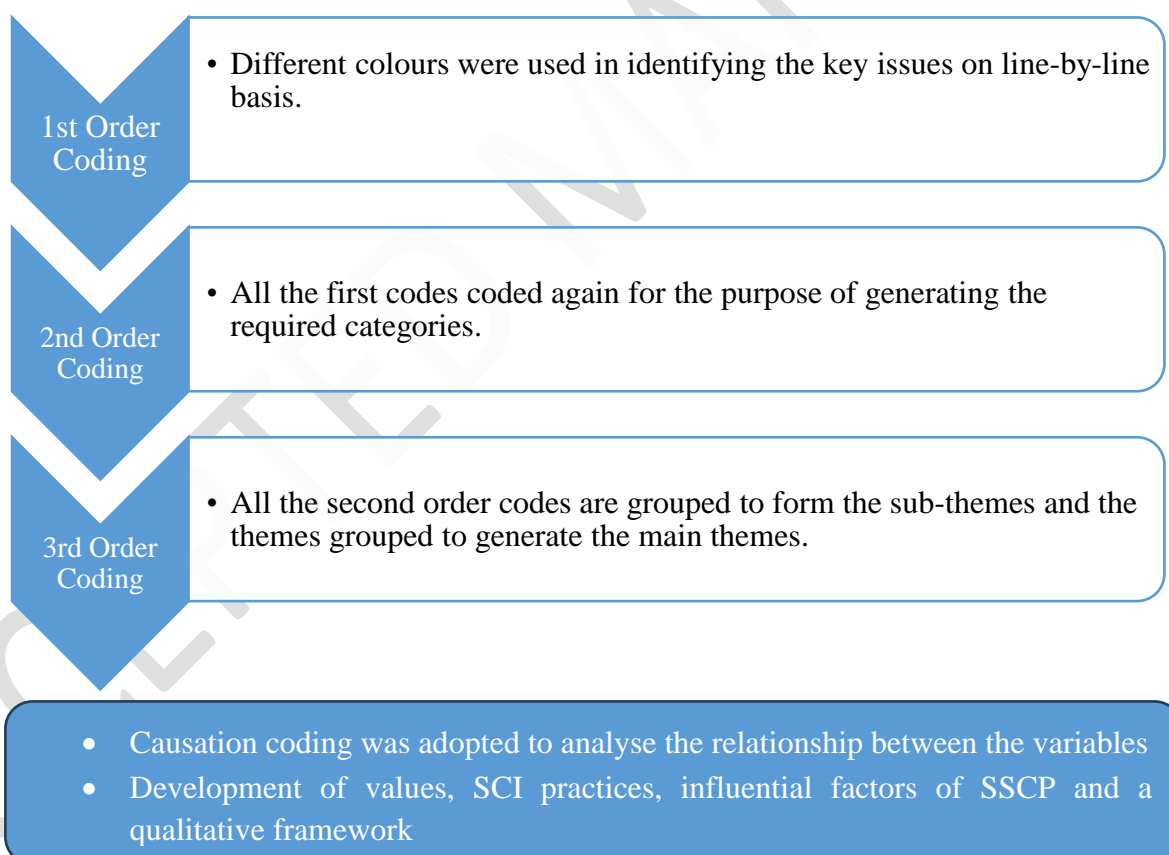


Figure 4. Coding and Thematic Analysis. Source: Donkor et al. (2022)

The established codes (1ST and 2nd Order) and the themes were now cross-referenced with the secondary data to check for the accuracy of the information from the interview. Most of the secondary sources from the firms confirmed the results of the interview.

4.0 Findings

The results of the study were categorised into SSCP, SCI and OC. With regards to SSCP, the findings were grouped into factors affecting the SSCP of the firms and how SSCP, that is, environmental, social, and economic performance are measured. The practices related to SCI and OC of the firms were also classified and finally, the relationship between OC, SCI and SSCP was analysed.

4.1 Factors Influencing SSCP

We further asked the respondents to indicate the factors critical to the implementation of their sustainability practices to achieve high SSCP. The factors were classified under minimal, high, and very high impact based on the criticality and commonality of the factor among the responses from the participants (see Table 5). The list of factors was first designed by the researchers from existing literature and presented to the participants during the interview to rank the factors based on very high, high, and minimal impact criteria. The factors in the “very high” category were extremely critical and common among the responses. The factors in the ‘minimal’ category are considered to have lesser influence while those in the ‘high’ category were considered to possess a relatively moderate level of influence on the implementation of sustainability practices and achievement of higher SSCP. The level of influence differs based on the size of the firm.

Among the factors identified, investment, environmental responsibility, headquarters directive, strong pressure from customers and suppliers, weather, profitability gains, scientific research, and key performance indicators (KPIs) were the main driving forces for the implementation of sustainability and achievement of SSCP in the food manufacturing firms. Comparatively, most of the large-scale manufacturing firms’ decisions to attain an improved SSCP were largely influenced by *profitability* and *good intentions*. In such firms, ingraining sustainability into their supply chains is seen as a good gesture to help protect the environment and society as well as a drive to maximise profit. Based on this, one participant highlighted that

Profit is everything, so we do this to attract more customers to get more demand for profit. Most of the activities too are due to a genuine intention to help the society and environment (Rep 4)

As confirmed by Pagell and Wu (2017), the supply chains of large firms have adopted the opportunity-first approach to embracing sustainability, therefore, the quest to implement sustainable practices is seen as a reactive approach to win customers’ trust for the overall purpose of improving the profitability of the firm. Subsidiaries of various large-scale manufacturing firms consider the *direction of the headquarters* and *budgetary allocations* of the organisation as factors influencing their SSCP. Most of the firms also acknowledged the availability of *investment* as a crucial element pushing the supply chain towards a better SSCP. This suggests that firms implement sustainability practices on a piecemeal basis depending on

the amount of investment/finance available. Regarding the seafood manufacturing firms used in the study, the decision to improve SSCP was largely dependent on the *publication and findings of the scientific research* by the sea scientists. The research determines the type of fish to catch, environmentally friendly tools/equipment to use and how to sustain the water. The profitability and the decisions to implement sustainability in the supply chain of such firms are based on scientific research and decisions.

Table 5. Taxonomy of the influential factors of SSCP and their level of consideration

Factors	Level of Impact		
	Minimal	High	Very High
Investment		√	
Environmental Responsibility (Good intentions)		√	
Environmental Standards	√		
Headquarters Standards		√	
Pressure from Customers			√
Key Performance Indicators		√	
Weather	√		
Organisational culture			√
Pressure from suppliers			√
Size of the firm		√	
Profitability gains		√	
Scientific Research	√		
Pressure from competition		√	
Prices of products	√		
Technology	√		
Quality of products		√	

For most SMEs (which arguably make up the largest proportion of firms in the industry) and large-scale food manufacturers, *customer pressure* was found to be the main influential factor enabling firms to attain a better SSCP. This conforms to the findings of studies (e.g., Shibin et al. 2018) which identified customer pressure as one of the important factors determining the implementation of SSCM in firms. In this study, most of the downstream customers of the food manufacturers are mostly the renowned retailers in the UK who mostly determine the sustainability decisions and force them down ‘the neck’, thus, upstream of the supply chain. This pressure is subsequently passed onto the upstream suppliers. Contrary to the practices of traditional supply chains, where inputs flow from upstream to downstream, within the context of sustainability decisions, especially in the food manufacturing firms, there is a reversal flow of information (see Fig. 5). With regards to customer pressure, one of the managers said:

As a business, we have a very passive approach to that as a business but our customers are all the major retailers, with the major retailers, they have a major pressure on them on what they are doing about sustainability. What the retailers do

is to pass the pressure down to the supply chain and we pass it through to suppliers like ours (Rep 8)

He continued by saying:

The retailers recognise the need and what the retailers do in my opinion is pass the problem down the supply chain to their suppliers and the suppliers provide the solution to the effectiveness of sustainability

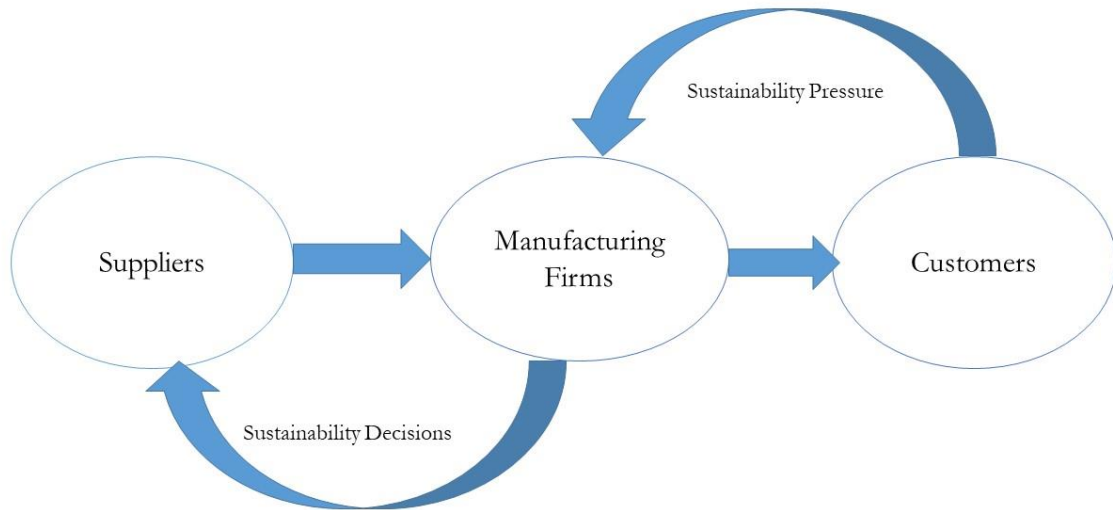


Figure 5. The reversal chain caused by sustainability

4.2 Measures of Sustainable Supply Chain Performance

The participants were asked to indicate how SSCP is measured in their firms. Fig. 4 presents the various means for measuring the environmental, social, and economic performance used in the food manufacturing firms. In assessing their effort to improve environmental performance, reduction in water and energy usage, waste recycling, high reuse of waste, sourcing, and usage of sustainable raw materials, tracking and reduction in carbon footprint were used. Social practices and performance measures were classified into employee-centred and community-centred performance (Das 2017). The firms had well-instituted health and safety practices (employee-centred), employed locally (community-centred), promoted equal opportunity for advancement (employee-centred), employee training (employee-centred) and societal developmental projects (community-centred). The societal developmental projects common in the firms encapsulate tree planting, tidying up of waste in the community, educating the community about sustainability, and internship and employment opportunities for students and ex-convicts respectively.

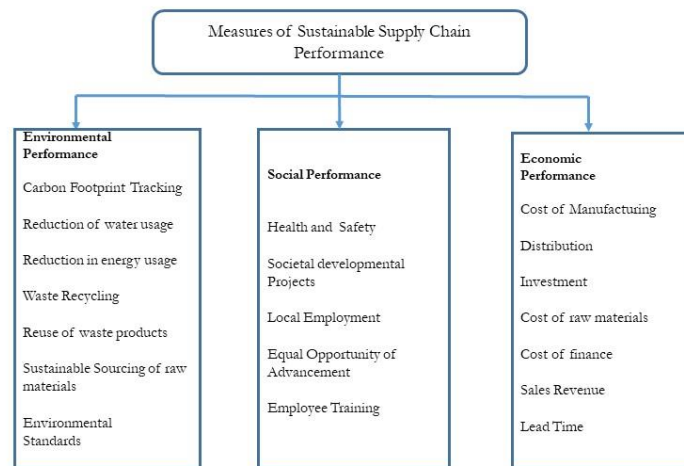


Figure 6. Classification of the measures of Sustainable Supply Chain Performance

Economic performance identified in the study was broken down into operational and financial performance (Flynn et al. 2010). The firms consider an improvement in delivery and lead time as an improvement in operational performance while the reduction in cost of manufacturing, improvement in investment, reduction in cost of raw materials, reduction in cost of finance and improvement in sales revenue are considered as measures for assessing economic performance. Achieving higher SSCP comes at a higher cost to the supply chains, especially with the SMEs, however, making sustainable products increases demand and helps firms maintain the desired level of profitability necessary to keep the firm and the supply chains profitable.

4.3 Supply Chain Integration

The findings confirmed the important role SCI plays in the implementation of sustainable strategies and practices and the achievement of SSCP. Most importantly, the achievement of higher sustainability performance is largely dependent on the success of external integration which is also based on the effectiveness of II. Meaning, that for sustainability performance to be enhanced, a full integration with customers and suppliers across the supply chain is needed, however, the success of the integration is based on a formidable and strong sustainable II (Han and Huo 2020) in the focal food manufacturing firms. The pursuit of quality products and customer satisfaction were the main drive for an effective II.

In breaking the functional silos to achieve an effective internal integration for sustainability, the firms use internal communication, regular meetings and teamwork through several processes and channels such as communicate, staff news, cross-functional teamwork for new sustainable product development and development of innovative systems for implementing sustainability practices (see Fig. 7).

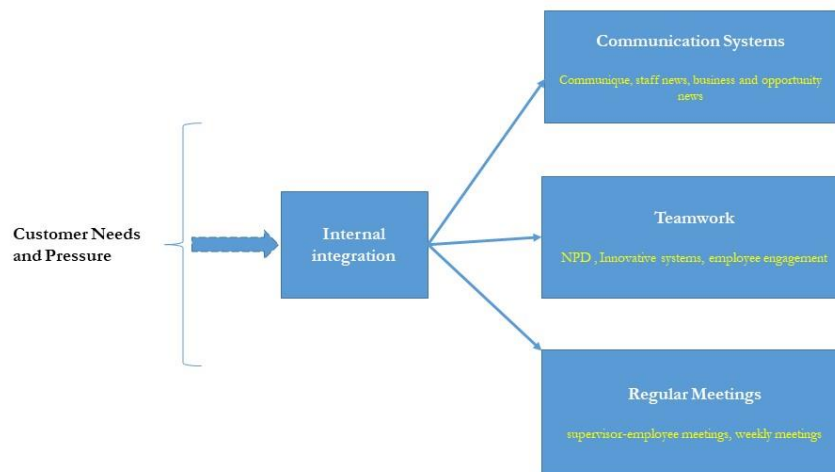


Figure 7. *Internal integration system*

Similarly, II and the increased desire to respond to the sustainability demands of the customers in the supply chain trigger the move to collaborate with customers (CI) across the food manufacturing supply chains. In response to this, one participant said:

Because there is much power in the retailers, the retailers put a lot of pressure on us, and the unfortunate thing is that that pressure is pushed further down the supply chain **(Rep 8)**

In integrating with customers, communication channels such as business portals, customer's preferred systems, telephone, and electronic data interchanges (EDI) are utilised. CI across the supply chain manifest in the form of sharing sustainable production strategies, collaborative management, sharing of productive information, joint sustainability decisions and effective pricing of sustainable products (see Fig. 8).

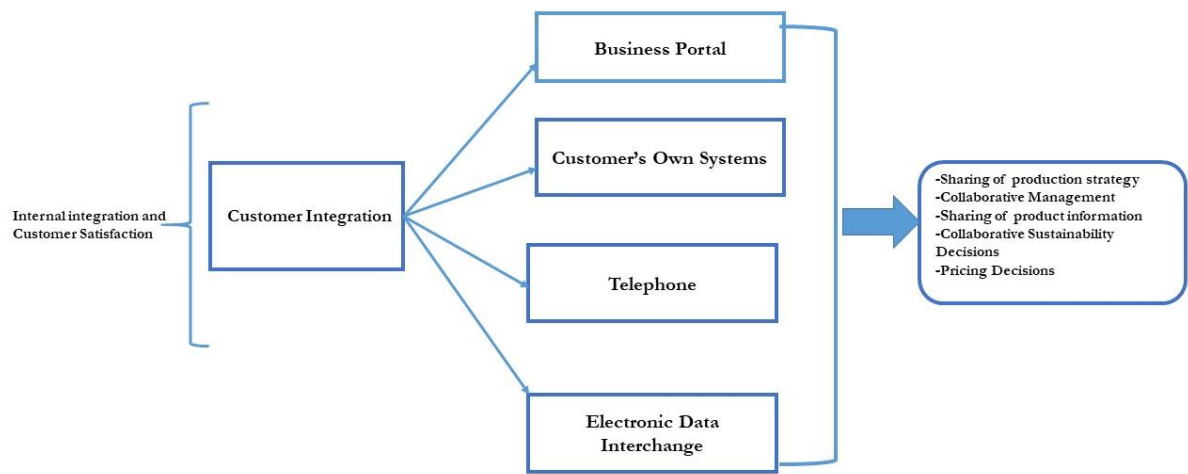


Figure 8. *Customer Integration system*

Despite the rebuttal of research (e.g., Zhang et al. 2018) on the influence of II on SI, our findings provided evidence to the contrary. Effective II in addition to meeting sustainability demands of customers were crucial for maintaining a strong SI. On the verge of integrating with suppliers, the focal firms use channels such as *emails and portals, joint audit programs, joint meetings and conferences and shared storage facilities*. Jointly, the focal manufacturing firms and their suppliers make joint supply chain decisions including collaborative sustainability performance management, sustainable new product development, new idea development and collaborative sustainability management programs (See Fig. 9).

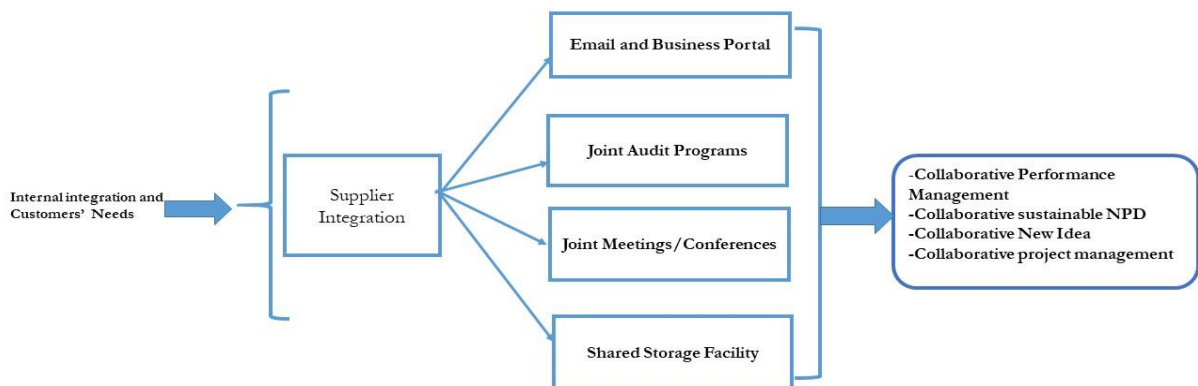


Figure 9. *Supplier Integration system.*

4.4 Organisational Culture

The firms acknowledged that the emergence of sustainability made it relevant to implement other values that could help stimulate a better SSCP. The values identified reflected the CVF dimensions and are presented in Fig. 10. Gregory et al. (2009) found the developmental culture to encompass growth, resource acquisition, innovation, creativity, change and responsiveness. To influence the sustainability performance, developmental cultural values such as continuous improvement, quality, recognition, safety, career development goals, employee sensitisation, excellence, key performance indicators, and openness were considered as key for the firms (see Fig. 10). Regarding rational culture, which uses incentives to achieve organisational objectives, the firms did not consider using incentive packages in influencing employees' behaviour towards achieving the sustainability plans of the supply chain. The employees are paid the normal minimum wage, and the firms had no intention of using incentives to channel employees to the achievement of the overall sustainability goals. Nonetheless, most of the firms considered internal promotion and training as the only incentive schemes. Regarding incentives, one participant said:

We don't rely on incentives for the employees (REP 2)

Furthermore, another manager reiterated that since most of the employees are outsourced, incentives were not necessary to encourage them to follow the sustainability plan of the firm.

Incentives do not actively play a major role because most of our employees are not employed directly as they are through the agencies (REP 1)

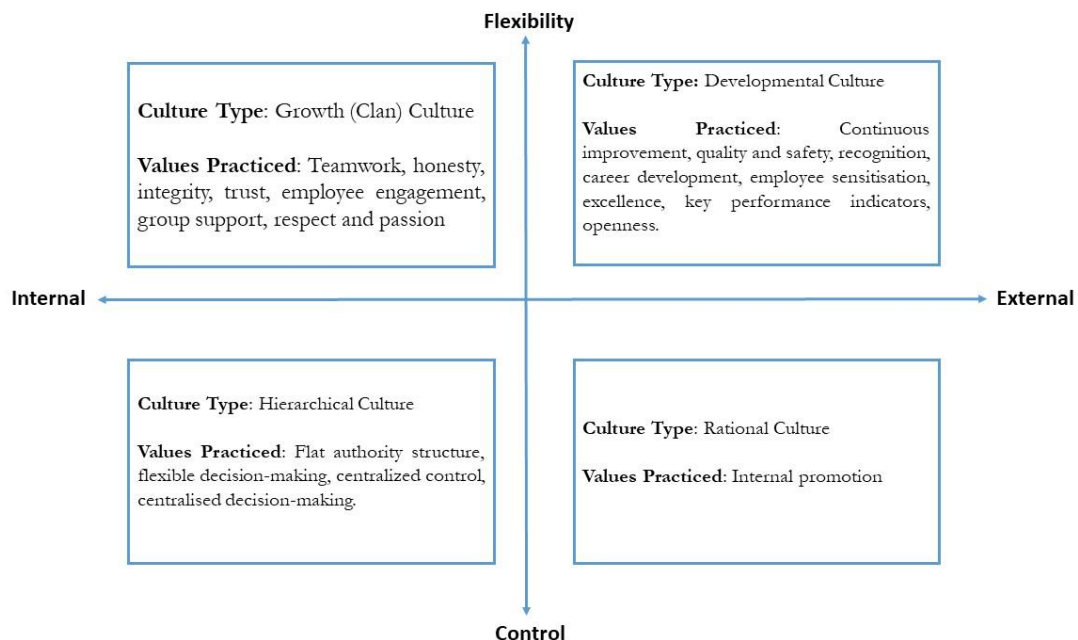


Figure 10. Classification of the values in line with Competing values framework

In terms of organisational structure, most SMEs had a flat authority structure. Decision-making is entrusted to only a few top managers in the firms. Consequently, all sustainability decisions are taken by the top management of the organisation. The flatness of the structure represents strict centralized control in the firm emphasising hierarchical culture (Cameron and Quinn 2011). Large-scale manufacturing firms, on the other hand, have other manufacturing sites, and as a result, flexibility is always regarded as the best approach to improve productivity and quickly meet the sustainability demands of the customers. To optimise SSCP, values comprising teamwork, participatory decision-making, open communication, employee engagement, group support, passion, honesty, integrity, and strong employee commitment were the common group cultural values used in the firms (see Fig. 10).

4.5 The Relationship between Organisational Culture, Supply Chain Integration and Sustainable Supply Chain Performance

Within the context of SSCP, only values inherent in developmental, group and hierarchical cultures were found to influence SSCP. In other words, the values present in the identified cultures are responsible for the achievement of environmental, social, and economic performance contrasting the assertion (Linnenluecke and Griffiths 2010; Wijethilake et al. 2021). Impliedly, the identified three cultural dimensions assist the focal manufacturing firms in instilling sustainability goals into both the firm and across the supply chain.

The customers, who are the retailers, enforce the sustainability decisions in the supply chain, hence, the cultural values adopted are because of the consistent pressure on the firms and the supply chains to implement and achieve an improved SSCP. Therefore, customer pressure plays a key role in the adoption of the different types of cultures (developmental, hierarchical and group) to pursue and implement sustainability practices in the supply chains. This aligns with Caiado et al. (2019) assertion that market and customer pressures are instrumental to sustainability adoption. Since sustainability is introduced on a piecemeal basis, shaping employees' behaviour is key to the implementation and attainment of an improved sustainability performance (Marshall et al. 2015; Caiado et al. 2019). Therefore, the most crucial cultural value enabling the firms to attain an improved SSCP is group culture (teamwork). The establishment of strong teamwork in the firm enables easy training, and sensitisation of employees' behaviour (Wijethilake et al. 2021) and other members of the firm towards the attainment of the sustainability plan of the supply chain. The importance of teamwork was clarified by two managers, who indicated that:

Sustainability is already part of the culture in the firm, so the teamwork and the strict sustainable policies that are discussed and passed down to workers definitely helps in attaining our sustainability performance (REP 1)

Making quality products and achieving sustainability performance, teamwork is important in my firm (REP 5)

One of the managers maintained that teamwork is extremely necessary to achieve sustainability performance. Regarding this, the participant highlighted that:

I think it does to some extent because we have teamwork as a value, we actively try to work as a team with our customers. For instance, the customers have people that are responsible for developing products and those people work closely with our people. So we do share that particular value with our customers (REP 6)

The developmental cultural values (see Fig. 8), on the other hand, play a key role by establishing a solid foundation for sustainability to be ingrained into the existing culture of the firm. Continuous improvement, quality and safety, career development, excellence and establishing KPIs act as fundamental enabling factors necessary for the effective implementation and achievement of an improved SSCP. Such type of culture urges the food manufacturing firms to continuously seek various sustainability-improving structures and tools, train organisational members, introduce quality-improving processes and track carbon emissions. These practices are very relevant to achieving higher environmental, social, and economic performance. This was confirmed by Chavez et al. (2020) who highlighted the significance of quality improvement strategies to social performance. A hierarchical culture which is characterised by a strict authority structure and lack of flexibility has been found to complicate the introduction of sustainability practices in several firms (Linnenluecke and Griffiths 2010; Cao et al. 2015). Contrarily, the findings in this study confirmed hierarchical culture as a significant mechanism for forging and achieving higher SSCP. The results suggest that maintaining a culture of strictness, regulated communication structure and strict conformity to rules and regulations is necessary for easily instilling sustainability practices into the firm and supply chain.

We want our employees to stick to our rules and regulations regarding water and energy usage and adhere to the sustainability policies established. This is important if we want to move forward with our sustainability performance (REP 6)

With the significance of these values discovered, it provides an insight into the significance of combining multiple competing values to abate sustainability challenges while improving sustainability performance in the supply chain. A combination of developmental, group and hierarchical cultural values is ideal for implementing sustainability practices and achieving all the environmental, social, and economic performance measures while at the same time coping with the sustainability pressures from customers and suppliers in the supply chain.

4.6 The Role of Supply Chain Integration

SCI has been found as an essential phenomenon for improving the supply chain performance of manufacturing firms (Flynn et al. 2010; Alfalla-Luque et al. 2013). Global supply chains need a higher level of customer and supplier integration to improve their SSCP. All the cultural values identified (developmental, group and hierarchical cultural values) stimulate integration inside the firm and across the supply chain providing intuition into the relevance of SCI. Developmental and group cultures contain values which spontaneously forge integration within and outside an organisation. Hierarchical culture creates an enabling environment to channel members' behaviour to pursue SCI. The growing demand of many firms to implement and conform to various sustainability policies has necessitated integration both within and across the supply chain to achieve sustainability goals (Pagell and Wu 2009; Osei et al. 2023). Additionally, our findings revealed the relevance of integration in the attainment of the SSCP, even after adopting a sustainable-oriented culture. It has been already pointed out that, group

cultural values dominated by teamwork foster strong internal integration within the firms. Since the implementation of sustainability in the supply chain is mostly triggered by customer pressure in the industry, the focal manufacturing firms need to work closely with the customers to fully comply with the agreed sustainability arrangements. The main customers are the mouthpiece of the lower tier customers (i.e., customers' customers) and other stakeholders, therefore, they can suggest the required sustainability practices. Through customer integration, the food manufacturing firms benefit from first-hand information regarding the environmental and social measures needed to be implemented across the supply chain. The formation of a strong bond with customers to implement sustainability in the supply chain is fundamentally triggered and supported by the teamwork existent in the firm. The food manufacturing firms successful at cross-functional teamwork can extend such a gesture to customers through the formation of a sustainability team. Additionally, the customers provide essential services such as sustainability audits, green packaging information, and Life Cycle Assessment (LCA) assessments. One of the respondents highlighted that;

We have a formed a strong sustainability team with the representatives from customers. We meet regularly to share sustainability ideas and suggest various ways to implement and improve on our sustainability performance. They are quite exciting meetings as we also form a strong bond with the customers. But you should know that without the teamwork in place at the workplace, we wouldn't at successful with the teamwork with customers (REP 5)

In other words, the strong integration in the manufacturing firms guarantees a strong and formidable working relationship with customers to attain an improved SSCP. With regards to the role of teamwork in forging a strong integration, one manager voiced that:

It is, especially, the teamwork and the values makes the performance better which makes customers happy. Customers get in contact and we get positive feedback from the customers and people about our good conduct and services (REP 10)

The significant role of teamwork was reiterated in the words of this respondent,

Honestly, humility and teamwork greatly influences the firm's ability to communicate and integrate effectively with our customers and suppliers and they help with the sustainability improvement (REP 9)

Since sustainability is supposed to be implemented across the supply chain, suppliers are also expected to adhere to the established sustainability targets, goals, and practices due to the detrimental nature of suppliers' activities on the environment and society (Adesanya et al. 2020). Kang et al. (2018) found supplier coordination to have a positive influence on the sustainability performance of firms. This means suppliers need to work closely with the focal manufacturing firms to provide sustainable raw materials, assist in assessing and measuring sustainability performance and mitigate negative supplier practices. Therefore, to attain a better SSCP, firms form a strong collaboration with customers and suppliers. Sustainable supply chain integration (SSCI) is demonstrated in the form of a sustainability implementation team consisting of the focal manufacturing firms, customers, and suppliers. The firms form a strong working relationship with customers and suppliers to improve the SSCP. The established

sustainability team now shares vital information, resources, ideas, knowledge, and skills to achieve a higher SSCP. With regards to the role of SCI on SSCP, it was highlighted:

Teamwork, transparency and relationships with customers and suppliers. We work together as a team. The customers and suppliers are core to the business, and we work together to achieve to increase sustainability and profitability of the business (REP 2)

5.0 Discussion

In this era of sustainability, several manufacturing firms have become very conscious of the factors which could enable the swift implementation of sustainability practices. Donkor et al. (2022) confirmed that leadership style and patient satisfaction are highly critical to the successful implementation of sustainability practices. In this research, pressure from customers and suppliers and organisational culture were considered necessary for implementing sustainability practices and achieving high sustainability performance, especially in the food manufacturing industry. Customers in the food industry, who are mostly retailers, sometimes propose sustainability practices and push these upstream. In order to streamline sustainability practices across the supply chain, suppliers in the food manufacturing industry also recommend and sometimes enforce sustainability practices (Lion et al., 2016). Other important success factors include investment, good intentions, top management support, KPIs, profitability, firm size, competition, and product types.

Existing research such as (Linnenluecke and Griffiths 2010; Wijethilake et al. 2023; Osei et al. 2023) highlighted the significance of adopting sustainability-supportive culture to easily implement sustainability practices to achieve high SSCP. With the scanty research in this area, this current study confirmed the necessity of using the values in the CVF in identifying sustainability-supportive culture. Additionally, the research confirmed the efficacy of only developmental, group and hierarchical culture as conducive to implementing sustainability practices to achieve high SSCP. This contradicts the results of Wijethilake et al. (2023) who confirmed the significance of all the dimensions of the CVF to enhancing organisational change towards the adoption of sustainability practices. The results prove that values inherent in developmental culture such as entrepreneurship, dynamism, risk-taking, innovativeness and long-term orientation are critical to enhancing social, environmental, and economic performance. Similarly, teamwork, training, and development, building cohesion, boosting the morale of employees, and encouraging independent decision-making from employees (associated with group culture) are critical to instilling sustainability behaviour in employees, establishing sustainability teams within firms and encouraging sustainability learning both within the firm and across the supply chain for the culmination of the relevant skills, knowledge, and information necessary for achieving higher SSCP. Through these values, focal firms can establish sustainability teams who can meet regularly with customers and suppliers to instil and enhance sustainability performance in the supply chain (Osei et al. 2023).

Unexpectedly, a hierarchical culture characterised by strictness, formalisation, centralisation, formalised and structured communication channels, strict rules, and policies were considered very useful for instilling a sustainability culture both within and between

(intra and inter) supply chain members. Linnenluecke and Griffith (2010) highlighted that the strictness associated with this type of culture mars creativity which prevents swift implementation of sustainability practices. However, the findings of this study reveal that maintaining strictness, rules and policies, and formalised and structured systems inside the focal and across the supply chain is very relevant to ensuring the agreed sustainability strategy and practices are adhered to by organisational members, to obtain the desired SSCP. Rational culture which considers incentives was found to possess no influence on the SSCP of the firms.

Further, SCI has been considered very crucial to contemporary manufacturing firms in enhancing their sustainability performance. This research confirmed the relevance of strengthening II, CI and SI to enhancing the SSCP of food manufacturing firms. The results confirm the findings of similar studies (e.g. Weingarten et al. 2015; Blome et al. 2014; Osei et al. 2023) all confirmed the positive impact of SCI on sustainability performance. This suggests that for firms to optimise SSCP from SCI, the internal collaboration for sustainability must solidified and effective. According to the results, internal collaboration in the form of internal sustainability teams from the focal firms collaborates with suppliers and customers to obtain the needed ideas, knowledge, resources, information, and data necessary to enhance SSCP. To obtain an indestructible collaboration, thus SCI, systemic collaboration (regular communication, consistent sharing of information, sharing of data and files, collaborative forecasting) is highly relevant. Additionally, the findings suggest that group, developmental, and hierarchical cultural values propel the focal firms to establish a sustainability team that can meet regularly with customers and suppliers to implement sustainability practices to enhance the SSCP. Thus, with the sustainability-supportive cultural values in place, firms still need a strong SCI to achieve a better SSCP.

5.1 Theoretical Contributions

Due to the limited empirical studies on the relationship between OC and SSCP from the CVF perspective, our findings make significant contributions to the literature on OC and SSCP within the context of the food manufacturing industry. Our research makes a significant contribution to the limited literature on the impact of OC on SSCP by empirically confirming the positive impact of OC on SSCP. The studies revealed that integrated competing values namely, hierarchical, group, and rational are relevant for implementing sustainability practices and eventually achieving high SSCP. The findings empirically confirm the assertion of Linnenluecke and Griffiths (2010) who theoretically predicted a possible positive relationship between the dimensions of the CVF and sustainability performance. Moreover, contrary to the empirical findings of Wijethilake et al. (2021), our studies confirmed the effectiveness of the values of only three cultural dimensions; developmental, group and hierarchical cultures to improve SSCP. Additionally, with the relevance of hierarchical culture to SSCP discovered in this study, extant studies (e.g., Braunscheidel et al. 2010; Cao et al. 2015; Porter et al. 2019) all indicated the negative impact of hierarchical culture on supply chain strategies. However, we confirm that hierarchical culture is very relevant for overcoming sustainability challenges and achieving higher SSCP. Our study further demonstrates that SSCP is likely to improve in a highly flexible culture which focuses on maintaining higher levels of internal and external

control. In addition to revealing the positive impact of OC and sustainability, this study further revealed the actual competing values critical to enhancing SSCP (see Fig. 9).

Furthermore, the findings in this research are consistent with existing studies (e.g., Weingarten and Longoni 2015; Kang et al. 2018; Han and Huo 2020) which all confirmed the relevance of SCI to sustainability performance. In addition to this, this study revealed how SCI must be established by the firms to enhance SSCP. Based on the findings, SCI must begin with II manifesting in the form of sustainability team formation, and this team must be established through proper communication systems and regular meetings. The sustainability team from the firms must consistently share sustainability information and make joint sustainability decisions through regular communication with suppliers and customers across the supply.

Most importantly, our studies identified that the competing values inherent in the group, developmental and hierarchical cultures stimulate internal integration, and such integration is extended to customers and suppliers (external integration), thereby enabling the food manufacturing supply chains to obtain the needed information, knowledge, and ideas for the measurement and improvement in environmental, social, and economic performance. Thus, SCI acts as a mediator between the values of OC and SSCP. Extant studies are yet to expand on this. The impact of developmental and group culture on internal integration found in this research contrasts the findings of Braunscheidel et al. (2010) who found no relationship between them. Our study also contributes to literature by identifying the various influential factors triggering SSCP in the food manufacturing firms. Fig 11 summarises the contributions and findings discovered in this research by linking how the sustainability-oriented cultures influence SSCP and presents the mediating relationship of SCI. This model is crucial for future studies intending to research further on the relationship between culture and SSCP.

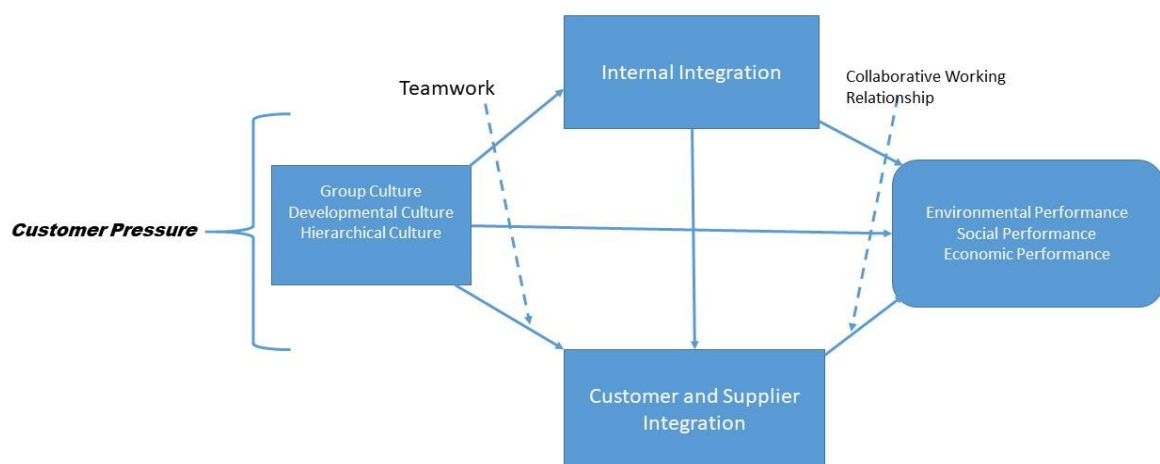


Figure 11. New Framework with the findings

5.2 Practical implications

The consistent pressure on business managers and organisations to deliver the short-term benefits from sustainability has created a huge challenge preventing the realisation of higher sustainability performance (Jabbour et al. 2019). As a result, it has become imperative for firms to focus on identifying factors that could enable the effective integration of environmental, social, and economic measures into the supply chain to reap long-term benefits or trade-offs. We argue that in global supply chains, instilling the right cultural values and achieving high levels of integration with customers and suppliers across the supply chain could be beneficial to the implementation, measuring and overall assessment of sustainability performance. The findings imply that introducing the values inherent in developmental and group culture is crucial for ingraining sustainability practices and overcoming sustainability challenges. The value in both cultures is conducive to creating a foundation for the introduction of sustainability practices in the firm and across the supply chain. Due to the complexity associated with the introduction of sustainability practices, we recommend that organisations should adopt a piecemeal approach to imbibing sustainability. This could commence with the development and introduction of sustainability learning and sensitisation programs coupled with training and development on sustainable practices. These practices can be propelled through the adoption of flexible cultures (developmental and group cultures). Flexible cultures are also suitable for ensuring and stimulating innovative ideas from employees for increased SSCP (Wijethilake et al. 2021).

Despite the strict controls associated with hierarchical culture, it is considered very effective for the implementation of sustainability measures. Organisations and managers could use the values inherent in the culture to ensure members both within and across the supply chain adopt practices and engage in operational activities which conform to the sustainability goals established by the supply chain. Maintaining strict sustainability rules and policies in both the firm and the supply chain and ensuring employees and supply chain partners adhere to these standards may be a sure way to successfully implement sustainability practices and enhance SSCP. Additionally, managers could use hierarchical culture as an instrument for the implementation of sustainability practices such as budgeting, investment appraisal, and life-cycle assessment (LCA) (Wijethilake et al. 2023). Lastly, our findings imply that supply chain partners especially customers and suppliers of global supply chains are crucial to the achievement of higher SSCP, hence, we admonish managers to forge a strong collaboration with them. This is because customers and suppliers are valuable to establishing joint sustainability checks, audit and budgeting, provision of sustainable raw materials and measurement of environmental, social, and economic impacts through LCA. We recommend that organisations and supply chain managers should maintain a blend of competing values and strengthen SCI to improve SSCP. This would also assist in overcoming sustainability challenges both in the firm and across the supply chain.

6.0 Conclusion and Suggestions for Future Research

This research aimed at empirically examining the impact of OC on SSCP and further assessed the critical role of SCI in the food manufacturing industry in the UK. Additionally, the study intended to discover the practical values relevant to SSCP and reveal how the SCI must be

established to achieve SSCP. The CVF was utilised in categorising OC into developmental, rational, hierarchical and group culture mainly to ascertain the type (s) of competing values which greatly influence SSCP. We argued that the competing values inherent in each of the cultural dimensions are effective for improving SSCP and an extreme level of SCI is needed after implementing a sustainability-supportive culture. The interviews identified the SSCP measures, the OC and SCI practices and their relationship, we found that a combination of developmental, group and hierarchical cultures is significant for improving SSCP. Rational culture, which focuses on the usage of incentives, is not considered by the firms used in the study, hence, rational culture plays no role in the improvement of the SSCP of the firms. Secondly, the competing values, especially those found in group and developmental cultures were found to play a crucial role in building a strong sustainability culture, thereby, enabling the firms to improve SSCP. We also found that achieving higher SSCP is based on the effectiveness and strength of the collaboration between the focal manufacturing firms, customers, and suppliers across the supply chain. Close collaboration with customers and suppliers enables the establishment of sustainability teams for the coordination of innovative ideas, sustainability knowledge, skills, information, and crucial resources necessary for implementing the environmental, social, and economic performance measures. However, the success of the sustainability team or sustainable supply chain collaboration is dependent on the effectiveness of internal integration within the focal firms.

Regardless of the significant contributions of this research, the study is still inundated with many flaws which generates a path for future researchers. The model developed in this study is based on a relatively small sample of senior managers and one industry. As a result, the results cannot be generalised to all firms and industries. Future research should replicate or test the model with many firms and multiple industries to strengthen sustainable supply chain literature. Additionally, replicating the research in other industries or even in other countries could present different perspectives of results due to the existence of different national cultures in various countries. This also means examining the impact of national culture on organisational culture (using the CVF) in the achievement of SSCP could contribute enormously to supply chain literature. Cause-and-effect relationships are best studied with longitudinal instead of cross-sectional studies. Future studies could adopt a longitudinal design and the results compared with that of this study. Longitudinal studies could identify several sub-cultures of firms which may also indirectly support the implementation of several supply chain strategies including sustainability.

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APPENDIX

INTERVIEW GUIDE

1. In your firm or generally in the industry what factors do you consider as having a huge impact on the supply chain sustainability performance?
2. Is sustainability performance measured across the supply chain or firm level?
3. Has the supply chain established any environmentally friendly projects? Can you specify some of the projects carried out by the company?
4. What measures have the supply chain put in place to ensure sustainable;
 - Water consumption
 - Energy consumption
5. What is/are being done by the supply chain to ensure the control of carbon footprint, waste recycling and sustainable raw material extraction?
6. Has the firm experienced an improvement in the economic performance of the supply chain after instituting sustainability measures?
7. Can you comment on how the firm performs in terms of unit manufacturing cost, ordering cost, manufacturing lead time, delivery time, investment, operational cost and the profitability level of the firm?

8. What actions are taken by the firm to improve the health and safety of employees, establish societal developmental projects, equal opportunity for advancement, employ locally motivate and satisfy employees?
9. What factors do you consider as affecting the supply chain integration efforts of the firm?
10. What measures/systems have been put in place to ensure the internal departments collaborate effectively?
11. How does the firm collaborate with customers? Does the firm have a fixed system for exchanging information with customers?
12. What factors can be considered as impeding the integration activities of the firm?
13. Do the customers of the firm play a major role in achieving higher sustainability? How does this happen?
14. How does the firm collaborate with suppliers? Does the firm have a fixed system (s) for exchanging information with the suppliers?
15. Do the suppliers of the firm play a major role in achieving higher sustainability in the supply chain? How does this happen?
16. Can you describe the kind of culture practised in your organisation? What values are considered very important in the organization?

17. Which part of the organizational values affect the sustainability performance of the supply chain performance?

18. Which values in the organization greatly influence the firm's decision to integrate internally and integrate with customers and suppliers?

19. What is your position in the firm?

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