Organisational Culture and Supply Chain Sustainability Performance in the Food Manufacturing Industry in the UK. Does Supply Chain Integration Really Matter?

ABSTRACT

This research draws on a study in the food manufacturing industry in the UK to examine the role of organisational culture (OC) and supply chain integration (SCI) in improving sustainable supply chain performance (SSCP). Qualitative methodology was employed by interviewing 11 senior managers from 11 top firms in the food industry. A list of the firms was obtained from the FAME database out of which thirty-five (35) leading firms were selected. Only 11 agreed to the interview. After manually analysing the interviews, we found that that three competing values, namely: developmental, group and hierarchical culture are effective for implementing and achieving higher SSCP. Also, the values inherent in these cultures also trigger internal and external integration through which the firms acquire sustainability ideas, knowledge, training, skills from customers and suppliers to improve SSCP. These findings also confirm the positive impact of supply chain integration on SSCP. We also found that within the context of sustainability performance, the effectiveness of external integration depends on the strength of internal integration. The study contributes immensely to sustainability literature by linking OC to SSCP and establishes the mediating role of SCI. Managers are advised to adopt blended competing values (developmental, group and hierarchical culture) to implement sustainability practices and improve SSCP. Managers also need to strengthen SCI to improve sustainability performance thereby overcoming various sustainability challenges. A proposed framework for implementing the values and SCI is presented.

Keywords

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

Introduction

For the past decade, manufacturing firms are experiencing pressure from various stakeholders for the achievement 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 both at the firm and supply chain level (Jabbour et al., 2019). The UK's food manufacturing industry which is considered as 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 to employees and other stakeholders (Ghadge et al., 2020; Carter et al., 2020). Consequently, researchers have been calling for a study into the factors capable of improving the SSCP in the industry. Within the context of sustainability, previous research has focused on examining the effect of formal factors or institutions with minimal emphasis on contextual or informal factors such as culture (Miska et al., 2018). Linnenluecke and Griffiths (2010) and Wijethilake et al. (2021) highlighted the significance of using culture in building a resilient supply chain to effectively respond to social and environmental challenges. Thus, adopting 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) have identified the various approaches of improving SSCP in the food industry. Due to this, 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, process and products in the firms which may be successful when a sustainability-supportive culture is implemented (Linnenluecke and Griffith, 2010; Wijethilake et al., 2021). Moreover, since OC is the hub of the operations of firms, introducing a new phenomenon such as sustainability warrants the support of appropriate cultural values (Cadden et al., 2020). 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, studies examining how food manufacturing firms and their supply chains could harness their 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 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 culture.

Han and Huo (2020) stressed the significance of supply chain integration (SCI) between downstream customers and upstream suppliers to the reduction of environmental risk of supply chains. Impliedly, food manufacturing firms and their supply chains could exploit the skills, information, knowledge and expertise of customers and suppliers in measuring and achieving higher SSCP. In this research, we argue that food manufacturing firms and their supply chains can improve their SSCP when there is an effective collaboration across the supply chain. Few research (e.g., Kang et al., 2018) have investigated the effect of SCI on sustainability performance using the quantitative approach. This demonstrates the need for more research to comprehensively examine

how each of the dimensions of SCI could 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 do the various cultural dimensions and competing values improve the SSCP of food manufacturing firms?
>
> (2) How do food manufacturing firms, customers and suppliers integrate 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 11 food manufacturing firms. Based on in-depth analysis, the study identifies the actual OC values and what constitutes SCI practices in the industry. The various measures of SSCP are also identified. The study further reveals how each of the OC values and SCI assist in the implementation and achievement of higher SSCP. Additionally, the research identifies the factors influencing sustainability performance in the industry.

The remaining part of the study is structured as follows: the next section (section 2) presents the literature review, divided into SSCP, OC, SCI and assesses the possible relationship between each of the variables. Section 3 presents a brief overview of the research context in the study. The fourth section presents the exploratory conceptual framework which highlights how the variables are linked. Section 5 discusses the research methodology used in the study while section 6 presents the results and discusses the findings of the study. Section 7 presents the implications of the research to theory and practice and finally, section 8 concludes the study and highlights the limitations of the research.

Theoretical Underpinnings and Development of the Research Propositions

2.2.1 Sustainability and Sustainable Supply Chain Performance

The Brundtland Commisson from the World Commission on Environment and Development (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 the environmental, social, and economic issues with the definition constitutes the triple bottom line. Explicitly, instilling the 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, 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). It has been projected that failure to fully embrace sustainability may cost a lot of global supply chains (Fung et al., 2020). As a result, sustainability has been incorporated into the overall corporate strategies of firms. SSCP, therefore, involves improving the environmental, economic,

and social performance of supply chains. In this study, higher SSCP is considered as firms achieving 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) can improve their environmental performance. Furthermore, implementation of sustainability 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 these practices requires restructuring of the process, operations, systems, and products, it poses enormous challenges to several firms. Supply chain authors (e.g., Linnenluecke and Griffith, 2010; Globocnik et al. 2020; Wijethilake et al., 2021) have asserted that, adopting supportive cultural values could be one of ways to easily ingrain and build sustainability practices into their operations and supply chain.

2.2.2 Organisational Culture

Culture is deeply rooted into the life of every firm and 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 supply chain management literature, the most widely cited definition was provided by Schein (1988, p.7) who defined OC as a "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 further highlights how OC underpins every organisational phenomenon such as integration and sustainability. Cadden et al. (2020) indicated the need for appropriate values to be in place prior to the introduction of a supply chain strategy. This means adopting appropriate cultural values could result in a successful sustainability implementation and achievement of a higher SSCP. Furthermore, new organisational alignments and initiatives require an adoption of new values that can generate the required strategic outcome or performance (Porter, 2019). This implies that an introduction of a new phenomenon such as sustainability require restructuring of culture to ensure its success. In this study, we argue that firms with values, beliefs, or cultural elements non-aligned with sustainability may struggle to attain improved SSCP.

In supply chain management literature, the most widely accepted model for evaluating the OC of firms is the flexible-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 Fig. 1.0). Figure 1.0

presents the various values present in each dimension. Firms adopting developmental culture often adopt flexible values and focuses 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 also uses flexible values but focuses on gaining internal control with the main objective of using team work to achieve both the firm and supply chain objectives. Rational and hierarchical 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 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.

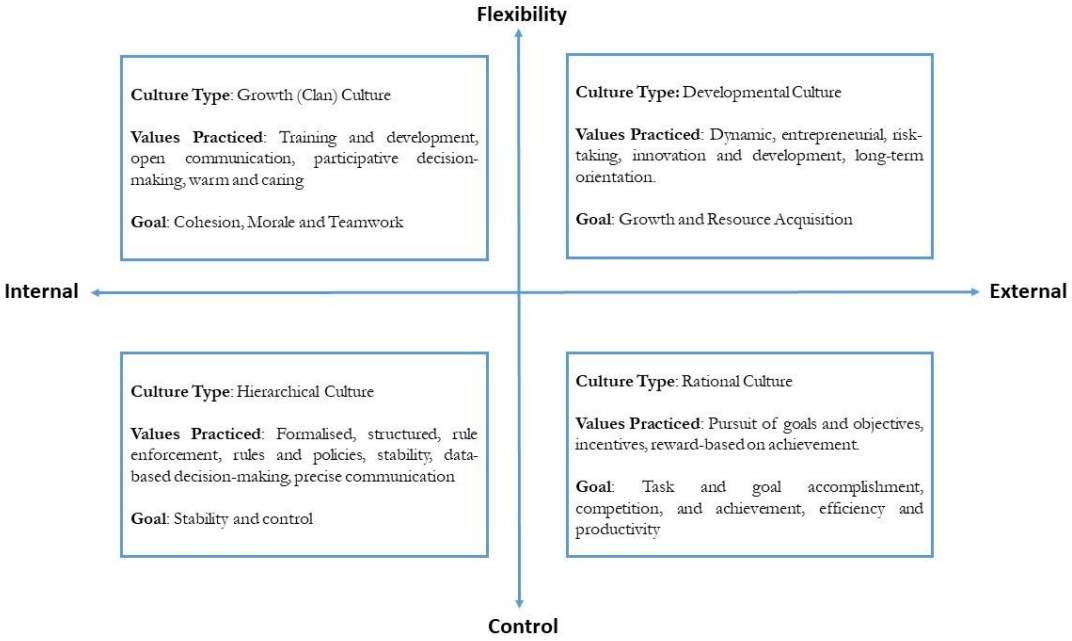

Figure 1.0. ***Competing Values Framework***

2.2.3 Supply Chain Integration

SCI has been considered as one of the enabling factors for the implementation of supply chain strategies (Pagell and Wu, 2009; Porter, 2019; Kumar et al., 2020). Recently, supply chain researchers (e.g Mani et al., 2018; Wijethilake et al., 2021) have tried linking the various dimensions of SCI; internal and external integration (customer and supplier) to the implementation and achievement of sustainability performance. Han and Huo (2020) also reported on the importance of a full integration to the improvement of environmental performance of supply chains. Inferring from this, global supply chains like the food supply chains need a strong working integration within the firms (internal integration) and between external partners (customers and suppliers) for the implementation, measurement, and achievement of a better SSCP. Customers in the food manufacturing industry are mostly retailers, who can suggest environmentally friendly innovative ideas such as green packaging and joint design of sustainable products (Kang et al., 2018), therefore customer integration is key to SSCP. Similarly, across the supply chain, the activities of suppliers are mostly calamitous to the environment and society (Adesenya et al., 2020), collaborating with suppliers is relevant to key sustainability activities such as LCA and sustainable extraction of raw

materials. We argue that, for the food manufacturing firms to be successful at achieving a higher SSCP, a strong collaboration with customers (retailers) and suppliers is highly essential.

2.2.4 The Food Industry in the UK

The food manufacturing industry is considered as one of the largest manufacturing sector, 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 usage of temperature controlled and energy intensive process 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 and achieve higher SSCP. As a result, the sustainability issues in the industry have received vast volume of attention and criticisms from the public, policy makers, 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.

2.2.5 Exploratory Conceptual Framework

This section reveals 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 with flexibility and change with the focus of 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 increases 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 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 the 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 the environmental and societal needs. Pagell and Wu (2009) indicated the need for organisational commitment and effort for 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 for the purpose of achieving high SSCP.

Past research (e.g., Weingarten and Longoni, 2015; Kang et al., 2018) have established the significance of customer and supplier integration to sustainability performance. 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.

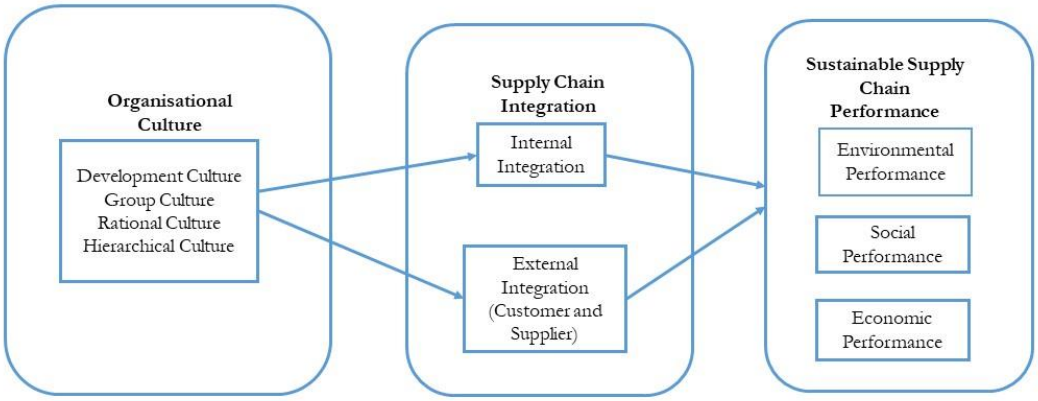

Figure 2. Conceptual Framework

3.3 Research Methodology

In this study, we aimed at gaining a deeper insight into the issues as well as directly obtaining the views, opinions, and perception of managers (Silverman, 2006; Manville et al., 2019), therefore, the qualitative methodology via interviews was highly appropriate. We obtained the data for the study from conducting interviews and the used other secondary sources for triangulation. Regardless of the enormous contributions of food supply chains, their negative contributions to the environment, society, climate change and environmental degradation needs further studies (Ghadge et al., 2020; Wijethilake et al. 2021). The food manufacturing firms in the UK have been criticised severely due to the bad sustainability practices in the industry. As a result, several researchers are calling for the sustainability-enhancing factors in the industry to be studied. Since the main context of the research is the food manufacturing industry, it was useful to adopt different firms, therefore, 11 top food manufacturing firms were used in this research. Siggelkow (2007)

suggested that a limited number of interviews are valid provided the information are useful for argumentation. The initial list of firms was obtained from the Financial Analysis Made Easy (FAME) database which contains comprehensive information on companies. The firms were selected based on the number of employees, sales, and the availability of a valid contact. We randomly selected 35 firms and the top senior managers (see Table I), out of which only 11 agreed to the interview.

Table I. 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** **Company Profile:** It is a dairy manufacturing company with very famous products.	England
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

For anonymity, we refer to the respondents as REP 1, REP 2…REP 11 and the profile of each of the company and information about the respondents can be found in Table I. For triangulation, we combined the interviews with information from the companies' websites, published reports and notes taken during the interview. Only top senior managers (see Table I) were targeted for the interview, since information on especially OC, SCI and sustainability are highly exclusive to them. Semi-structured interviews were held, and the interview guide covered questions on OC, SCI and SSCP (Appendix 1). Averagely, the interviews lasted for 30 minutes (Table II) and were conducted by the researcher. Most of the interviews were conducted remotely due to the location, cost, and the COVID-19 pandemic (see Table II). Besides, saturation was reached on the 10th interview when the emerging responses from the participants became very similar. The interviews were tape recorded and transcribed accordingly and the collected data was eventually, coded. We triangulated both the interviews and the secondary sources (see Table II) to improve reliability and validity of the study. To further improve the reliability and validity, the transcribed interviews were sent to the various respondents for confirmation.

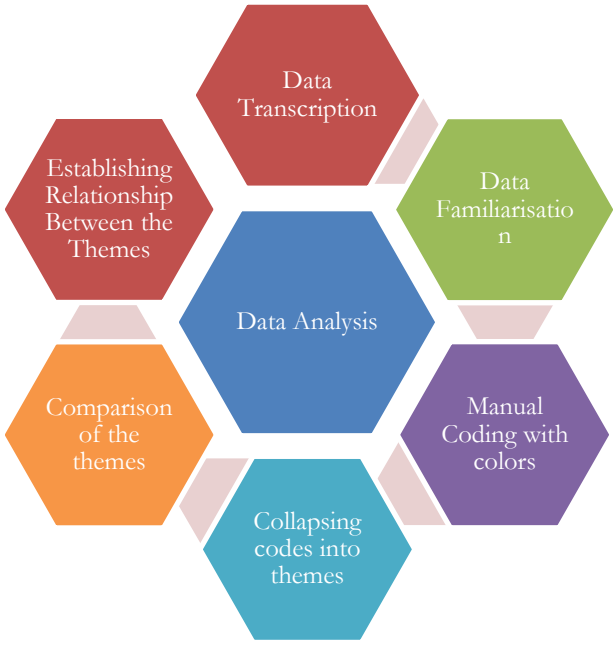

Figure 3. *Data Analysis procedure*

3.3.1 Data Analysis

Merriam (1998) suggested the relevance of simultaneous collection and analysis of data while Braun and Clarke (2006) also expressed the significance of familiarising and writing memos during

the interview. In this study, we adopted the procedure 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 technicality of the concept and the smaller number of interviews, manual coding was appropriate (Basit, 2003). The structure of the questions on the interview guide was used as a pathway for the transcription of the recorded interviews. This made coding highly effective and relatively easier. 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. The broader themes generated were OC, SCI and SSCP, and the sub-themes relating to SSCP comprised measures of SSCP and the sub-themes of OC, were categorised into developmental, group, rational and hierarchical culture. Similarly, the sub-themes of SCI were classified under internal, customer and supplier integration. The respondents were later asked to comment on how OC and SCI influence SSCP and codes relating to the relationship were developed. The emerging themes were inter-linked, to understand the relationship between the various concepts in the study. The coding was done by two researchers, and the codes were consistently compared to ensure high inter-coder reliability rate.

Table II: 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

4.4 Results and Discussion

The results of the study were categorised into SSCP, SCI and OC. With regards to 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.

4.4.1.2 Measures of Sustainable Supply Chain Performance

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), employ locally (community-centred), promotes 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, internship and employment opportunities to students and ex-convicts respectively.

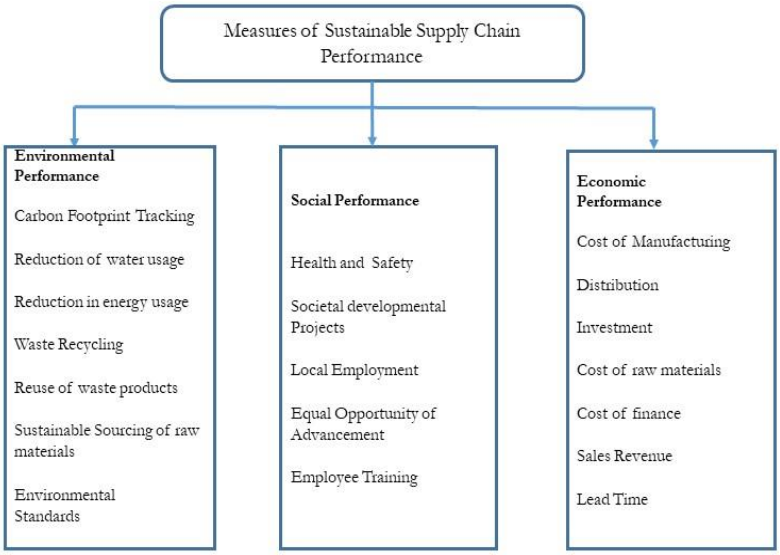

Figure 4. Classification of the measures of Sustainable Supply Chain Performance

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 improvement in operational performance while 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 small medium-scaled enterprises (SMEs), however, making sustainable products increases demand and help firms maintain the desired level of profitability necessary to keep the firm and the supply chains running profitably.

4.4.1.3 Supply Chain Integration

The findings confirmed the important role SCI play in the implementation of sustainable strategies and practices and the achievement of SSCP. Essentially, the achievement of higher sustainability performance is largely dependent on the success of external integration which is also based on the effectiveness of internal integration (II). Meaning, 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 the formidable and strong sustainable II (Han and Huo, 2020) in the focal food manufacturing firms. The pursuance of quality products and customer satisfaction were the main drive for an effective II. One of the respondents revealed that:

> *Because there is much power in the retailers, the retailers put a lot of pressure on the suppliers, and the unfortunate thing is that that pressure is pushed further down the supply chain*

In breaking the functional silos to achieve an effective II for sustainability, the firms use internal communication, regular meetings and teamwork through several processes and channels such as communique, staff news, cross-functional teamwork for new sustainable product development and development of innovative systems for implementing sustainability practices. Similarly, II and increased desire to respond to the sustainability demands of the customers in the supply chain trigger customer integration (CI) across the food manufacturing supply chains. In integrating with customers, communication channels such as business portal, customer's preferred systems, telephone, and electronic data interchanges (EDI) are utilised. CI across the supply chain comprise sharing sustainable production strategies, collaborative management, sharing of productive information, joint sustainability decisions and effective pricing of sustainable products.

Despite the rebuttal of research (e.g., Zhang et al., 2018) on the influence of II on supplier integration (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 suppliers make supply chain decisions including collaborative sustainability performance management, sustainable New Product Development, new idea development and collaborative sustainability management programs.

4.4.1.4 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 clearly reflected the CVF dimensions and are presented in *Fig. 5*. Gregory et al. (2009) found 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. 5*). Regarding rational culture, which uses incentives to achieve organisational objectives, the firms did not consider incentive packages in influencing employees' behaviour towards achieving 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 consider internal promotion and trainings as only incentive schemes. Regarding incentives, it was said:

> *We don't rely on incentives for the employees*

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*

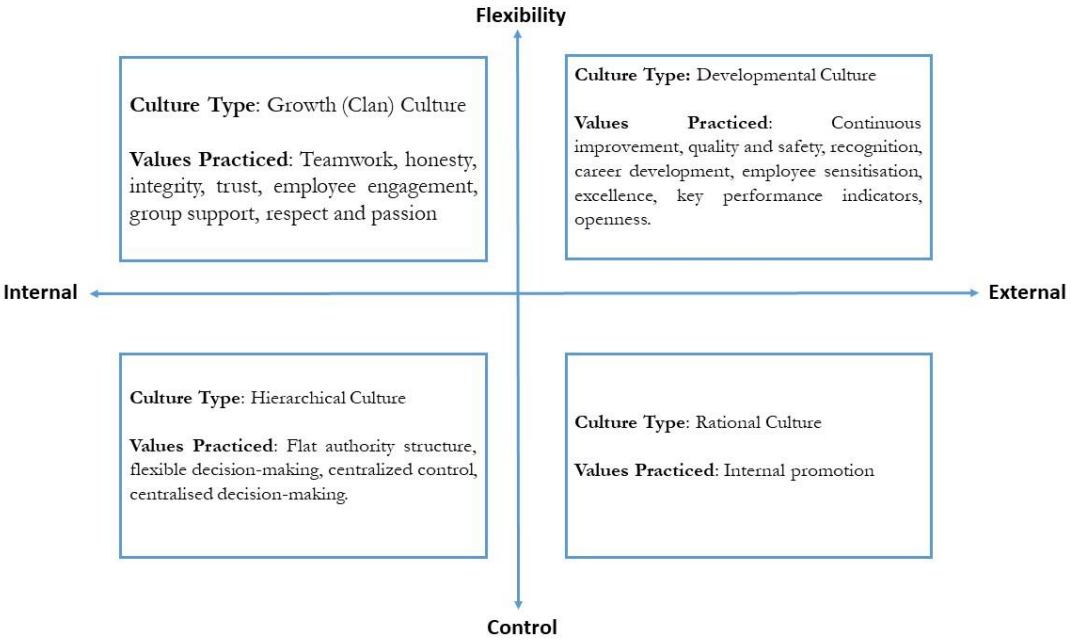

Figure 5. Classification of the values in line with Competing values framework

In terms of organisational structure, most SMEs had a flat authority structure. Decision-making is entrusted to only 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, which is one of the tenets of hierarchical culture (Cameron and Quinn, 2011). The 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.

4.4.1.5 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 the environmental, social, and economic performance contrasting the assertion of (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 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 the culture (developmental, hierarchical and group) to pursue and implement sustainability 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; Lopez-Torres et al., 2019). Therefore, the most crucial cultural value enabling the firms to attain an improved SSCP is group culture (teamwork). The establishment of a strong teamwork in the firm enables easy training, 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 polices that are discussed and passed down to workers helps in attaining our sustainability performance*

> *Making quality products and achieving sustainability performance, teamwork is important in my firm*

One of the managers who was maintained that teamwork is necessary on the use of teamwork to achieve the sustainability performance, 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 value with our customers*

The developmental cultural values (*see Fig. 5*), 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 key performance indicators (KPIs) act as a fundamental enabling factor necessary for the effective implementation and achievement of an improved SSCP. Such type of culture urges the food manufacturing firms to continuously seek for various sustainability improving structures and tools, train organisational members, introduce quality improving processes and track carbon emissions. These practices are very relevant to achieving a higher environmental, social, and economic performance. This was confirmed by Chavez et al. (2020) which highlighted the significance of quality improvement strategies to social performance. Hierarchical culture which is characterised by strict authority structure and lack of flexibility have been found to complicate the introduction of sustainability practices (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. The findings provide an insight into the significance of combining multiple competing values to abate sustainability challenges while improving sustainability performance in the supply chain. Therefore, a combination of developmental, group and hierarchical cultural values is ideal for achieving all the environmental, social, and economic performance measures while at the same time complying with the sustainability pressures of customers and suppliers.

4.4.1.6 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 the integration both within and across the supply chain to achieve the sustainability goals (Pagell and Wu, 2009; Loughlin et al., 2021). 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 a strong internal integration within the firms. Since the implementation of sustainability in the supply chain is mostly triggered by customer pressure in the industry, it is essential for the focal manufacturing firms 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 the 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 gesture to customers through the formation of a sustainability team. Additionally, the customers provide essential services such as sustainability audit, 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*

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*

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*

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 detrimental nature of suppliers' activities on the environment and society (Adesenya 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 the 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. The sustainable supply chain integration (SSCI) is demonstrated in the form of sustainability implementation team consisting of the focal manufacturing firms, customers, and suppliers. The firms form a strong working relationship with customers and suppliers for the purpose of improving the SSCP. The established sustainability team, now share 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*

4.4.2 Theoretical Contribution

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 SSCM within the context of food manufacturing industry. This study argued that developmental, group and hierarchical cultures are sustainability oriented and are suitable for obtaining higher SSCP. The study also argued that for firms to obtain higher SSCP from the sustainability-oriented cultures, a strong SCI is needed. Our research confirms the importance of adopting integrated competing values and strengthening SCI to improve SSCP. The findings partly confirm the assertion of Linnenluecke and Griffiths (2010) which theoretically predicted 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 improving SSCP. Our study demonstrates that SSCP is likely to improve in a highly flexible culture which focuses on maintaining higher levels of internal and external control. 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. This research adds to the findings of extant studies (e.g., Weingarten and Longoni, 2015; Kang et al. 2018) which all confirmed the relevance of SCI to sustainability performance.

Most importantly, our studies identified that the cultural values in group, developmental and hierarchical culture (see Fig. 5) 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 of environmental, social, and economic performance. The relevance of hierarchical culture to SCI contradicts the findings of studies (e.g., Braunscheidel et al., 2010; Cao et al., 2015; Porter, 2019). The impact of developmental and group culture on internal integration in this research contrasts the findings of Braunscheidel et al. (2010) which found no relationship between them. Our study also contributes to literature by identifying the various factors triggering SSCP of the firms and the various competing values adopted by the food manufacturing industry. *Fig* 6 summarises the findings by linking how the sustainability-oriented cultures influences SSCP and

present the mediating relationship of SCI. This model is crucial for future studies intending to research further on the relationship between culture and SSCP.

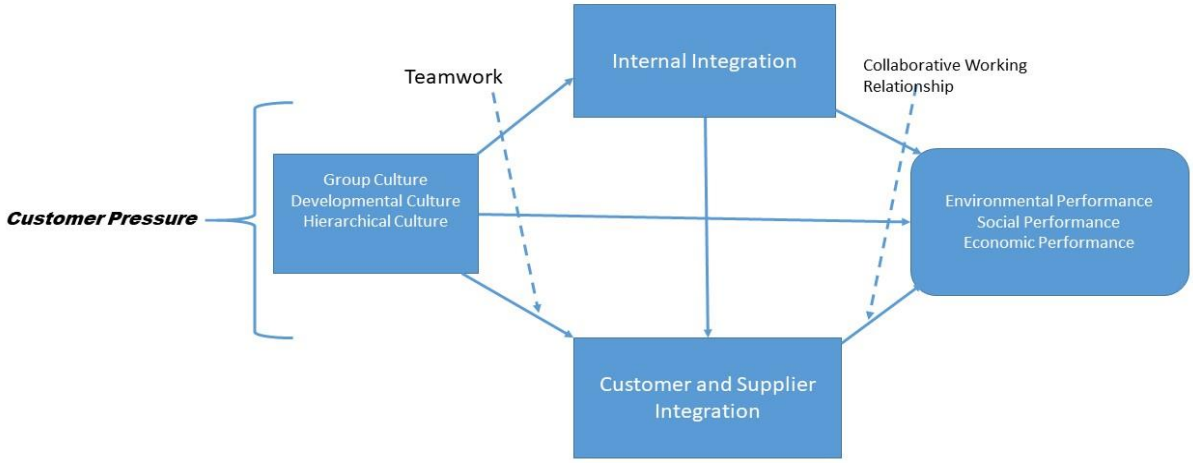

Figure 6. New model with the findings

4.4.3 Practical Implication

The consistent pressure on supply chain 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 the 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 culture is conducive for 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 in 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 culture). 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 as very effective for the implementation of sustainability practices. 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 set 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 improving SSCP. Additionally, managers could use hierarchical culture as an instrument for the implementation of the sustainability practices such as budgeting, investment appraisal, LCA (Wijethilake et al., 2021). 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 bond 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.

5.5 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. The CVF was utilised in categorising OC into developmental, rational, hierarchical and group culture mainly for the purpose of ascertaining 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 extreme level of SCI is needed after implementing a sustainability-supportive culture. After interviewing the various firms to identify 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 had 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 sustainability performance is also based on the effectiveness and strength of the collaboration between the focal manufacturing firms, customers, and suppliers across the supply chain. A 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.

With such an astounding findings 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 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 existence of different national culture 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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