Evaluating the Role of Short Food Supply Chains as a Driver of Sustainability: Empirical Evidence from China

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Abstract

While the industrialised agri-food supply chain has achieved tremendous success in the past decades, it has been increasingly criticised for its unsustainable issues. Short Food Supply Chains (SFSCs) have emerged as one of the sustainable alternative food networks. While some studies have shown that SFSCs are closely linked with sustainability, research on this topic in a developing country context is limited. Therefore, this thesis proposes to investigate the linkage between SFSCs and sustainability in the context of China. A systematic literature review was conducted to investigate the sustainable performance of SFSCs and provide theoretical foundations for this research. Afterwards, a novel conceptual framework was developed, which examines the relationships of SFSCs with the extended five dimensions of sustainability, sustainable livelihoods framework, moral economy, and the Chinese relationship. With the research paradigm of interpretivism, the mixed-method approach was applied in this study. In the city of Xinxiang, semi-structured interviews were conducted with 30 farmers, and survey data were collected from 532 customers. Covariance-based structural equation modelling (CB-SEM) was used to analyse the survey responses. It was found that the Chinese relationship is ineffective in motivating consumers' performance towards SFSCs, while the awareness of moral economy positively influences consumers' motivations towards SFSCs. Moreover, qualitative data from farmers and other quantitative data from consumers suggested that SFSCs play a vital role in enhancing sustainability and farmers' livelihoods. This study contributes to SFSCs research by originally focusing on the cultural and governance dimensions of sustainability, examining the joint implementation of sustainable livelihoods and moral economy, and featuring the Chinese relationship between farmers and consumers in SFSCs practices. The study sets a foundation for new research avenues in the SFSCs context and provides practical implications for policymakers to monitor and encourage farmers' and consumers' participation in SFSCs.

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Publications

The presented work has led to the publication or peer review of several journal and conference articles. A list of these publications is provided below and references to these will be included as necessary within the chapters of this thesis.

Refereed journal articles:

1. Farmers' attitudes towards participation in short food supply chains: Evidence from a Chinese field research

M. Wang et al., Journal of Administrative Sciences.

2. Sustainability concerns on consumers' attitude towards short food supply chains: An empirical investigation

M. Wang et al., Operations Management Research.

Refereed conference articles:

3. Investigating motivations towards participating in short food supply chains: evidence from Chinese context

M. Wang et al., 7th International EurOMA Sustainable Operations and Supply Chains Forum (Nottingham, UK, 10 – 12 February 2020).

4. Exploring short food supply chains from triple bottom line lens: A comprehensive systematic review

M. Wang et al., International Conference on Industrial Engineering and Operations Management (Bangkok, Thailand, 5 – 7 March 2019).

5. Farmers' attitudes towards participation in short food supply chains: evidence from a Chinese field research

M. Wang et al., 6th International EurOMA Sustainable Operations and Supply Chains Forum (Gothenburg, Sweden, 18 – 19 March 2019).

6. A systematic literature review investigating the short food supply chains and sustainability linkage

M. Wang et al., 5th International EurOMA Sustainable Operations and Supply Chains Forum (Kassel, Germany, 5 – 6 March 2018).

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Chapter 1

INTRODUCTION

1.1. Research background

With an annual GDP of 14.72 trillion dollars (Trading Economics, 2020), China is a rapidly developing country, which is responsible for feeding 18.2% of the entire population (US Census Bureau, 2020). Ranking first in farm output among all countries, China is an agriculture-centred country, which employs over 300 million farmers (National Bureau of Statistics of China, 2008). The farm produces in China cover a wide variety of products, most notably rice, wheat, potato, tomato, sorghum, peanut, tea, and soybean. While the history

of agriculture in China can trace back to the pre-agricultural Paleolithic (Liu et al., 2013), industrialized agriculture has gained incredible success in the past century in China.

Owing to the industrial revolution, the agriculture system has been geared towards a supply chain model that can maximize efficiency to reduce consumer costs. This led to the emerging trends of supermarket-based globalized agro-food systems in the last 20 – 40 years (Gereffi, 1994). As indicated by Roth et al. (2008), three major trends were identified as globalisation, consolidation across food categories, and commoditization with massive quantities. This supermarket-based food supply chain has achieved incredible success in the past decades, mainly because it can sufficiently mitigate the food crisis with its modernistic large-scale production.

However, the reputation of standardized food in the industrialized agriculture system is deteriorating due to the increasing occurrences of safety crises (Macartney, 2008). There have been several food safety incidents that occurred in China. For example, one of the largest milk producer companies added melamine to their infant formula, causing 6 babies to die from kidney stones, and over 54,000 babies hospitalized in 2008 (Macartney, 2008). According to Xu and Meng (2011), about 20,000 food poisoning incidents were recorded annually in the past ten years. These crises have arisen public concern about food safety in China. Llazo (2014) indicates that food safety is rather serious in China and hence transparency in supply chains has become essential. Moreover, the massive production feature of this food supply chain has also raised widespread concerns about its unsustainability and harms to the environment, such as excessive land use, pollution of soils and water, and exhaust emissions (Bazzani and Canavari, 2013; Mastronardi et al., 2015). From the producer aspect of this industrialized food supply chain, the increasing cost to maintain massive production and consumers' changing attitudes towards industrialized food both further compress the economic margin, leading to increased pressure on farmers' incomes (Renting et al., 2003). Meanwhile, the lack of information flow can also cause a dramatic

decrease in the profit of farmers. Moreover, the cost-price squeeze of commodity production also threatens farmers' revenue (Berti and Mulligan, 2016). Furthermore, the inefficiency during transportation of farm produces is also a severe problem in China, as up to 25% of fruits and vegetables can turn to rot during transportation, five times larger than in developed countries (Wang et al., 2013).

Thus, it can be noted that the existing industrialized agro-food system in China is causing several economic, environmental, and social problems. Owing to all these disadvantages of the current agro-food system, the demand for a more sustainable food supply chain has been rising.

1.2. Research problem

To fulfill the requirement for sustainability, several alternative forms of food supply chain have been proposed, that abandon the main features of the traditional food chain, such as massive production and standardized organisation (Higgins et al., 2008).

As indicated by Renting et al. (2003), these newly emerged food chains can be categorised as alternative food networks (AFNs). It refers to diverse new food production and trade modes that fall beyond the conventional agriculture model. Meanwhile, it also has some core characteristics, such as the social cooperation between producers and consumers, the reconnection of food supply in a sustainable manner, and the ability to promote local agriculture (Goodman et al., 2012, Berti and Mulligan, 2016; Rover et al., 2017; Vittersø et al., 2019; Bui et al., 2021). Although initially it was proposed to promote peripheral rural regions (Ilbery and Kneafsey, 1999), it has been identified as a potential solution to regain customers' trust and increase producers' incomes (O'Kane and Wijaya, 2015; Giampietri et al., 2016; Benedek et al., 2017; Deller et al., 2017; Giampietri et al., 2018, Zhang et al., 2019; Malak-Rawlikowska et al., 2019; Jarzębowski et al., 2020; Bui et al., 2021).

While AFNs are a broader concept and contain multiple initiatives, such as fair trade and local food networks (Chiffoleau et al., 2016), Short Food Supply Chains (SFSCs) are identified as a prominent sustainable practice (Marsden et al., 2000), which generally refers to any forms of re-joining farmers with consumers, with a minimized number of intermediaries (Ilbery and Maye, 2005). Instead of solely exchanging a product, this direct connection between producers and consumers shares additional information about knowledge, value, the meaning of the product, and producer and consumer themselves (Marsden et al., 2000). According to Galli and Brunori (2013), the essence of SFSCs is a strategy aiming to incorporate the support from concerned consumers, local communities, and civil society organisations, and hence improve the resilience of the family farms.

Recent research indicates that SFSCs have close linkages with sustainability (Kneafsey et al., 2013; De Fazio, 2016; Demartini et al., 2017; Milestad et al., 2017; Vittersø et al., 2019; Malak-Rawlikowska et al., 2019; Jarzębowski et al., 2020; Bui et al., 2021; González-Azcárate, 2021). From the social aspect, SFSCs can provide more employment opportunities and better visibility of the supply chain (Marino et al., 2013; Sgroi et al., 2014; Tudisca et al., 2015; Falguieres et al., 2015; Mastronardi et al., 2015; Mundler and Laughrea, 2016; Berti and Mulligan, 2016; Rover et al., 2017; Jarzębowski et al., 2020). Environmentally, SFSCs are proven to improve biodiversity and reduce environmental pollution (Canfora, 2016; Berti and Mulligan, 2016; Rover et al., 2017; Mancini et al., 2019; Jarzębowski et al., 2020; González-Azcárate et al., 2021). From the economic aspect, it can provide a closer linkage between consumers and producers and help farmers to regain the profit shared by intermediates (Hinrichs, 2000; Smith, 2008; Watts et al., 2011; Marino et al., 2013; Sgroi et al., 2014; Cleveland et al., 2014; Tudisca et al., 2015; Forssell and Lankoski, 2015; Balázs et al., 2016; Deller et al., 2017; Zhang et al., 2019; Malak-Rawlikowska et al., 2019; Jarzębowski et al., 2020; Bui et al., 2021). Owing to its sustainable features, it has been increasingly promoted in the agro-food system and rural areas by policymakers across many countries (De Fazio, 2016; Canfora, 2016; Verraes et al., 2015).

However, it should be noted that while SFSC has gained popularity in European countries, its evidence in the developing world remains widely un-documented (De Fazio, 2016). Given the huge population in China, agricultural sustainability has become a prominent issue for the Chinese government. The food safety issues (Xu and Meng, 2011) and the living conditions of farmers (Chow, 2006; Si et al., 2015; Zhang et al., 2019) in China both are ponderous topics, and the necessity of resolving these problems has become an urgent task. Therefore, the Chinese government is devoted to establishing a sustainable and resilient food supply system to ensure the entire population is properly fed (Ministry of Agriculture, 2015). Moreover, the Chinese government is committed to improving the sustainable livelihood of farmers, improving transparency along the food supply chains, and promoting safer food. Realizing the food sustainability challenges in China and the potential of SFSCs in meeting sustainability goals, it seems beneficial to investigate SFSCs in the Chinese context. Moreover, given that SFSCs are potentially the newest concept when considering sustainability in supply chain management, studies on their linkage are limited, and there is a lack of theoretical understanding. Therefore, it would be beneficial to critically explore the linkage between sustainability and SFSCs through an appropriate theoretical lens. Moreover, as an alternative food supply chain, SFSCs aim to minimize the number of intermediates, and hence have a different structure from the traditional food supply chain. Therefore, adopting SFSCs will introduce some reformations in the local food supply system. Thus, identifying the stakeholders in SFSCs and exploring their attitudes towards taking part in SFSCs would be beneficial. Additionally, the majority of existing studies on SFSCs adopt a qualitative approach (Ely et al., 2016; Canfora, 2016; De Fazio, 2016), there has been very limited empirical evidence to support this using the quantitative method (Battini et al., 2016). Thus, this study also aims to address this research gap by adopting a combination of qualitative and quantitative methods to explore the SFSC and sustainability linkages.

1.3. Research questions

With the research background and problems outlined, this study aims to address three particular research questions:

RQ1. *How SFSCs conform to the five dimensions of sustainability?*

RQ2. *What is the role of SFSCs in enhancing the sustainable livelihoods of farmers in China?*

RQ3. *What are the farmer and consumers' motivations to participate in SFSCs in China?*

1.4. Research aim and objectives

The overarching aim of this study is to investigate the SFSCs and sustainability linkages in the context of China. Following research objectives are hence identified to ensure the thesis consistently follows the aim of this research.

1. To critically explore the sustainability and SFSCs linkages by conducting a systematic review of the literature on sustainable SFSCs practices;
2. To develop a conceptual framework highlighting sustainability, sustainable livelihoods, and consumer-farmer relationship in the implementation of SFSCs;
3. To empirically validate and verify the proposed conceptual framework in the context of Chinese SFSCs practices;
4. To provide theoretical contribution and practical implications that can improve the understanding of farmers' and consumers' participation in SFSCs in China.

1.5. Scope and limitations of the study

The broad area of investigation of the current study is sustainable supply chain management, with a specific focus on the newly emerged forms of Short Food Supply Chains. This study builds on the theories of five pillars of sustainability, sustainable livelihoods framework, moral economy, and Chinese relationship and proposes a conceptual framework that connects them with different participating parties of the supply system.

The proposed conceptual framework was evaluated using data collected from semi-structured interviews and online questionnaires within a selected city.

However, several limitations of the current study should be addressed. Firstly, the city was carefully picked following a set of criteria to ensure it has both a conventional food supply system and sufficient SFSCs. While it helps to exclude the potential basis that can be introduced with the lack of a certain type of food supply system, it limits the generalizability of the results. It should be noted that coverage of farming in the selected city can be larger and more distributed than in other cities, especially those in a different part of China. Thus, it should be noted that the findings from this study assume the city has sufficient instances of SFSCs and the residents have easy access to both forms of food supply systems.

Another limitation of the study lies with the distribution of the online questionnaire. Although WeChat helps to distribute the questionnaires more conveniently, it may also restrict the involvement of elder people. This phenomenon is also reflected in the age distribution of the participants, which is more centralized to the range of younger and middle ages.

1.6. Contribution of the thesis

The major contributions of this thesis lay in three aspects. Firstly, a novel conceptual framework was proposed to guide the research. This framework draws on four relevant theories and denotes the relations between the two major actors in SFSCs (farmers and customers) and the corresponding theories. The proposed framework facilitates the design of the research and the derived hypotheses were evaluated by analysing the collected data. This study is among the first studies that attempt to empirically validate the relationships between SFSCs and the five dimensions of sustainability and sustainable livelihoods framework, which has been largely missing in the existing literature. Moreover, this is also perhaps the first study that attempts to investigate the influence of SFSCs on the moral economy and Chinese relationship. The findings from this thesis can help to improve the understanding of the SFSCs' influence on food supply systems.

Secondly, since most existing studies on SFSCs were focusing on developed countries, this study investigates the current status in a developing country and extensively compares the difference with existing studies. The divergence in several aspects within the findings can help to address the difference caused by the level of development. It also helps to reveal the cultural difference to a certain extent.

The third contribution is related to the practical implication. The findings of this thesis can be useful to policymakers as they can provide an understanding from both farmers' and customers' perspectives. This will help them in designing local and regional policies to promote more sustainable farming practices and encourage farmers to adopt SFSCs practices to serve local needs. Findings would also benefit farmers who are often less resourced to understand the shifting consumer trend and are hesitant to participate in SFSC activities.

1.7. Thesis outline

Chapter 2 to Chapter 6 present the work implemented and corresponding findings of this research. The conclusions are summarized in Chapter 7. A brief overview of the contents of each chapter is given below. A visual overview of this thesis that outlines the chapters and fulfilled research objectives (Section 1.4) is provided in Figure 1.1. As can be seen from the figure (Figure 1.1), the overarching aim of this research to investigate sustainable SFSCs in the Chinese context would be completed by achieving the four research objectives according to the missions of each chapter.

Chapter 2 – Theoretical Backgrounds. This chapter will evaluate the related concepts and research fields. Both the broader concepts, such as supply chain management, conventional agri-food supply system, alternative, and local food networks, and more concentrated concepts, like short food supply chains and sustainable livelihoods framework, are documented.

Chapter 3 − Literature Review. This chapter will review the current knowledge on SFSCs and their potential relations with sustainability. A systematic literature review was first conducted to locate relevant studies. Afterwards, the located literature was analysed using the five pillars of sustainability.

Chapter 4 – Theoretical Framework. This chapter will introduce the proposed conceptual framework of this study. Building upon the key themes originating from the previous chapters, a theoretically informed conceptual framework is proposed to facilitate the investigation into SFSCs in the Chinese context.

Chapter 5 − Research Methodology. This chapter will justify the methodology adopted in this study. The research paradigm and adopted strategy are first introduced. Afterwards, the detailed research design and data collection, and analysis methods are discussed. Finally, the ethical considerations of this study are included.

Chapter 6 − Data Collection and Analysis. This chapter will present and analyse the research data. The qualitative data collected from farmer interviews are discussed first. Afterwards, the quantitative data from consumer surveys are analysed statistically and through the structural modelling approach.

Chapter 7 – Discussion and Conclusion. This chapter will summarize the results and key findings from this study. The identified future work that could benefit current research is also discussed.

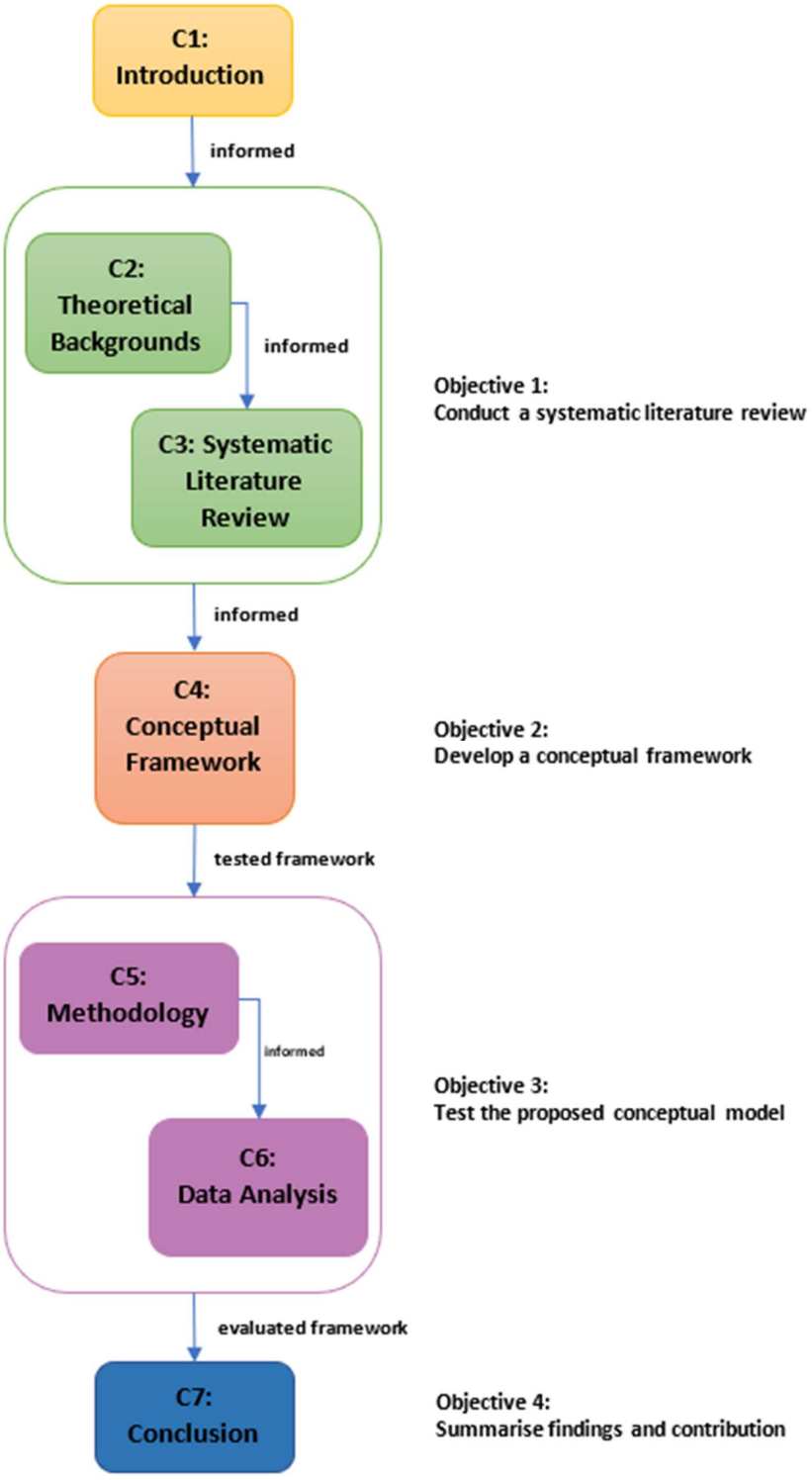


Figure 1.1. Outline of chapters and fulfilled research objectives

Chapter 2

Theoretical Backgrounds

2.1. Introduction

The purpose of this chapter is to analyse short food supply chains (SFSCs) in prior research and some relevant concepts, and in doing so to report its current state and identify research directions for literature reviews and future studies. This chapter begins by providing a brief overview and definitions of supply chain management, sustainable supply chain management, and the issues in conventional agri-food supply chains. The chapter proceeds by coming up with an alternative and local food system that may solve the food issues (Section

2.5). The chapter then provides a descriptive introduction and presents some existing definitions and classifications of short food supply chains in Section 2.6. The chapter then identifies the current food system in China and highlights the importance of investigating short food supply chains in this Chinese context (Section 2.7). Having identified the main research themes and set the country context of this study, a summary of this chapter is concluded in Section 2.8.

2.2. Supply chain management

Unlike most businesses several decades ago, when the production of certain products is conducted entirely within a company, today's business usually includes raw materials provided from and related operations implemented in several different companies (Forsman-Hugg et al., 2013). Therefore, it can be noted that the competition in today's business is no longer between individual companies, but between supply chains instead (Lambert and Cooper, 2000). As the efficiency of the local company is increasingly dependent on other parties within its supply chains, the management, coordination, and control of their relationships are now becoming an integral part of business strategy (Christopher, 2005).

Originally proposed by Oliver in 1982 (Laseter and Oliver, 2003), supply chain management (SCM) has gained increasing significance in value creation and potential competitive advantage (Li et al., 2006). It is a cross-functional approach that involves the transformation of natural resources, raw materials, and components into a finished product, which is delivered to the end consumers (Kozlenkova et al., 2015). As indicated by Handfield (2002), SCM is the integration and management of related organizations and activities through cooperative organizational relationships, effective business processes, and a high level of information sharing to create high-performing value systems that provide member organizations sustainable competitive advantage. It consists of a wide variety of participants directly or indirectly involved in satisfying customers' requirements, most notably, manufacturer, supplier, transporter, warehouse, retailer, and customer (Chopra and Meindl, 2004).

The major purpose of SCM is to improve the trust and collaborations among supply chain partners, which can hence improve the visibility of inventories and their movement speed. It should be noted that effective SCM can improve the potential competitive advantages and also create more added values (Dyer and Singh, 1998; Li et al., 2006).

Although the concept of SCM has been around for more than three decades, there is still a lack of consensus on a unified definition (Stock, 2009). Nonetheless, it should be noted that the most widely espoused definition of SCM is proposed by the Council of Supply Chain Management Professionals (2009), which is defined as:

> "*Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, Supply Chain Management integrates supply and demand management within and across companies. Supply Chain Management is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the logistics management activities noted above, as well as manufacturing operations, and it drives coordination of processes and activities with and across marketing, sales, product design, finance, and information technology*."

While activities and processes involved in supply chains are dynamic and complex, the challenges that included lowering costs, environmental pressure, and growing social concerns of these networks have led many organizations to seek supply chain sustainability as a measure of profitable logistics management. Because of the obvious benefits of improved environmental and

financial performance, advancing sustainability becomes mainstream in every aspect of supply chain management (Pagell and Shevchenko, 2014).

2.3. Sustainable supply chain management

As indicated by Lam (2018), current research in SCM mainly focuses on topics related to sustainability and risk management. The concept of Sustainable Supply Chain Management (SSCM) has been proposed as integration of sustainability and supply chain management. The research into SSCM originates from the Green Supply Chain Management (GSCM), which only incorporates environmental aspects to the economic management criteria of the supply chain (Srivastava, 2007). Afterwards, the importance of social aspects was also acknowledged, and it was proposed that all three dimensions of sustainability should be effectively considered in the management of the supply chain to achieve sustainable performance (Pagell and Wu, 2009). This proposal leads to the emergence of SSCM, which has attracted increasing research interest in the recent decade. According to Pagell and Wu (2009), SSCM involves the integration of social, economic, and environmental goals in the supply chain routines, operations, strategies, and decision making. Although there have been many definitions proposed for this concept (Ahi and Searcy, 2013), the definition proposed by Carter and Rogers (2008) is favoured in this thesis, which conceptualises it as "*the strategic, transparent integration and achievement of an organization's social, environmental and economic objectives in the systemic coordination of supply chain business to improve its long-term economic performance"*. According to Alghababsheh (2018), the paper by Carter and Rogers (2008) marked the beginning of a new research area on sustainability in supply chain management. In the following decade, SSCM has received significant research interest and has become a mainstream research field in supply chain management studies (Pagell and Shevchenko, 2014). Extensive studies have been conducted to investigate various related aspects, such as the benefits of adopting SSCM, the motivations, and the implementation procedures (Alghababsheh, 2018).

The sustainability concept is generally underpinned by three pillars, which are social, environmental, and economic (Van der Vorst, 1999; Giddings et al., 2002). The first pillar, social sustainability, concerns the systems, structures, and relationships that actively support the capacity of current and future generations to create healthy communities (Partridge, 2005). Meanwhile, environmental sustainability implies that environmental resources are utilized in a way that it becomes possible for civilizations to support themselves indefinitely (Daly, 1990). Finally, economic sustainability refers to the ability of an economy to consistently maintain a respectable level of increasing gross domestic product over a long period (Daly, 1996). It should be noted that economic sustainability requires environmental and social sustainability and social sustainability hinges on environmental sustainability (Reddy and Thomson, 2015). Alternatively, the three domains of sustainability can be treated with parity as suggested by Newton (2003).

While these three dimensions' architecture of sustainability has been widely acknowledged, additional dimensions have been increasingly proposed in recent studies, most noticeably, cultural and governance. First proposed in 1995, cultural sustainability was originally categorized under the social pillar but has been increasingly considered as an additional sustainability pillar (Soini and Birkland, 2014). In the framework of the World Summit of Local and Regional Leaders – 3rd World Congress of UCLG, the Executive Bureau of UCLG officially approved the policy statement that confirms culture is the fourth pillar of sustainability (UCLG, 2010). It mainly concerns the maintaining of cultural beliefs, cultural practices, heritage conservation, and culture as its entity (Soini and Birkland, 2014). As indicated by Bender and Haller (2017), people's beliefs about society can have a significant influence on their decisions, which demonstrates the importance of cultural sustainability. While this new pillar represents a new aspect of regenerated sustainability, it also contributes to the traditional three pillars (Astara, 2014). The same feature was also confirmed by Tweed and Sutherland (2007). They provided a framework under which culture, a part of which is the architectural heritage, is connected with the three pillars of sustainability. In their research, the environmental

dimension focuses on the maintenance of the existing stock of buildings, for example, the chemical pollutants in urban environments. They also agreed that the role of historic buildings could help to promote economic development in established cultural cities by attracting tourists (ODPM, 2004). The social dimension is more relevant to the need of looking at the architectural and cultural heritage as a part of sustainability because the cultural capital could be preserved for future generations (Bourdieu, 1986). Thus, culture through the architectural heritage has a role to play in and contribute to all three dimensions. Culture itself can be defined as a set of beliefs, morals, methods, and a collection of human knowledge that is dependent on the transmission of these characteristics to younger generations.

Along with the cultural dimension, governance has also attracted increasing attention as an additional dimension of sustainability. While there still are some debates on the essence of governance, some researchers have proposed it as an independent sustainability pillar (Biermann et al., 2014; Jitmaneeroj, 2016). Although currently no consensus has been reached on admitting governance as a sustainability pillar, it has played a crucial role in shaping the Sustainable Development Goals and the post-2015 development agenda (Biermann et al., 2014). Governance concerns the authoritative steering of social processes, which usually involves activities of governmental and non-governmental actors, such as civil societies, partners, and other private entities, and can occur at multiple levels, ranging from international to local.

While the products involved in SCM can be rather diverse, nearly covering all aspects of human livelihood, the agri-food supply system is of particular importance, as it is essential to the survival and prosperity of human civilization. It should be noted that the agri-food supply system tends to be more complex than other products as its performance can be reflected by factors, such as food quality, safety, and freshness within a limited time (La Scalia et al., 2016). Thus, the next section introduces the agri-food supply chains without considering sustainability in these networks.

2.4. Conventional agri-food supply chains

As an essential part of human existence, sufficient food needs to be produced and consumed to ensure the survival and flourishing of humanity. It should be noted that food is an integral component of the social fabric throughout the world, which is closely linked to the health and well-being of people. While the history of the agri-food supply system can trace back to Iron Age (Hueston and McLeod, 2012), it had been a vital restriction for the mankind population for a long period. This phenomenon was improved with the industrial revolution when the conventional agri-food supply chains were developed and dominated the food supply system. This modern form of food supply system operates on economies of scale. They are geared towards a production model that aims to maximize efficiency to reduce consumer costs and hence increase overall production. It should be noted that these supply chains are usually monopolised by a few large companies or organizations that possess a dominant proportion in the entire process from production to consumption (Ilbery and Maye, 2005; van der Ploeg, 2010).

As indicated by Welch and Graham (1999), the most prominent benefits of this conventional food supply system are lower food costs and larger food variety. Both are achieved through large-scale production and advanced logistics system. The costs to maintain large-scale farming are usually lower, especially when compared with organic farming. This is mainly caused by the use of synthetic chemical fertilizers. Moreover, the modern logistics system can help to transport the farm products to other regions or even countries. Agricultural products have been the main export goods for many countries, such as China, the US, and Brazil. It can be noted that this modern form of food supply system has achieved tremendous success in mitigating the food crisis in the last decades.

However, while these conventional agri-food supply chains have been proved effective and successful, they are increasingly accused of their adverse impacts on health (Llazo, 2014) and the environment (Mastronardi et al., 2015).

The massive production feature of this food system has caused many food safety crises, which have raised global concerns. For example, the meat, eggs, and subsequent products in Germany were contaminated with dioxins in 2011, when about 4700 farms were affected, and exports from Germany to China were banned (Harrington, 2011). Moreover, a crime ring was found in China that passed off rats, minks, and small mammal meats as mutton, which affected Shanghai and Jiangsu province and reached an estimated market value of over 1 million USD (Martina, 2013). It can be noted that with the public increasing awareness of food safety and security, these incidents have raised widespread concerns about the conventional food supply system, leading to consumers' decreasing confidence in food products sold there. Along with the food safety issue, this conventional food supply system also harms the environment. For instance, the excess use of pesticides can cause pollution of soils and water (Aktar et al., 2009). Moreover, globalised logistics transportation can cause extensive exhaust emissions (Mastronardi et al., 2015). Apart from these, it can also be noted that the conventional food system is more favourable for big farming industries and is hence not suitable for small farmers. Produces from small farms are more difficult to be admitted into the system, which can deteriorate the livelihoods of farmers, especially in developing countries, where industrialised farming is rather rare among the majority of rural farmers.

Moreover, with the rapid development of modern society, consumers' selection of food is not merely limited to maintaining basic living demands, but also considers the safety, environment, and other affiliated values. Therefore, their preferences for conventional supplied food keep deteriorating, as the industrialized food suffers from safety crisis, and tends to have minimal affiliated values. This changing attitude is a growing threat to the maintenance and future of conventional agri-food supply chains. Meanwhile, from the farmers' perspective, while the lower sale price caused by massive production has been a competitive advantage and granted them substantial revenues in past years, the cost-price squeeze of commodity production and the increasing maintenance costs of massive production have been compressing their

economic margin (Berti and Mulligan, 2016). The profits of large-scale industrialised farming have been decreasing in recent years, resulting in increased pressure on farmers' incomes (Renting et al., 2003). Therefore, it can be noted that the preferences of both farmers and consumers on conventional food supply chains are changing in a deteriorating trend. The new agri-food supply chains which could solve the above problems and fit sustainable benefits in these networks become the pursuable alternatives to conventional food systems.

2.5. Alternative and local food systems

With the increasing concerns on agriculture sustainability and food safety, several different forms of food supply chain have been proposed, which can be categorized as alternative and local food systems (Renting et al., 2003). These newly proposed food supply systems abandon the main features of the conventional food chain, such as massive production and standardized organization (Higgins et al., 2008). The emergence of these new food supply systems originates from the demand for a spatial, economic, and social re-localization of the food systems (Goodman and Goodman, 2008). A growing trend in developing these new food systems has been witnessed in recent years, which is represented by the growth in selling organic, fair trade, local, and quality food through typical instances, such as Farmer Markets, CSAs, farm shops, etc. (Maye and Kirwan, 2010).

A detailed comparison between conventional and alternative food systems is listed in table 2.1. Owing to their potential in mitigating sustainability and safety issues and improving the livelihoods of farmers, the interest in these new forms of food supply chains has surged among academic, campaigning, and policy-making circles in the last two decades (Owen, 2014). According to Gliessman (2015), alternative and local food systems have five typical elements, which are operated in a local context, shortened path from farmer to consumer, building food-based community, enabling democratic information exchange, and promoting food justice.

Table 0.1. Comparison between both food systems (Ilbery and Maye, 2005, P. 824)

Conventional	**Alternative**
Modern	Postmodern
Manufactured/processed	Natural/fresh
Massive production	Craft/artisanal production
Long food supply chains	Short food supply chains
Costs externalized	Costs internalized
Rationalized	Traditional
Standardized	Difference/diversity
Intensification	Extensification
Monoculture	Biodiversity
Homogenization of foods	Regional palates
Hypermarkets	Local markets
Agrochemicals	Organic/sustainable farming
Non-renewable energy	Renewable energy
Fast food	Slow food
Quantity	Quality
Disembedded	Embedded

The first element concerns the geographical feature of these new food systems. This "*local*" feature can incorporate more social values into the products, and hence benefit the local economy and improve the engagement of the local community. Moreover, it has also been found that customers tend to show more trust when they know the origin of the food and can communicate directly with the producers (Renting et al., 2003). Thus, it can be noted that this geographical proximity is the most prominent feature of these new food systems.

Meanwhile, the second element refers to the proximity between farmers and consumers. Unlike conventional food supply system, which consists of many related third parties, these new food systems short-circuit the supply relation and reduce the number of intermediates. This reduction in related third parties can result in mutual economic benefits for both farmers and consumers. With less revenue shared by intermediates, farmers can sell their products at prices

lower than conventional markets, while still making more profits (Mastronardi et al., 2015).

Moreover, the third element draws on building a food-based community, which involves actors related to producing, processing, distributing, and marketing food products. Developing a community bonded with food can be beneficial to reduce the risks of farming individually, and improve the food system's robustness to various issues, such as losing farmland to development, deteriorating soil erosion and profits squeezed (Gliessman, 2015). Developing such communities can improve the resilience of the food system and increase the engagement of neighbourhoods.

Furthermore, the fourth element mainly focuses on the transparency of the food system. As a major criticism of conventional food systems is the lack of shared information and increasing occurrences of safety crises, these new food systems are hence proposed to improve the information exchange between related parties. Direct communication between farmers and consumers is enabled to allow the free flow of undistorted and unfiltered information. Through this information exchange, consumers can gain a deeper understanding of the products they purchased and hence have increased trust in the quality and safety of the food.

Finally, the fifth element concerns the equity issues of the food system, that every member within the system should be treated fairly and receives full recognition and reward for their efforts. As indicated by Gottlieb and Joshi (2010), food justice ensures that the benefits and risks of the entire food supply process should be shared equitably. It helps to ensure all devoted efforts and participation from planting to consuming the food are no longer taken for granted or ignored (Allen, 2004).

It should be noted that possessing all five elements is not essential for a food system to be qualified as an alternative and local food system. According to the classification proposed by Renting et al. (2003) and Jarosz (2008), some

most typical forms of these new food systems are identified as Farmer Markets, farm stores, Community Supported Agriculture, box delivery schemes, and food hubs.

Table 0.2. Types of AFNs and relative contributions (Gliessman, 2015)

Type of AFN	Encompassed within a Locality	Shortens Food Supply Chain	Builds Food-Based Community	Promotes Democratic Flow of Information	Promotes Sharing of Burdens and Benefits
Farmers' markets Farmers sell their products directly to consumers	✓	✓	✓	✓	✓
Pick your own Consumers do their own harvest on the farm	✓	✓	✓	✓	**
Farm stores On-farm store for direct sale, open all year	✓	✓	✓	✓	✓
Community supported agriculture Subscription sales to consumers and groups	✓	✓	✓	✓	✓
Box schemes Farmer prepares a box on order for consumer	✓	✓	**	**	**
Consumer cooperatives Centralized food buying by consumers	**	✓	✓	✓	**
Local-food restaurants Promotion of local food by restaurants	✓	✓	✓	**	**
Dedicated retailers Shops that sell local or regional products	✓	✓	✓	**	**
Food hubs Networks that create a local food institution	✓	✓	✓	✓	✓
Catering for institutions Using local and regional products in food service	✓	✓	**	**	
Mail order sales Long-distance purchase from farmer		✓	**	✓	
eCommerce Direct purchase through online mechanisms		✓	**	✓	✓

As listed in Table 2.2, these specific types of new food systems can contribute to some of the five elements, which already distinguish them from conventional food systems. Although the exact forms of these examples vary significantly, they share some similar essences, especially when compared with the conventional food supply systems. These new supply systems usually have some affiliated social values, such as social cooperation and direct communication between producers and consumers. Moreover, they can also improve the sustainability of the agriculture system, and promote local agriculture (Goodman et al., 2012). Meanwhile, it should also be noted that

consumers tend to have more trust in the food products when they can directly meet the producers in a relaxed and friendly shopping atmosphere, which is also a typical characteristic of these alternative food systems. While AFNs refer to the alternative forms of food supply systems compared with conventional food networks, a more sustainable and specific form of AFNs is introduced as Short Food Supply Chains in the next section.

2.6. Short Food Supply Chains

As a broader concept, AFNs contain multiple initiatives, such as fair trade and local food networks (Chiffoleau et al., 2016). Among these newly emerged forms of food supply systems, Short Food Supply Chains are identified as a prominent sustainable practice (Marsden et al., 2000). It operates like a local food system and short-circuits the traditional long food supply chains. The 'short' not only refers to the proximity in geography but also the social relations between producers and consumers (Renting et al., 2003; Aubry and Kebir, 2013). It was originally proposed as an example of farmers showing resistance to the modernization of the food system (van der Ploeg et al., 2000), and received a resurgence of interest in recent decades (Ilbery and Maye, 2005; Kneafsey et al., 2013). There have been several government attempts to promote this new mode of food supply chain. For instance, a specific action plan aiming to support the development of short food chains was developed by the Ministry of Agriculture, Agrifood, and Forestry of France in 2009.

While the modern research on SFSCs can be traced back to 2000 (Marsden et al., 2000), there still has been no consensus on a unified definition of this concept. 10 different definitions proposed in the literature are summarized in Table 2.3.

Table 0.3. Definition of SFSCs

Original proposer	Subsequent authors	Definition
Marsden et al. (2000)	Galli and Brunori, 2013	1. The capacity to re-socialize or re-spatialize food, thereby allowing consumers to make value-judgements about the relative desirability of foods based on their
	Aggestam et al. (2017)	
	Galli et al. (2014)	

		knowledge, culture, experience, or perceived images. 2. The redefinition of the relationships between producers and consumers shows clear signals as to the origin of food. 3. The development of new relationships for new types of supply and demand with new criteria that link price with quality criteria and the construction of quality (enhancing the image of the farm and the territory as a source of quality foods). 4. Emphasis on the relationship between food producer and consumer to construct value and meaning, rather than solely the type of product itself.
UK Soil Association (2001)	Tanasa (2015)	A production, processing, and trading system, primarily based on organic and sustainable methods of agri-food production, where the physical and economic activity is largely contained and controlled within the locality or region where it was produced, which provides health, economic, environmental, and social benefits to the communities in those areas.
Renting et al. (2003)	Aubert and Enjolras (2015)	SFSCs are defined as innovative food chains characterised by a restored and more direct connection between producers and consumers.
	Demartini et al. (2017)	
	Giampietri et al. (2015)	
	Filippini et al. (2016)	
Parker (2005)	Mastronardi et al. (2015)	SFSC can be defined as an agro-food supply chain where there are only a few intermediaries between producer and consumer and/or a short distance, geographically, between the two.
	Marino et al. (2013)	
	Blanquart et al. (2010)	
Ilbery and Maye (2005)	Bimbo et al. (2015)	Short Food Supply Chain (SFSC) refers to any form of direct sale from farmers to consumers.
French Ministry of Agriculture (2009)	Aubry and Kebir (2013)	Selling systems involve no more than one intermediary.
	Mundler and Laughrea (2016)	
	Chiffoleau et al. (2016)	
Giarè and Giuca (2012)		Reduce steps and intermediaries to create a new, direct, and trust-based relationship between producers and consumers.
European Commission (2013)	Wawryszuk and Golebiewsk (2014)	A supply chain involving a limited number of economic operators, committed to cooperation, local economic development, and close geographical and social relations between producers, processors, and consumers
	Canfora (2016)	
Kneafsey et al. (2013)	Berti and Mulligan (2016)	The foods involved are identified by, and traceable to a farmer. The number of intermediaries between farmer and consumer should be 'minimal' or ideally nil.
	Niemi and Pekkanen (2016)	

Gorton et al. (2014)		Short or direct supply chains are defined as those having no more than one intermediary between the farm producer and the final consumer, e.g. farm shops, farmer markets, and community-supported agriculture.

While it can be noted from table 2.3 that there has not been a consensus on a unified definition of SFSCs, it generally refers to any forms of re-joining farmers with consumers, with a minimized number of intermediaries (Ilbery and Maye, 2005). Instead of solely exchanging a product, this direct connection between producers and consumers shares additional information about knowledge, value, the meaning of the product, and producer and consumer themselves (Marsden et al., 2000).

Meanwhile, although SFSCs is a more concentrated definition, it still has multiple types of derivatives, such as box schemes, Farmer Markets, on-farm selling, consumer cooperatives, Internet sales, and Grow Your Own (Galli and Brunori, 2013). To distinguish these derivatives, Renting et al. (2003) proposed a comprehensive SFSCs classification, from which they derived three categories of SFSCs based on the adopted mechanism, as shown in Table 2.4.

Table 0.4. Classification of SFSCs (Renting et al., 2003)

Face-to-face	**Proximate**	**Extended**
farm shops	farm shop groups	certification labels
farmers markets	regional hallmarks	production codes
roadside sales	consumer cooperatives	reputation effects
pick your own	community-supported agriculture	
box schemes	thematic routes	
home deliveries	special events, fairs	
mail order	local shops, restaurants, tourist enterprises, dedicated retailers	
e-commerce	catering for institutions	
	sales to emigrants	

As shown in Table 2.4, the face-to-face SFSCs are arguably the most quintessential form. The direct personal interaction between producers and consumers can improve the trust and authenticity of the products (Renting et al., 2003). It is the most typical group of SFSCs and can maximize the effects of direct personal relationships between producers and consumers. Among this sub-group, Farmer Markets and farm shops are more similar and their selling mode. Both are commonly hosted in in-door venues and consist of a large variety of products sold by different farmers. The major difference between these two forms of SFSCs is the venue location, as the former is mainly in an urban area, while the latter tends to be near the farms and hence in the rural area. Meanwhile, picking your own is another interesting type of SFSCs as it requires consumers to be responsible for harvesting themselves, which is always incorporated with some bonus features to attract tourists, such as farm tours and the experience life of farmers. While there are several other types of SFSCs in this group, the most prominent feature of this face-to-face type of SFSCs is the minimized number of intermediates, which can be nil in many cases.

Unlike the most typical group of SFSCs, while the proximate SFSCs don't have interpersonal direct communication between producers and consumers, both parties share spatial and social relations of proximity in this group (Marsden et al., 2000; Renting et al., 2003). It is like an extension of the first group, where producers can scale up their business to reach more local and regional markets and consumers with the help of several limited intermediaries (e.g. distributors, wholesalers, retailers). As described by Renting et al. (2003), the products in proximate SFSCs are sold in the region of origin place, and this local production feature is advertised to the consumers at the point of retail. Therefore, this type of SFSCs can be referred to as the agri-food networks that characterise local or regional food systems. With the incorporation of some intermediates, the dependency on trust and authenticity over the products is transferred from farmers to the intermediaries and retail venues.

Meanwhile, the extended SFSCs are more distinct from the previous two groups. It typically refers to the products sold to regions outside of their origin. The produces may travel a long distance, and even across nations. Therefore, neither the interpersonal relations nor the intermediaries or retail venues can be relied on. The trust in products is hence guaranteed by some external certification labels. While this type of SFSCs is similar to conventional food supply systems, the origin places of those products are made aware to the consumers to include some additional information about the quality of the products. Some typical examples are identified as the Protected Designation of Origin (PDO), Protected Geographical Indication (PGI), and Traditional Specialities Guaranteed (TSG) labelling schemes in the EU. The names of products within these schemes are protected and their qualities are guaranteed to the consumers.

While the emerging trend of SFSCs is driven by the demand for a more sustainable agriculture supply system, the positive influences of SFSCs have been researched and evaluated in recent two decades (Marsden et al., 2000). The current studies on SFSCs mainly focused on European and other developed countries, related research on developing countries is limited. As China is an agricultural country with a large population, it is meaningful to investigate SFSCs in the Chinese context. To achieve this research question, the next section sought the current food supply chain status in China.

2.7. Food supply chain in China

As one of the ancient cradles of civilization, the history of China can be traced back to over 3000 years ago (Boltz, 1986). With such a long history, the origin of Chinese agriculture is hence rooted in the Paleolithic era, when hunter-gatherers harvested wild plants with the same tools for millet and rice (Liu et al., 2013). The revolution of agriculture has never ceased in China. It should be noted that the food crisis has been a prominent issue in China for many centuries (Lu et al., 2015). Thanks to Borlaug's Green Revolution, the shortage of food supply has been eased, and China can successfully produce enough

grain to feed 22% of the world population with only 9.5% of the world's arable land and 31% freshwater resource (Tan, 2007). The Engel coefficient of China, which measures the proportion of income spent on food, has dropped rapidly from around 60% in 1978 to around 30% in 2017 (Jiang and Bian, 2019). This dramatic decline in Engel's coefficient helps to confirm that the food supply in China has shifted from shortage to abundance. Currently, grain per capita is over 400 kg in China (Jiao et al., 2017). With such a high food production, it not merely solves the food crisis and related social problems in China but also contributes greatly to world food security (Tan, 2007).

While the current food supply system in China has gained tremendous success, it suffers criticisms from many aspects, most notably, the pollution and safety issues. As the guidance policy for the development of the Chinese food supply system is "*pollution first and then elimination*", it is hence evident that the existing food supply system is accompanied by relatively severe pollution issues (Tan, 2007). Owing to the limited perceived education, the Chinese farmers' consciousness of environmental protection is very restricted, resulting in the large-scale usage of chemical fertilizer (Wu et al., 2018). According to the study conducted by Cai et al. (2018), the fertilizer use intensity keeps increasing in China from 2004 to 2015, and the intensity is significantly higher than the upper limit of international safety fertilization. Moreover, most Chinese farmers are unaware of the concept of environmental sustainability and have never heard of biodiversity before (Jiao et al., 2017). It should be noted that the pollution caused by Chinese agriculture has been a prominent issue for many decades (Quan and Liu, 2002). While recent policies have started to concern the environmental impacts of agriculture, more efforts from both the government and farmers are still needed to mitigate this issue (Yu and Wu, 2018).

Along with agricultural pollution, food safety is another severe issue in China, which has raised even more concern among the public. There have been multiple serious food safety crises happened in China that have drawn worldwide attention. For instance, the 2008 Chinese milk scandal has caused

the most adverse impacts on the reputation of Chinese food safety, as 54,000 babies were sick with the baby formula contaminated by melamine (Macartney, 2008). Its long-lasting impact still is valid after a decade that Chinese parents prefer to buy milk powders for their infants from overseas. Moreover, there have also been multiple instances reported that fake animal meats were produced and sold on the market (Foster, 2011). Driven by profits, these Chinese food producers tend to mix their products with chemicals to reduce costs and increase competitiveness. Therefore, it can be noted that Chinese food products are threatened both by the quality of raw materials and post-processing. China has a vast variety of small to medium-sized food producers that are responsible for producing different kinds of food but without any monitoring and certification from the government (Zhou, 2015). The lack of transparency in the Chinese food supply system is a severe issue and has drawn increasing public concern (Yiannas, 2018). As the public's trust in Chinese food safety keeps deteriorating, it would hence be a rather urgent task to solve the safety issues and regain customers' trust.

Owing to these two most prominent issues of the current food supply system in China, it can be noted that a reformation of Chinese agriculture that can improve its sustainability is demanded. Moreover, as a rapidly developing country, the importance of sustainability has been widely acknowledged in China. The Chinese government has paid great attention to sustainable development. The earliest sustainable development policy was released in 1994 by the state council (1994). Several following reports have been published to monitor the progress (Zhang et al., 2012). Within the general requirements for sustainable development, there have been specific policies to promote sustainable agriculture in China. For instance, the Ministry of Agriculture has released the Plan for National Sustainable Agriculture Development in 2015, which divided the country into three districts according to the sustainability demand (Ministry of Agriculture, 2015).

With the government support and deficiencies of the current food system, it can be noted that investigating SFSCs in China would be beneficial and has

great significance. It could be a potential solution to regain consumers' trust, improve food safety, and enhance farmers' lives. However, owing to the vast territory and huge disparity between different regions, SFSCs have not been widely recognised and promoted in China. Moreover, the existing SFSCs practices in China also possess different structures. According to Cai and Du (2013), the most popular types of local food supply are municipal designated production areas, membership farms, community-supported farms, and community-based free markets. While the municipal designated production areas are to directly supply food to cities from their surrounding peri-urban areas, the other three types are more similar to some instances proposed by Renting et al. (2003). Membership farms have a high correlation with box schemes, the community-supported farm is an extension to Pick-your-own, and community-based free markets are essentially farmer markets. However, it should be noted that all these food supply modes are dominated by the government or big companies. Thus, it would be beneficial to compare the short food supply systems between China and EU countries and investigate the promotion of SFSCs in China.

2.8. Chapter summary

This chapter presents the broader context background of this study. The history of supply chain management was briefly reviewed first. Afterwards, the recently emerged sustainable supply chain management was documented, which sets the field of this proposed research.

Along with clarifying the broader field of research, the research focus was set on the food sector. The current status of conventional agri-food supply chains was reviewed first. A primary characteristic of these conventional food supply chains is that they are usually monopolised by a few large companies or organizations that possess a dominant proportion in the entire process from production to consumption. While these industrialised food systems, featured by large-scale production, have achieved tremendous success in the past decades, they have been increasingly criticised for their adverse impacts on

health and the environment. It should be noted that although massive production can improve its efficiency, it has caused many food safety crises and raised public concerns. Moreover, the excess use of pesticides in these food systems can cause pollution of soils and water and harm environmental sustainability.

With the increasing concerns on the sustainability issues of these conventional agri-food supply chains, several different forms of food supply systems were proposed and can be generally categorised as alternative and local food systems. These alternative forms of food supply chains were characterized by five prominent elements, which are operated in a local context, a shortened path from farmer to consumer, building a food-based community, enabled democratic information exchange, and promoted food justice. Although the exact forms vary among these newly proposed food supply chains, their performance in improving sustainability has been validated in many existing studies.

Afterwards, a more concentrated form of alternative food supply chains is reviewed as Short Food Supply Chains. The most prominent characteristic of SFSCs is the close relations between producers and consumers, which is achieved by minimizing the number of intermediates. Through the review of relevant studies, it was found that there has been no consensus on a unified definition of this concept, as 11 different definitions were located. Nonetheless, a general definition of this concept was proposed as any form of re-joining farmers with consumers, with a minimized number of intermediaries. Along with the definitions, the classification of SFSCs is also introduced. Three groups were derived as face-to-face, proximate and extended, with multiple instances belonging to each group. It should be noted that although the latter two groups also are SFSCs, face-to-face is a more typical representation of this newly emerged form of food supply chain.

Along with the development history of global food supply chains, the food supply chain evolvement in the Chinese context is also presented. As a

developing country with the largest worldwide population, agriculture is the mainstay industry of China. It can be noted that although the conventional industrialised food supply systems have gained tremendous success in China, the food safety and pollution issues have raised widespread concerns among the Chinese public. Multiple food safety crises that caused severe consequences have been previously reported, ranging from bad quality raw materials to anthropic matters during post-processing. Although these reported crises have been solved properly, the Chinese public's trust in conventional supplied food is deteriorating, and it would be quite difficult to regain them. Meanwhile, pollutions caused by the misuse of pesticides are also a national phenomenon. It should be noted that most Chinese farmers are unaware of environmental protection, which is partially the cause of the large-scale usage of pesticides. Owing to these two prominent issues, developing more sustainable food supply chains would hence be beneficial in the Chinese context, especially considering the government's increasing attention to sustainable development. Therefore, it can be noted that investigating SFSCs in the Chinese context would be promising and helpful.

This chapter has provided a discussion of various concepts related to SFSCs and sustainability in supply chains management, it helps to clarify the research background and a part of the theoretical information of this study. The chapter has also briefly introduced the current status of the sustainable food supply system in China and the importance of investigating SFSCs in the Chinese context. To have a more critical analysis of the current research on SFSCs and their linkage with sustainability, a systematic literature review was conducted to answer this research question in the next chapter.

Chapter 3

SYSTEMATIC LITERATURE REVIEW

3.1. Introduction

The purpose of this chapter is to analyse, synthesise and integrate SFSCs prior research with a particular focus on the dimensions of sustainability, and in doing so report its current state, highlight key research themes and investigate how SFSCs conform to the dimensions of sustainability. The chapter begins by providing a brief overview of systematic literature review (SLR), and reasons for conducting an SLR on SFSCs with its linkage to sustainability. The chapter proceeds by outlining the review methodology including the review protocol (e.g. inclusion and exclusion criteria and search terms) and the procedures for conducting the review (Section 3.3). Afterwards, Section 3.4 provides a descriptive analysis to summarise some basic features of the located studies, such as the rate of publication, the geographical background of the study, the nature of the SFSCs, and their linkage to different

pillars of sustainability. A more detailed content analysis was then discussed in Sections 3.5 and 3.6. The chapter concludes by identifying current research gaps and outlining directions for the proposed study (Section 3.7).

3.2. Background

As introduced in Section 2.5, SFSCs have been proposed as a sustainable alternative to conventional food supply systems. However, it should be noted that while some research evidence has shown that SFSCs have a close linkage with sustainability, the majority of these studies focus on regional practices, and the linkages to sustainability are not well articulated (Marino et al., 2013; Nonini, 2013; Zirham and Palomba, 2016; Leiper and Sather, 2017). These existing studies tend to focus on a specific type of SFSCs in a certain country context, and lack of systematization. Given that SFSCs are potentially the newest concept when considering sustainability in supply chain management, this chapter hence aims to examine its linkage to sustainability through one of the popular theoretical frameworks, the Triple Bottom Line (TBL), which has been used for sustainability evaluation (Alhaddi, 2015).

Therefore, a systematic literature review was conducted to locate and examine relevant literature, to identify the potential relation between SFSCs and sustainability. Originating from medical science research, a systematic literature review can improve the quality of the review process by adopting a systematic, transparent, and replicable literature synthesis approach (Cook et al., 1997). It is a specific methodology that adopts a series of phases to ensure reasonable conclusions are reached about what is and is not known (Denyer and Tranfield, 2009). Systematic reviews provide an explicit process of exhaustive literature search, transparent literature selection, and scientific literature synthesis (Cook et al., 1997). With its success in medical science, this evidence-based approach has migrated to other disciplines with its benefit of minimizing bias through a systematic review process. Other disciplines such as nursing, housing policy, and criminal justice that learned to adopt this approach have gained success in their research fields (Tranfield et al., 2003).

Disciplines such as management in social science also endeavour to make improvements in evidence-based decision-making for policy and practice (Tranfield et al., 2003). Thus, many management researchers intend to analyse the existing literature by using an explicit and systematic review rather than the traditional narrative one. Owing to its benefits of high reproducibility, this approach was hence adopted in this study.

3.3. Review methodology

The overarching aim of this review was to report the current state and identify the key research themes of SFSCs literature with a particular focus on sustainability. To ensure the validity and reliability of the systematic review, a five-step process is suggested by Denyer and Tranfield (2009) as follows: (1) question formulation, (2) locating studies, (3) study selection and evaluation, (4) analysis and synthesis, and (5) reporting and using the results. This five-step structure can help to organise this literature review and can improve its rigour and reproducibility. The results from this literature review can help to understand the current status of research on SFSCs and answer the question about the linkage between SFSCs and different dimensions of sustainability from existing evidence. The findings from this literature review are used to guide this study and facilitate the design of the theoretical framework and data collection and analysis. This section is structured according to the above five steps.

3.3.1. Locations of studies and selection criteria

This sub-section provides the precise details of the search strategy and the selection criteria to illustrate how this review was conducted. The literature search was located among five electronic databases: Emerald (emeraldinsight.com), Wiley (onlinelibrary.wiley.com), Sage (journals.sagepub.com), Scopus (scopus.com), and ScienceDirect (sciencedirect.com). According to Wang and Waltman (2016), different databases may have quite different coverage, so the use of five databases allows more relevant articles to be explored within the search area.

The key research question that this study aims to answer is, How SFSCs conform to the dimensions of sustainability? To answer this research question, the literature was systematically reviewed and analysed according to the two obvious pillars: SFSCs and sustainability. A set of search terms that comprise the two pillars were identified at the first stage.

To address more relevant articles in the literature search, the search terms Alternative Food Networks (AFNs) and Local Food Systems (LFSs) were also used for this study. Although the definition and scopes of these two words are different from SFSCs, all three represent quite new forms of the food system that allow consumers and farmers to regroup together to some extent (Renting et al., 2003; Darolt et al., 2016; Deller et al., 2017). Thus, the relevant articles with these two keywords were included in these searching criteria. Then the search strings were confirmed as "*short food supply chain*" and "*sustainability*", together with "*alternative food networks*" and "*local food system*". The search terms were illustrated in Table 3.1.

Table 3.1. Keywords used in the literature search

Sustainability		**Short food supply chains**
"*sustainability*" OR	And	"*short food supply chain*" OR
"*sustainable*"		"*food supply chain*" OR
		"*food*" OR
		"*short supply chain*" & "*food*" OR
		"*alternative food networks*" OR
		"*local food system*"

The search period of this research was from 2000 to 2020. Although the emergences of AFNs and LFSs were earlier than SFSCs (Renting et al., 2003; Feenstra, 1997), the term "*short food supply chain*" was first appeared in the literature in 2000 (Marsden et al., 2000). This is why the search timing starts from 2000 to this year.

According to the searching criteria described above, the initial search resulted in 4703 articles. However, after careful examination, it was found that not all papers were relevant and valuable for the research. Thus, the inclusion/exclusion criteria were determined according to a flow diagram (Moher et al., 2009) to select the relevant research studies. After the article duplication was excluded, a selection was implemented through screening the titles and abstracts to remove papers that did not address the topic of SFSCs in the managerial aspects, for example, articles introducing sustainable agriculture in its technical aspects were excluded.

Then, the papers that did not emphasize the perspectives of sustainability in SFSCs were also excluded by reading the abstracts and in some cases the full text. Moreover, only the empirical articles having evidence of the linkages between SFSCs and sustainability were included in this literature review, resulting in a selection of 52 publications. Additionally, according to the snowball method, 8 papers that fail to satisfy the initial search but were cited in some selected papers were added to the final samples. This resulted in a final selection of 60 articles concerning SFSCs and sustainability being identified.

3.3.2. Analysis and synthesis criteria

There are various research synthesis methods for systematic review in the management discipline such as realist synthesis, meta-synthesis, and meta-ethnography (Tranfield et al., 2003). To effectively analyse the qualitative research and integrate the findings of those multiple studies, thematic synthesis was considered an appropriate method for the descriptive and analytical studies on each theme (Thomas and Harden, 2008). According to the thematic focus/content of the existing literature, a classification of the articles was made using the different dimensions based on the economic, social, and environmental perspectives of sustainability. The detailed analysis and synthesis have been reported in the discussion section.

By carrying out a systematic literature review, it would be beneficial to understand the development of SFSCs and their linkages with sustainability. The findings from this literature review can help to investigate the first research objective of this study and help to guide the research design and analysis in the following chapters.

3.4. Descriptive analysis of SFSCs literature

A review of the selected 60 articles shows that SFSCs have gained increasing interest within the research community since 2014, with 45 papers (75.0%) being published in the following years (see Figure 3.1). This growing trend suggests that SFSCs is a relatively new and emergent research field, which has started gaining popularity in recent years. With a wider recognition of its benefits, more publications can be expected in the next few years. Meanwhile, as shown in Figure 3.1, there are some blanks in several years. It should be noted that these blanks only indicate that no publications satisfy the selection criteria, and there may still be studies on SFSCs in these years.

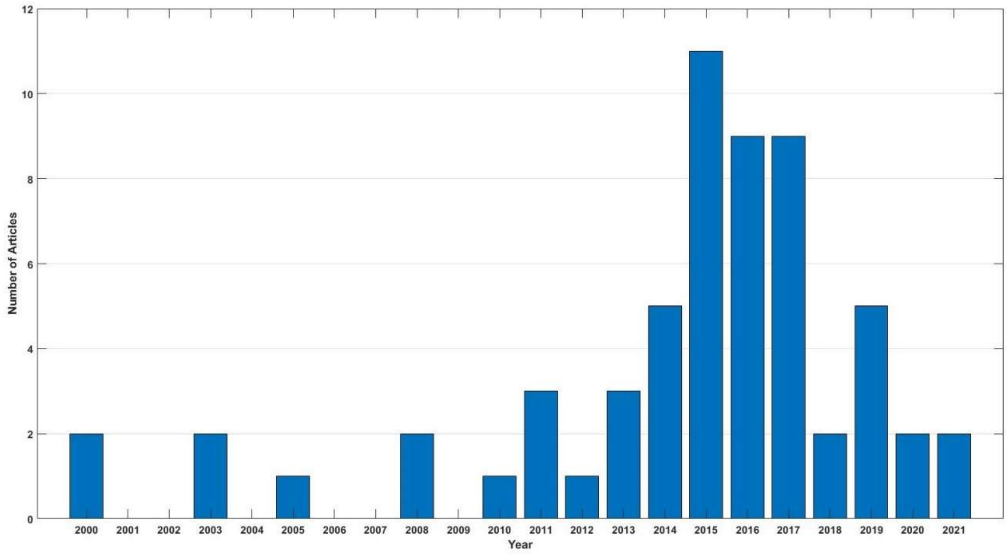


Figure 3.1. Number of publications per year

Along with the analysis of publications per year, the targeted countries' distribution of the selected publications was also evaluated. As listed in table 3.2, it can be noted that studies have been most frequently conducted in Italy

(25.3%) and the US (12.0%). Meanwhile, multiple studies have also been carried out in 6 or more countries, while 3 countries only have one identified study. Moreover, the remaining 4 studies were not targeted in any specific country. Four of them were implemented across Europe and the other four didn't mention the country's context.

Table 3.2. Targeted countries in empirical studies

Target countries	Frequency	Target countries	Frequency
Italy	19	Norway	3
US	9	Vietnam	2
UK	5	China	2
France	5	Poland	2
Hungary	4	Japan	1
Canada	4	Austria	1
Australia	3	Greece	1
Brazil	3	Europe	4
Spain	3	Not specified	4

Moreover, the frequency of different types of AFNs was also examined as part of the analysis of the empirical papers. It should be noted that 4 studies have investigated two forms of AFNs, leading to a sum of 64 counts. While 26 studies didn't specify the exact type under investigation and focused on broader concepts, e.g. local food system (4.7%), SFSCs (25.0%), and AFNs (10.9%), the remaining 38 studies (59.4%) targeted specific types of AFNs. As shown in figure 3.2, the most commonly investigated type of AFNs is the farmer market, which was focused on 16 identified studies and occupies a proportion of 25.0%. This is followed by direct sale, investigated in 7 papers and occupies 10.9%. Other types of AFNs were investigated on a smaller scale, with proportions less than 10%, e.g. CSA/CSF (9.4%), food hub (6.2%), Box scheme (3.1%), organic farm (3.1%), and pick your own (1.6%).

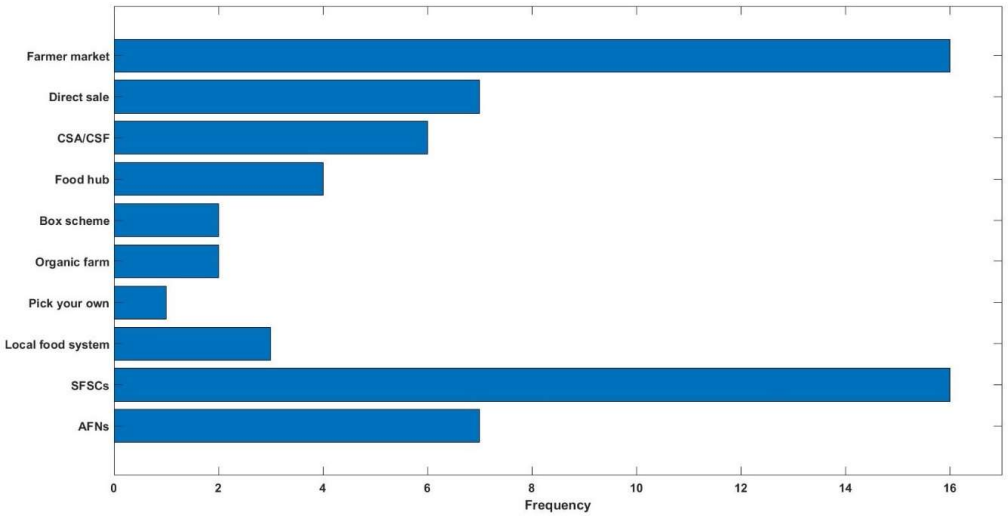


Figure 3.2. Types of AFNs studied in empirical studies

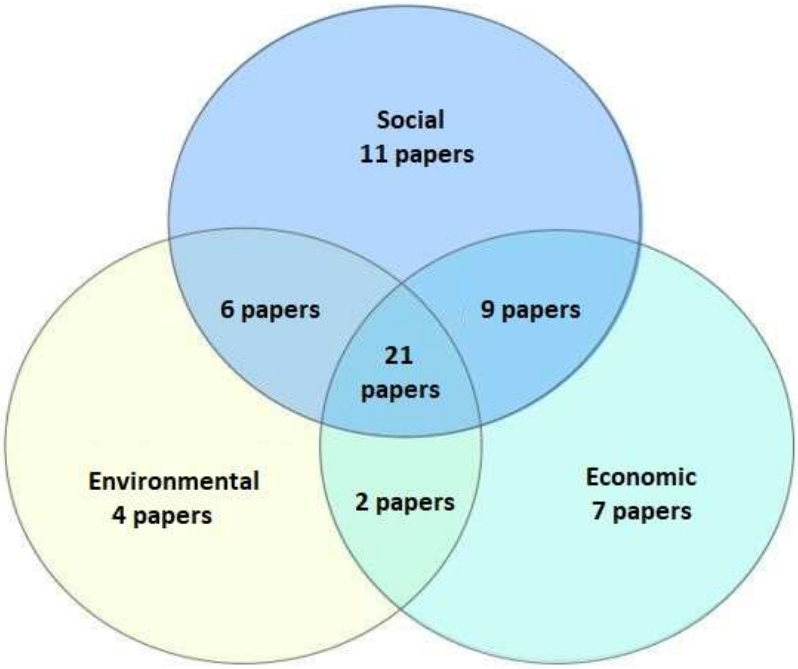


Figure 3.3. Sustainability pillars addressed in empirical studies

Along with these preliminary analyses of the identified empirical studies, the next section presents the discussion associated with the individual social, economic, and environmental pillars of SFSCs. As illustrated in Figure 3.3, 22 papers (36.6%) addressed only a single pillar of sustainability, 17 papers

(28.3%) investigated two pillars, and the remaining 21 papers (35.1%) studied all three pillars of sustainability. Meanwhile, it should be noted that the social dimension was the most extensively addressed pillar of sustainability, with an accumulated number of 47 papers. The economic dimension ranks the second, documented in 39 papers. The environmental dimension received the least attention, with only 33 papers.

From these results shown above, it can be noted that a rapidly increasing research interest in SFSCs has been witnessed in recent years. However, only 7 studies of them were conducted in the context of developing countries. Thus, it would be beneficial to obtain more empirical evidence from the Chinese context, to facilitate the investigation into SFSCs and the comparison between developing and developed countries. Moreover, as shown in Figure 3.2, the farmer market is the most extensively investigated and widely acknowledged form of AFNs in existing studies. Therefore, this study focuses to investigate this form of AFNs in the Chinese context. As shown in Figure 3.3, it was proven that SFSCs can have a positive influence on some dimensions of sustainability, which confirms the validity of the research question about "*How SFSCs conform to the dimensions of sustainability?*". Thus, it can be noted that all these descriptive findings help to confirm the necessity of this proposed study.

3.5. Sustainability dimensions focus in SFSCs research

To provide more clarity to readers, for each article, the research country, and type of SFSCs were coded together with the author list and publication year. After descriptive analyses of articles in each theme, an analytical discussion was presented to interpret the benefits of SFSCs under each theme. The reviewed 60 articles are listed in Table 3.3.

Table 3.3. List of paper reviewed

No	Author	Year	Journal	Type	Region	Sustainability		
						Soc.	Eco.	Env.
1	Sage,C.	2003	J. Rural Stud.	Organic farm	UK	✓		
2	Ilbery, B., Maye, D.	2005	Land Use Policy	AFNs	UK	✓		
3	Hinson,R,Bruchhaus,M.	2008	J. Food Dist. Res.	Local food system	US	✓		
4	Nonini,D.M.	2013	Am. Ethnol.	FMs	US	✓		
5	Zirham,M., Palomba,R.	2015	CEUR WKSH. Proc.	Direct sale	Italy	✓		
6	O'Kane,G., Wijaya,S.Y.	2015	Agroecology and Sustainable Food Syst.	FMs	Australia	✓		
7	Bimbo, F., et al.	2015	IFAMR	FMs	Italy	✓		
8	Giampietri, E., et al.	2016	Brit. Food J	Direct sale	Italy	✓		
9	Zirham,M., Palomba,R.	2016	Agric. Agric. Sci. Proc	Direct sale	Italy	✓		
10	Giampietri, E., et al.	2018	Food Qual. Preference	Direct sale	Italy	✓		
11	Vittersø et al.	2019	Sustainability	SFSCs	Europe	✓		
12	Janssen,B.	2010	Culture & Agric.	CSA	US		✓	
13	Watts,D., et al.	2011	Reg. Stud.	FMs	UK		✓	
14	D'Amico, M., et al.	2014	Ital. J. Food Sci.	Direct sale	Italy		✓	
15	Balázs,B., et al.	2016	Futures	CSA	Hungary		✓	
16	Benedek,Z., et al.	2017	Agric. Hum. Values	FMs	Hungary		✓	
17	Charatsari et al.	2019	Renew. Agric. Food Syst.	Farmer enterprise	Greece		✓	
18	Zhang et al.	2019	AJARE	FMs	China		✓	
19	Hara,Y., et al.	2013	Sustainability Sci.	FMs; Pick-your-own	Japan			✓
20	McClenachan,L., et al.	2014	Fish. Res.	CSFs	US			✓
21	Tasca,A.L., et al.	2017	J. Cleaner Prod.	Organic farm; Integrated farm	Italy			✓
22	Loiseau et al.	2020	J. Cleaner Prod.	SFSCs	France			✓
23	Marsden, T., et al.	2000	Sociol. Ruralis	FMs; CSA	Europe	✓	✓	✓
24	Hinrichs, C.	2000	J. Rural Stud.	FMs; CSA	US	✓	✓	✓
25	Renting, H., et al.	2003	Environ. Plann. A	AFNs	Europe	✓	✓	✓
26	Smith, B. G.	2008	Philos. Trans. R. Soc. B Biol. Sci.	Local food system	NS	✓	✓	✓
27	Jones, P., Bhatia, R.	2011	Am. J. Public Health	FMs	US	✓	✓	
28	Connelly, S., et al.	2011	Critical Social Policy	Box scheme; Food hub	Canada	✓	✓	✓
29	Beckie, M. A., et al.	2012	Agric. Hum. Values	FMs	Canada	✓	✓	✓
30	Marino, D., et al.	2013	Proc. Syst. Dyn. Innov. Food Networks	FMs	Italy	✓	✓	✓
31	Sgroi, F., et al.	2014	Am. J. Agric. Biol. Sci	Direct sale	Italy	✓	✓	
32	Farmer, J. R., et al.	2014	J. Leis. Res.	FMs; CSA	US	✓		✓
33	Cleveland, D. et al.	2014	J. Rural Stud.	Local food hub	US	✓	✓	✓
34	Aubert, M., Enjolras, G.	2015	Agric. Econ.	SFSCs	France	✓	✓	✓
35	Giampietri, E., et al.	2015	Quality	SFSCs	Italy	✓	✓	✓
36	Forssell,S., Lankoski,L.	2015	Agric. Hum. Values	AFNs	NS	✓	✓	✓
37	Mastronardi, L., et al.	2015	IFAMR	SFSCs	Italy	✓	✓	✓
38	Si, Z. Z., et al.	2015	Agric. Hum. Values	AFNs	China	✓	✓	✓
39	Falguieres, M., et al.	2015	IFAC	SFSCs	Spain	✓		✓
40	Migliore, G., et al.	2015	Food Qual. Pref.	FMs	Italy		✓	✓
41	Tudisca, S., et al.	2015	Ital. J. Food Sci.	Direct sale	Italy	✓	✓	
42	Berti, G., Mulligan, C.	2016	Sustainability	Food hub	NS	✓	✓	✓
43	Darolt, M. R., et al.	2016	Ambiente & Sociedade	AFNs	France; Brazil	✓	✓	✓
44	Dixon, J., Richards, C.	2016	Agric. Hum. Values	AFNs	Australia	✓	✓	✓
45	Canfora, I.	2016	Agric. Agric. Sci. Proc	SFSCs	Europe	✓	✓	✓
46	Mundler,P.,Laughrea,S.	2016	J. Rural Stud.	SFSCs	Canada	✓		✓

47	Engelseth, P.	2016	Int. J. Food Syst. Dyn.	Food hub	Norway	✓	✓	
48	Rover, O. J., et al.	2017	Sustainability	SFSCs	Brazil	✓		✓
49	Milestad,R., et al.	2017	J. Rural Stud.	Box scheme	Austria	✓	✓	✓
50	Wills,B., Arundel,A.	2017	Agric. Hum. Values	AFNs	Canada; Australia	✓		✓
51	Elghannam,A., et al.	2017	New Medit	SFSCs	Spain	✓	✓	
52	Leiper, C., Sather, A. C.	2017	Int. J. Justice and Sustainability	FMs	US	✓	✓	
53	Deller, S. C., et al.	2017	Community Dev.	Local food system	NS	✓	✓	
54	Demartini, E., et al.	2017	Agric. Econ.	SFSCs	Italy	✓	✓	
55	Sellitto, A., et al.	2018	J. Cleaner Prod.	SFSCs	Italy; Brazil	✓	✓	✓
56	Mancini et al.	2019	Sustainability	SFSCs	Italy	✓		✓
57	Malak-Rawlikowska et al.	2019	Sustainability	SFSCs	Europe, Vietnam	✓	✓	
58	Jarzębowski et al.	2020	Sustainability	SFSCs	Europe	✓	✓	✓
59	González-Azcárate et al.	2021	Sustain. Prod. Consum.	SFSCs	Spain		✓	✓
60	Bui, T. N., et al.	2021	Sustainability	FMs	Vietnam	✓	✓	✓

3.5.1. Social pillar of sustainability

The benefits of SFSCs on social sustainability are widely acknowledged and have been investigated extensively. The earliest studies stressing the social pillar can trace back to 2000 when Marsden et al. analysed six case studies across four EU countries and Hinrichs investigated the interplay of economic and social features of two specific forms of SFSCs, e.g. Farmer's Markets (FMs) and Community Supported Agriculture (CSA). Marsden et al. (2000) identified the typical benefits of SFSCs as local economic development, improved farmers' income, and increased green tourism. They also found that the development of SFSCs is vital to promoting rural development. Meanwhile, Hinrichs (2000) found that both forms of SFSCs can improve food quality and security. Another early study was by Renting et al. (2003). They explored the development of AFNs within Europe. A major contribution of their work was classifying AFNs into three categories based on proximity. They also confirmed that improved food quality can be obtained with these new forms of food supply systems. Meanwhile, Sage also conducted a study in the same year. Through 12 semi-structured interviews and 20 informal discussions with relevant stakeholders, they explored the benefits of direct interactions in these food systems. The study noted that additional moral values, such as ethics of animal welfare, consideration for sustainability, and belief in the local community, can be obtained in face-to-face transactions.

Along with Sage (2003), the close linkage between social sustainability and direct interactions in SFSCs was also confirmed in some following studies. For example, SUSTAIN's sustainable food criteria were adopted by Ilbery and Maye (2005) to evaluate the sustainability of six selected case studies. It was found that while the satisfied criteria varied among these cases, three particular criteria (healthy, local employment, and knowledge/understanding of food culture) were achieved in all studies. Moreover, Giampietri et al. (2016, 2018) conducted two continuous studies to investigate the motivations of consumers' purchasing behavior in SFSCs. A questionnaire survey containing 112 university students was conducted in the first study. In the following study, the survey was extended to 260 participants with different backgrounds. They found that the direct interactions in SFSCs can reinforce consumers' trust in food security and quality and increase consumers' involvement in local development. A similar finding was also obtained by O'Kane and Wijaya (2015). They investigated farmers' motivations to join Farmers Market (FM) and its linkage to social sustainability. Semi-structured interviews, field observations, and document analyses were conducted to gather data from relevant parties in the farmers' market. They found that farmers felt more empowered and equitable in Farmer Markets, and consumers also showed more trust in the high-quality food products. Moreover, in two continuous studies conducted by Sgroi et al. (2014) and Tudisca et al. (2015), they explored the benefits of direct sales on Sicilian farms. Telephone surveys and Semi-structured interviews were conducted separately among farmers. Direct sales were found to be capable of improving farmers' profits and creating new job opportunities. Nevertheless, they also found that there is a limit on local demand, and direct sales need to be adopted in conjunction with conventional modes. Moreover, Si et al. (2015), Dixon and Richards (2016), and Darolt et al. (2016) reached the same findings, that AFNs can facilitate local economic development and create a closer social relationship between producers and consumers. Vittersø et al. (2019) conducted a comparative analysis of 12 European SFSC cases from six countries (France, Hungary, Italy, Norway, Poland, and the UK). They have evaluated multiple factors affecting the three dimensions of sustainability and confirmed that direct interaction can improve social sustainability across

all cases. Jarzębowski et al. (2020) conducted six workshops to explore the positive impact of SFSCs on the three dimensions of sustainability. Through in-depth interviews with 139 participants and customer surveys with 596 responses, they also confirmed the importance of direct interactions in SFSCs.

Along with the unique feature of direct interactions, another widely acknowledged social benefit is the improvement in food quality and security. Extensive studies have found the positive influence of SFSCs on this factor. It should be noted that the direct interactions and improved food quality are positively correlated. Thus, this social benefit has also been confirmed in those studies addressed above, i.e. Marsden et al. (2000), Hinrichs (2000), Renting et al. (2003), Ilbery and Maye (2005), O'Kane and Wijaya (2015), Giampietri et al. (2016, 2018) and Jarzębowski et al. (2020).

Moreover, this social benefit was also confirmed in many other studies. For example, Hinson and Bruchhaus (2008) explored the consumer preferences for locally produced strawberries through a mail survey with 309 useable responses. They focused on the social benefits and identified multiple social factors, among which the improved quality is confirmed. Smith conducted a study in the same year that focused on the sustainable features of the local food system and nearly covers all the identified sustainable benefits of SFSCs. Another study was implemented by Jones and Bhatia (2011), which focused on improving the access to FMs for federal food assistance beneficiaries through a partnership consisting of three organizations. Beckie et al. (2012) conducted a survey and semi-structured interviews with 61 participants to investigate the scaling up of AFNs through farmer market clustering. They found that improved food quality is the major customers' motivation for shopping at FMs. The same finding was also obtained by Marino et al. (2013). Nonini (2013) evaluated a transformation conceptualization through the analysis of the local-food movement in North Carolina. Interviews were implemented with various participants of the food system. It was found that the local food system can help to provide food access to more low-income people and also improve food security. Meanwhile, a positive correlation was also

found between the density of FMs and Italian adults' Body Mass Index (BMI), indicating that FMs can provide higher quality food products (Bimbo et al., 2015). Meanwhile, Farmer et al. (2014) explored the motivations for participating in agrileisure and local food systems. A comprehensive questionnaire was developed to collect data from 712 individuals, ranging from customers at FMs, CSA, or conventional markets. It was found that FMs and CSA have a positive influence on food nutrition, which were the top factor affecting participation in these systems. Cleveland et al. (2014) focused on local food hubs, which were classified as an intermediate between direct marketing and mainstream food supply systems. The product selection at local food hubs can also improve the physical appearance and quality of the food products. Aubert and Enjolras (2015) investigated the relationship between the adoption of organic farming and SFSCs. Using data from the exhaustive census of French farms in 2010, they found these two were positively correlated. While they also found other benefits, the improved food quality was confirmed. Forssell and Lankoski (2015) conducted a structured review to explore the connections between AFNs and sustainability and found this improved food quality is the most typical benefit of social sustainability. Zirham and Palomba (2015) focused on female agriculture entrepreneurship in SFSCs. Four case studies were implemented through open and semi-structured interviews. They found that female agriculture entrepreneurship in SFSCs can benefit from improved food security and a more pleasant shopping atmosphere. Engelseth (2016) focused on a local food hub, where five local food producers were interviewed. It was found that effectiveness is the prime challenge of local food supply and improved food quality can be obtained through the local food supply. Berti and Mulligan (2016) conducted a literature review to investigate the sustainable feature of food hubs and found that this specific form of SFSCs can promote health with improved food quality. Leiper and Sather (2017) investigated the motivations of both farmers and consumers in participating FMs. On-site data were collected at 5 FMs, containing a questionnaire survey with 377 consumers and semi-structured interviews with 17 producers. Alongside the increased profits and community sense, they also found that FMs can supply food with improved quality and provide an enjoyable vending

atmosphere to both parties. A more recent study was conducted by Mancini et al. in 2019. They investigated the perceptions of producers and consumers on the sustainability of two SFSCs of a specific quality of cheese in a rural area and a peri-urban area. They conducted a semi-structured interview with five producers and five consumers and also a questionnaire survey with 62 customers. The improved food quality was found to be the primary reason for consumers' participation.

Meanwhile, a more pleasant shopping atmosphere is another social benefit that is highly correlated with direct interactions. Several studies have confirmed a positive influence on this factor. Both studies reviewed earlier have mentioned this factor (Beckie et al., 2012; Giampietri et al., 2015; Leiper and Sather, 2017). Moreover, Demartini et al. (2017) focused on the general form of SFSCs and investigated the contribution of farmers' motivation. They found that farmers within SFSCs can obtain higher profits and closer relations with consumers. This factor was also confirmed by Zirham and Palomba (2015), during their investigation into female agriculture entrepreneurship in SFSCs. Four case studies were implemented through open and semi-structured interviews. They found that female agriculture entrepreneurship in SFSCs can benefit from improved food security and a more pleasant shopping atmosphere.

Moreover, improved gender equality was also confirmed as a social benefit of SFSCs. Following their earlier study (Zirham and Palomba, 2015), Zirham and Palomba (2016) conducted two case studies using open interviews, which aimed to investigate women's role in SFSCs. It was found that female features can effectively promote direct sale businesses, and hence confirmed the importance of gender equality in SFSCs. Malak-Rawlikowska et al. (2019) surveyed 208 participants from seven countries (France, Hungary, Italy, Norway, Poland, UK, and Vietnam). They found that SFSCs can effectively improve gender equality in most cases. The improvement in gender equality was also confirmed by Bui et al. (2021). They surveyed 338 farmers to investigate the characteristics of SFSCs and their benefits to small farmers in

Vietnam. Through the evaluation of the survey responses, they found that participating in FMs can help to eliminate gender discrimination in rural areas

Along with these benefits from the individual level, some social benefits of SFSCs are also identified from the community level. Among these benefits, the most prominent factor is identified as the creation of more opportunities for local employment. This social benefit was confirmed in many existing studies. In addition to some studies mentioned above (Ilbery and Maye, 2005; Marino et al., 2013; Sgroi et al., 2014; Tudisca et al., 2015; Jarzębowski et al., 2020), some other studies are also identified. For example, Falguieres et al. (2015) investigated the relation between SFSCs and emigration through a questionnaire survey with 212 responses. In addition to creating more employment, they also found that SFSCs can help to mitigate the emigration wave in Spain. Mastronardi et al. (2015) surveyed in the same year and focused on the farmers' participation in different categories of SFSCs and their linkage to sustainability. This survey was conducted with 226 farmers from different categories of SFSCs, such as FMs, direct selling, box schemes, and CSA. They confirmed the creation of more employment opportunities as a typical social benefit of these schemes. Afterwards, both Berti and Mulligan and Mundler and Laughrea implemented a study in the following year. A literature review was conducted by Berti and Mulligan (2016) to investigate the sustainable feature of food hubs. It was found that food hubs can benefit social sustainability by improving health and creating more job opportunities. Meanwhile, Mundler and Laughrea (2016) evaluated the contributions of SFSCs to territorial development based on three case studies. Questionnaires, interviews, and a price survey were conducted for data collection. Moreover, Rover et al. (2017) examined a specific AFN in Brazil through participant observation and document analysis. Both studies found the creation of more job opportunities as a typical social benefit to sustainability.

Meanwhile, several other social benefits at the community level are also identified. For example, some previously reviewed studies (Marsden et al., 2000; Jones and Bhatia, 2011; Aubert and Enjolras, 2015; Giampietri et al.,

2016, 2018; Leiper and Sather, 2017) also found participating in SFSCs can facilitate the rural development. This factor was also confirmed by Elghannam et al. (2017) when they investigated the contribution of general forms of SFSCs to the farmers' motivation. Moreover, González-Azcárate (2021) surveyed 1677 valid responses and also confirmed that the scale-up of SFSCs can have a positive impact, direct and indirect, on rural development. Meanwhile, it was also found that SFSCs can also improve social awareness. Moreover, another community-level social benefit was confirmed by Hinson and Bruchhaus (2008), O'Kane and Wijaya (2015), Giampietri et al. (2016, 2018), Vittersø et al. (2019), and Jarzębowski et al. (2020). They found that SFSCs can also promote customers' trust in local products. Furthermore, Hinson and Bruchhaus (2008), Smith (2008), Vittersø et al. (2019), and Bui et al. (2021) also found that SFSCs can help to support local farmers as another social benefit.

In addition to these more prominent social benefits that were reported in multiple studies, some other social benefits are less acknowledged and were only confirmed in one study each. For example, Sage (2003) indicated that through direct sale, additional moral values can be attained. Ilbery and Maye (2005) noticed that SFSCs can deliver more knowledge of food culture. Nonini (2013) found that the local food system can support low-income people. Moreover, Milestad et al. (2017) explored the scaling up of an organic box scheme in Austria. Through a semi-structured interview with 19 participants and a group discussion with 11 management staff, they found the organic box scheme was a more socially just alternative to the conventional food supply system.

The current literature highlights different social benefits that can be obtained in SFSCs (see Table 3.4). Based on the identified studies, it can be noted that the most widely acknowledged social benefits of SFSCs are improved food quality and security. This fact is consistent with the consumers' expectation of SFSCs, as their growing preference for SFSCs is because of the increasing occurrences of safety crises in conventional food systems (Llazo, 2014). Thus,

SFSCs can be an effective solution to regain consumers' trust and improve social sustainability through improved food products and gender equality.

Table 3.4. Key social benefits highlighted in the extant literature

Social benefits	Sample references
Direct interaction	Sage (2003); Ilbery and Maye (2005); Sgroi et al. (2014); O'Kane and Wijaya (2015); Tudisca et al. (2015); Si et al. (2015); Dixon and Richards (2016); Darolt et al. (2016); Giampietri et al. (2016, 2018); Vittersø et al. (2019); Jarzębowski et al. (2020)
Improvement in food quality	Marsden et al. (2000); Hinrichs (2000); Renting et al. (2003); Ilbery and Maye (2005); Smith (2008); Hinson and Bruchhaus (2008); Jones and Bhatia (2011); Beckie et al. (2012); Marino et al. (2013); Nonini (2013); Farmer et al. (2014); Cleveland et al. (2014); Bimbo et al. (2015); Aubert and Enjolras (2015); Forssell and Lankoski (2015); Zirham and Palomba (2015); O'Kane and Wijaya (2015) ; Engelseth (2016); Berti and Mulligan (2016); Giampietri et al. (2016, 2018); Leiper and Sather (2017); Mancini et al. (2019); Jarzębowski et al. (2020)
More pleasant shopping atmosphere	Beckie et al. (2012); Zirham and Palomba (2015); Giampietri et al. (2015) ; Demartini et al. (2017) ; Leiper and Sather (2017)
Improvement in gender equality	Zirham and Palomba (2016); Malak-Rawlikowska et al. (2019); Bui et al. (2021)
More opportunities for local employment	Ilbery and Maye (2005); Marino et al. (2013); Sgroi et al. (2014); Tudisca et al. (2015); Falguieres et al. (2015); Mastronardi et al. (2015); Mundler and Laughrea (2016); Berti and Mulligan (2016); Rover et al. (2017); Jarzębowski et al. (2020)
More involvement in local development	Marsden et al. (2000); Jones and Bhatia (2011); Aubert and Enjolras (2015); Giampietri et al. (2016, 2018); Elghannam et al. (2017); Leiper and Sather (2017); González-Azcárate (2021)
More trust in local product	Hinson and Bruchhaus (2008); O'Kane and Wijaya (2015); Giampietri et al. (2016, 2018); Vittersø et al. (2019); Jarzębowski et al. (2020)
Support local farmers	Hinson and Bruchhaus (2008); Smith (2008); Vittersø et al. (2019); Bui et al. (2021)
More socially just	Milestad et al. (2017)
Support low-income people	Nonini (2013)
More knowledge of food culture	Ilbery and Maye (2005)

Additional moral values	Sage (2003)

3.5.2. Economic pillar of sustainability

Unlike the widely acknowledged improvements in social sustainability, research on the linkage between SFSCs and economic sustainability is rather limited. As shown in Table 3.2, the economic benefits can be roughly divided into three major factors.

The most well-known economic sustainability benefit is that SFSCs can help to retain added values. This is a typical benefit closely associated with direct sales, as the profit shared by intermediates can be minimised and retained by the participants with direct interactions. This factor has been confirmed in many existing studies, for example, Hinrichs (2000), Marsden et al. (2000), Renting et al. (2003), Smith (2008), Jones and Bhatia (2011), Connelly et al. (2011), Beckie et al. (2012), Marino et al. (2013), Sgroi et al. (2014), Cleveland et al. (2014), Tudisca et al. (2015), Aubert and Enjolras (2015), Mastronardi et al. (2015), Leiper and Sather (2017), Forssell and Lankoski (2015), Engelseth (2016), Berti and Mulligan (2016), Demartini et al. (2017), Deller et al. (2017), Malak-Rawlikowska et al. (2019), Jarzębowski et al. (2020) and Bui et al. (2021). Moreover, some other studies were identified to mention this factor as well. For instance, Watts et al. (2011) investigated the geography of local food activity through a database analysis of 723 enterprises. Their study found that food re-localization can help to retain added values in local areas and hence facilitate economic development. Benedek et al. (2017) compared conventional markets and farmer markets in Hungary. Based on a survey among 156 markets, they found that farmers within farmer markets are more open to cooperation and tend to be higher educated. Zhang et al. (2019) investigated the impacts of participating in SFSCs on vegetable farmers' market performance. They analysed the survey data from 625 vegetable farmers between 2011 and 2016. It was found that farmers treat these SFSC schemes as an opportunity to increase profit. All these three studies (Watts et al., 2011; Benedek et al., 2017; Zhang et al., 2019) focused on FMs and found that the direct interactions can help to regain the profit shared by intermediates

in conventional food supply systems. Moreover, D'Amico et al. (2014) investigated the direct sales of local wine in Italy. A structured questionnaire was distributed to 953 randomly selected wine consumers. Their study found that direct sales can financially benefit both consumers and producers. Furthermore, during their survey across seven countries, Malak-Rawlikowska et al. (2019) also found that while SFSCs can generally increase the profits obtained by farmers, the exact effect may differ with the form of SFSCs. FMs and pick-your-own were found to be the best options to retain more profits than other forms of SFSCs.

While the economic sustainability of FMs and direct sales is obvious, there is some controversy over Community Supported Agriculture (CSA). Balázs et al. (2016) examined the CSA movement in Hungary through semi-structured interviews, consumer surveys, and secondary data analysis. Meanwhile, Janssen (2010) explored the operation of CSA through interviews with eight CSA growers. While Balázs et al. (2016) confirmed that CSA can improve farmers' financial situation and facilitate local economic development, both they and Janssen (2010) found that scaling up CSA can be a major challenge. This is because the investment of CSA is much greater for hiring external labours. Thus, it can be a tough decision for growers to adapt to this form of SFSCs. Moreover, the empirical evidence of the return on investment for CSA is quite limited. This ambiguous effect was also confirmed by Charatsari et al. (2019). During a comparison study, they invited 33 farmers to participate in SFSCs and 38 farmers involved in the conventional food system in Greece. While the exact type of SFSCs is not specified, they found that the potential economic benefits of participating in SFSCs are not the main motivation for farmers' participation. Thus, it can be noted that although the profits regained in some forms of SFSCs may be less obvious, those related to direct sales are more easily benefit from this factor.

Along with retaining added values, the second economic benefit is the facilitation of economic development. This factor has also been confirmed in many studies, for example, Marsden et al. (2000), Smith (2008), Watts et al.

(2011), Aubert and Enjolras (2015), Giampietri et al. (2015), Si et al. (2015), Migliore et al. (2015), Dixon and Richards (2016), Darolt et al. (2016), Balázs et al. (2016), Benedek et al. (2017), Elghannam et al. (2017) and Milestad et al. (2017). Unlike the previous economic benefit, this factor does not differ from the forms of SFSCs. Multiple forms of SFSCs have been found to facilitate the economic development of the local area, for example, FMs (Marden et al., 2000; Watts et al., 2011; Migliore et al, 2015), CSA (Marsden et al., 2000; Balázs et al., 2016; Benedek et al., 2017), Box scheme (Milestad et al., 2017) and other general forms of the local food system and SFSCs (Smith, 2008; Aubert and Enjolras, 2015; Giampietri et al, 2015; Si et al, 2015; Dixon and Richards, 2016; Darolt et al., 2016; Elghannam et al., 2017).

Moreover, Benedek et al. (2017) also found another unique economic benefit during their survey between FMs and conventional markets, which is that farmers within farmer markets are more open to cooperation and tend to be higher educated. While the direct economic benefit of this factor is less obvious, it leads to the potential of adapting to new forms of supply chains and more expandable business.

The current literature highlights different economic benefits of SFSCs (see Table 3.5).

While the linkage between SFSCs and economic sustainability is less evident, it can be noted that the direct interactions in FMs and direct sales can be retained as added values and hence help farmers to solve the price squeeze issues. Moreover, the short-circuit feature of SFSCs can help farmers to regain the profits shared by intermediates. However, it should be noted that the potential increased costs for small-scale production are not fully evaluated. Although the economic performance of SFSCs can be difficult to assess, a thorough evaluation and more empirical evidence are recommended for further justification.

Table 3.5. Key economic benefits highlighted in the extant literature

Economic benefits	Sample references
Retain added values	Hinrichs (2000); Marsden et al. (2000); Renting et al. (2003); Smith (2008); Watts et al. (2011); Jones and Bhatia (2011); Connelly et al. (2011); Beckie et al. (2012); Marino et al. (2013); Sgroi et al. (2014); Cleveland et al. (2014); D'Amico et al. (2014); Tudisca et al. (2015); Aubert and Enjolras (2015); Mastronardi et al. (2015); Forssell and Lankoski (2015); Balázs et al. (2016); Engelseth (2016); Berti and Mulligan (2016); Benedek et al. (2017); Demartini et al. (2017); Deller et al. (2017); Leiper and Sather (2017); Zhang et al. (2019); Malak-Rawlikowska et al. (2019); Jarzębowski et al. (2020) ; Bui et al. (2021)
Facilitate economic development	Marsden et al. (2000); Smith (2008); Watts et al. (2011); Aubert and Enjolras (2015); Giampietri et al. (2015); Si et al. (2015); Migliore et al. (2015); Dixon and Richards (2016); Darolt et al. (2016); Balázs et al. (2016); Benedek et al. (2017); Elghannam et al. (2017); Milestad et al. (2017)
More open to cooperation	Benedek et al. (2017)

3.5.3. Environmental pillar of sustainability

Similar to linkage with economic sustainability, existing studies addressing environmental sustainability are rather limited, as illustrated in table 3.2. The identified environmental benefits of SFSCs can be roughly divided into six categories. The first environmental benefit is that farmers who participated in SFSCs tend to adopt more environmentally friendly production techniques, such as better fertilization practices. This factor was confirmed in multiple existing studies, i.e., Hinrichs (2000), Renting et al. (2003), Aubert and Enjolras (2015); Forssell and Lankoski (2015); Mundler and Laughrea (2016), Jarzębowski et al. (2020), and Bui et al. (2021). Moreover, this environmental benefit was also confirmed by Tasca et al. (2017). They used life cycle assessment (LCA) to examine the environmental impacts of organic and integrated farming and their distribution chains. Farm owners, company managers, farmers, and consumers were interviewed to collect relevant data.

They explicitly declared that better fertilization practices can help to further improve the environmental sustainability of SFSCs.

The second identified environmental benefit is the reduction of carbon footprint during the production and transportation of the products. Existing studies (Cleveland et al., 2014; Forssell and Lankoski, 2015; Jarzębowski et al.,2020) have all confirmed this benefit through their investigation. Moreover, McClenachan et al. (2014) compared the environmental impacts of community-supported fisheries (CSFs) and industrial fisheries. Data were collected from 15 CSFs in North America. They found CSFs have much smaller environmental impacts than industrial fisheries, especially for the carbon footprint. While CSFs were confirmed to be a more environmentally sustainable alternative to industrial fisheries, they also indicated that the scaling up of CSFs will be a major challenge. The reduction of transportation costs was also confirmed by Canfora (2016) and Sellitto et al. (2018), resulting in less carbon footprint and hence improving environmental sustainability. Moreover, after conducting a full life cycle assessment of the environmental impacts of SFSCs, Loiseau et al. (2020) also pointed out that there are still wide margins to improve environmental sustainability through optimising logistics strategies.

Another widely acknowledge environmental benefit is the improved biodiversity of local areas. This factor was confirmed in five studies reviewed previously (Smith, 2008; Mastronardi et al.,2015; Canfora, 2016; Berti and Mulligan, 2016; Rover et al., 2017; Mancini et al., 2019). It should be noted that the majority of these studies do not specify the specific forms of SFSCs. For example, Mastronardi et al. (2015), Canfora (2016), and Rover et al. (2017) all focused on the general form of SFSCs, and Smith (2008) and Berti and Mulligan (2016) investigated local food system and food hubs, respectively.

Moreover, two environmental benefits are confirmed in three studies each. Smith (2008), Hara et al. (2013), and Jarzębowski et al. (2020) found that participating in SFSCs can help to reduce energy consumption. While Smith

(2008) also confirmed several benefits in other sustainability dimensions, Hara et al. (2013) focused specifically on environmental sustainability. They investigated the local food movement in Japan, with a specific focus on vegetables in the Osaka city region. A multi-scale and a scenario analysis were implemented to examine the energy consumption. Meanwhile, interviews were also conducted at three Farmer Markets. It was found that while these farms tended to be low profitable, they can effectively reduce energy consumption. Meanwhile, Cleveland et al. (2014), Tasca et al. (2017), and Jarzębowski et al. (2020) all found that SFSCs can reduce the environmental impacts of packaging. Tasca et al. (2017) found that the abandonment of disposable packing and industrial processing indirect distribution can effectively reduce environmental impacts by 20% to 48%.

Furthermore, multiple studies indicated that SFSCs can help to protect the environment in a more general manner. Studies mentioned this factor were identified as Connelly et al. (2011), Beckie et al. (2012), Marino et al. (2013), Farmer et al. (2014), Falguieres et al. (2015), Migliore et al. (2015), Si et al. (2015), Dixon and Richards (2016), Darolt et al. (2016), Milestad et al. (2017) and González-Azcárate (2021). Moreover, Wills and Arundel (2017) investigated Internet access to AFNs based on a survey of 365 consumers. While they haven't declared exactly sustainable improvements, they confirmed that environmental benefits can be obtained through AFNs. While no specific environmental benefit was confirmed in these studies, they are confirmed that participating in various forms of SFSCs can positively influence the environment. It's easily interpretable as it tends to be difficult to measure the environmental impacts accurately.

The current literature highlights different environmental benefits of SFSCs (see Table 3.6). Therefore, it can be noted that SFSCs can improve environmental sustainability through direct distribution. Meanwhile, better performance can be achieved through the adoption of environmental-friendly practices, such as improved fertilizations.

Table 3.6. Key environmental benefits highlighted in the extant literature

Environmental benefits	Sample references
Better fertilization practice	Hinrichs (2000); Renting et al. (2003); Aubert and Enjolras (2015); Forssell and Lankoski (2015); Mundler and Laughrea (2016); Tasca et al. (2017); Jarzębowski et al. (2020); Bui et al. (2021)
Reduce carbon footprint	Cleveland et al. (2014); McClenachan et al. (2014); Forssell and Lankoski (2015); Canfora (2016); Sellitto et al. (2018); Jarzębowski et al. (2020); Loiseau et al. (2020)
Improve biodiversity of local areas	Smith (2008); Mastronardi et al. (2015); Canfora (2016); Berti and Mulligan (2016); Rover et al. (2017); Mancini et al. (2019)
Reduce energy consumption	Smith (2008); Hara et al. (2013); Jarzębowski et al. (2020);
Reduce environmental impacts of packaging	Cleveland et al. (2014); Tasca et al. (2017); Jarzębowski et al. (2020)
Protect environment	Connelly et al. (2011); Beckie et al. (2012); Marino et al. (2013); Farmer et al. (2014); Falguieres et al. (2015); Migliore et al. (2015); Si et al. (2015); Dixon and Richards (2016); Darolt et al. (2016); Milestad et al. (2017); Wills and Arundel (2017); González-Azcárate et al. (2021)

3.6. Thematic analysis of SFSCs research

3.6.1. Country classification of publication

The identified 60 publications were classified according to their country. While most studies were conducted in a single country, it needs to be noted that several studies were conducted in 2 or more countries. Meanwhile, 4 articles focused on Europe, and 4 were not specified in any country context. The classification result is illustrated in Figure 3.4.

It can be noted that Italy has the largest number of publications (16), which occupies 21.33% among all countries, and 36.36% among EU countries. This phenomenon correlates with the fact that Italy is one of the largest agricultural producers in the EU. Moreover, 44 studies (58.67%) were conducted in EU countries, which indicated that EU researchers have a larger interest in adopting these new modes of the food supply system. Furthermore, an

interesting difference between developing and developed countries was also noted. Brazil, China, and Vietnam were the only three developing countries that have research on SFSCs, with a total of 7 publications. Meanwhile, instead of any specific types of SFSCs, such as FMs and CSA, these studies all focused on the general form of SFSCs and AFNs. This indicates that such studies in developing country contexts just emerge and are rather limited.

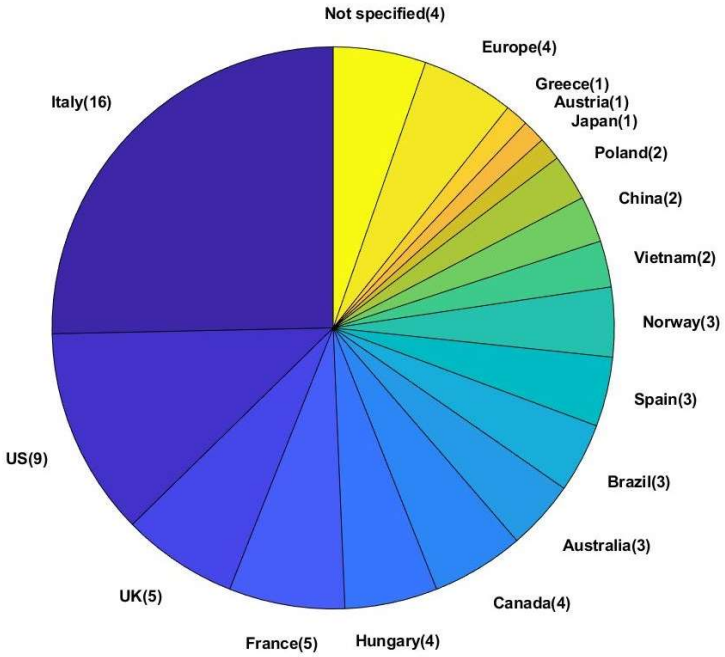


Figure 3.4. Country classification of publications

Along with the classification based on country context, it should be noted that no significant difference is found between these countries. Although the farmer market occupies the largest proportion (25.0%) of all SFSCs instances, they are spread among these countries. These countries seem to have no particular preference for a certain type of SFSCs instance. Nonetheless, it should be noted that the existing studies on many countries are rather limited, which could potentially cause this phenomenon.

3.6.2. Theoretical frameworks in the extant literature

The review identified the main topics of SFSCs research regarding the three dimensions of sustainability. Some topics related to the social dimension are

cooperation and solidarity, ethics, gender equality, social capital, food safety, communication, and social justice. The topics related to the economic dimension have explored the local economy, income, consumer behaviour, retailing, moral economy, ethical consumption, and sharing economy. The environmental topics are associated with research that has focused on ecology, certification, labelling, and organic farming.

The thematic analysis also identified some frameworks used to examine sustainability in SFSCs. The frameworks include the sustainable livelihoods framework (SLF) (Smith, 2008), convention theory (Migliore et al., 2015), and moral economy (Sage, 2003).

3.7. Conclusions and gaps of SFSCs research

From the current literature, the concept of the AFNs and local food systems is essentially the same as SFSCs. This vagueness indicates that there has not been a consensus on a unified definition of SFSCs. Thus, a more standardized definition of SFSCs needs to be proposed to prevent misinterpretations and false understandings of this concept, and better facilitate future research in this area. In this research, SFSCs not only focus on the short food miles in food networks, but they also mainly emphasize the direct interactions between farmers and consumers with minimized intermediates in the supply chain systems.

From the reviewed 60 articles, it can be noted that the social benefits of SFSCs are the most widely acknowledged, as only 13 papers haven't addressed the improvements in social sustainability. As most consumers' preference for SFSCs is because of the improved food quality and security, this phenomenon is hence not surprising. Other commonly identified social benefits of SFSCs are creating more job opportunities and increasing community sense. While the economic and environmental benefits are relatively limited, it was still found that SFSCs can mitigate the price squeeze and increase farmers' incomes by regaining the profits shared by intermediates in conventional food supply

systems. Moreover, SFSCs can also improve biodiversity, adopt more eco-friendly production methods, and reduce environmental pollution. From the country's perspective, it is found that despite the 4 articles that did not specify any countries, only 7 articles focused on SFSCs in developing countries. This indicates a lack of empirical evidence from developing countries. As SFSCs can improve food security and increase farmers' profits, it would hence be beneficial to encourage more studies in developing countries. As indicated by Balázs et al. (2016) and Janssen (2010), the scaling up of CSA can be a major challenge as it requires more investments than other forms of SFSCs. Moreover, the cultural and governance aspects of sustainability should be considered to provide a more integrated understanding of the linkage between SFSCs and sustainability. Therefore, it would be beneficial to conduct an empirical study in a developing country context to further investigate the influence of SFSCs on sustainability and analyse all five dimensions of sustainability.

From the existing review in section 3.6, some frameworks have been developed and proposed to analyse the performance of SFSCs. However, it should be noted that only a few measurement frameworks and metrics of the performance of sustainability in SFSCs were used in the sample papers. Moreover, to date, the empirical evidence supporting the sustainability of SFSCs is qualitative, and very little quantitative evidence on the impacts of food supply chain types exists. There is a need for more rigorous, quantitative assessments of the socio-economic and environmental impact of SFSCs.

3.8 Chapter summary

This chapter provides a critical analysis of the current literature on SFSCs with a particular focus on three dimensions of sustainability. The review has identified the three most commonly acknowledged dimensions of SFSCs benefits, namely social sustainability, economic sustainability, and environmental sustainability. The performance outcomes of SFSCs were analysed through these three themes. The thematic analysis identified the

main topics and frameworks that have been used to examine the measurement of SFSCs performance in sustainability.

From the existing literature on SFSCs introduced in this review and Chapter 2, most of the current research in this area focused on empirical evidence of a particular type of SFSCs and its sustainability linkage in a particular country context. There is a lack of a thematic summary that analysed the assessment and measurement of sustainability performance in the empirical study of SFSCs from a systematic process. Thus, this chapter provides a vital process to identify the existing research status of SFSCs and their linkage with sustainability through this systematic literature review. Findings from this literature review illustrated that researchers agreed on the SFSCs benefits of sustainability in three well-known dimensions (social, economic, and environmental), and there is no research evidence trying to show the exploration of SFSCs with its benefits of sustainability from the newly developed cultural and governance pillars. Meanwhile, the thematic analysis in this chapter identified only a few measurement frameworks or metrics of sustainability performance in SFSCs that have been proposed from the existing literature.

Thus, having identified the research gaps and the importance of SFSCs research and its linkage with sustainability, the chapter also illustrated the necessity of developing a framework for the assessment of sustainability based on indicators or metrics for SFSCs study. Therefore, based on the linkage between SFSCs and sustainability found in this literature review, a theoretical framework is proposed in Chapter 4 to guide and facilitate this study.

Chapter 4

THEORETICAL FRAMEWORK

4.1. Introduction

In the previous context and literature review chapters, a detailed introduction and critical analysis of the relevant literature on sustainable short food supply chains were provided, which identifies the gaps in current studies related to the proposed research area. This chapter builds upon the key themes that originated from the previous chapters and presents a theoretically informed conceptual framework to facilitate the investigations into SFSCs in the Chinese context. This chapter is structured as follows. Section 4.2 introduces an

overview of the theoretical perspectives that set the foundation for the conceptual framework before the research hypotheses and propositions are developed in Section 4.4 and Section 4.5. The proposed conceptual framework and its associated constructs are presented in Section 4.3. Finally, a summary of the chapter is provided in Section 4.6.

4.2. Theoretical foundations

The current study draws on four established theoretical perspectives as foundations to facilitate the investigation of the research questions. The selected theories are sustainable livelihood framework, five pillars of sustainability, moral economy, and Chinese relationship. The following sections provide an overview of these adopted theoretical foundations.

4.2.1. Sustainable livelihood framework

Originally conceived by the UK's Department for International Development in the 1990s, the Sustainable Livelihoods Framework (SLF) was developed to organize and improve organizations' efforts to eliminate poverty. Its theoretical developments were mainly fulfilled in the following decade (Chambers, 1995; Carney, 1998; Scoones, 1998). Geographically speaking, the majority of seminal applications of SLF has been within the global South, especially in South America (Bebbington, 1999), Africa, and Asia (Korf, 2004; Daskon and McGregor, 2012). This is mainly because the livelihoods of rural farmers are a more prominent issue in developing countries.

According to Ellis (2000), the SLF provides a method to engage with and understand the relationships between processes at both micro and macro levels and policy impacts that can influence people's ability to gain and earn a sustainable livelihood. As indicated by Majale (2002), the SLF consists of five main components, which are:

1. Livelihood assets
2. Vulnerability context
3. Transforming structures and processes
4. Livelihood strategies

5. Livelihood outcomes

Based on the belief that people require a range of assets to achieve positive livelihood outcomes, five categories of capital assets are identified within SLF, which are human, natural, financial, physical, and social (McLeod, 2001). Human capital refers to education, skills, and the health to carry out labour, which is a prominent component in the context of agri-food systems and food production. Meanwhile, the natural capital concerns the environmental resources, which is a defining feature of sustainability debates. Moreover, the financial capital concerns the economic assets required for a livelihood, most notably, cash, credit, and technologies, while the physical capital comprises the infrastructure needed for the successful pursuit of a livelihood strategy that applies both on a wider spatial level and household level. Finally, as a central asset to SLF, the social capital concerns the relationships among all related actors, which can be mediated by the logic of the state, the market, and civil society (Bebbington, 1999). As indicated by Carney (1998), the main purpose of forming the asset pentagon is to force users to "*think holistically rather than sectorally about the basis of livelihoods*". Therefore, a better understanding of the livelihood strategies and opportunities can be obtained through the continuous investigations of these five capitals.

Meanwhile, the vulnerability context describes the external factors that can influence people's assets and livelihood opportunities, which are beyond their control. It involves three types of factors (trends, shocks, and seasonality), as both perceived and actual vulnerability, affect people's livelihood strategies and decisions (Tang et al., 2013). According to Carney (1998), trends refer to resources and technology, while shocks comprise both environmental and anthropogenic elements. Meanwhile, seasonality contains price fluctuations and employment opportunities.

The third component, transforming structures and processes consists of two aspects, structures, and processes. Structures refer to the organizations that propose and enforce legislation, provide requirements related to assets,

manage natural resources, and provide other services necessary for operations with assets. Meanwhile, processes can determine the interactions between the structures and individuals.

Livelihood strategies concern the individual's available and implemented options for pursuing livelihood goals. The household's resilience to the three factors in the vulnerability context can be improved if it has a wide variety of livelihood strategies.

The outputs of livelihood strategies are referred to as livelihood outcomes. Typical positive achievements include higher income, better well-being, reduced vulnerability, increased food security, and improved environmental sustainability. Through enhancing outcomes, vulnerability can be reduced and access to more forms of capital can be granted.

The relations among these components are illustrated in Figure 4.1.

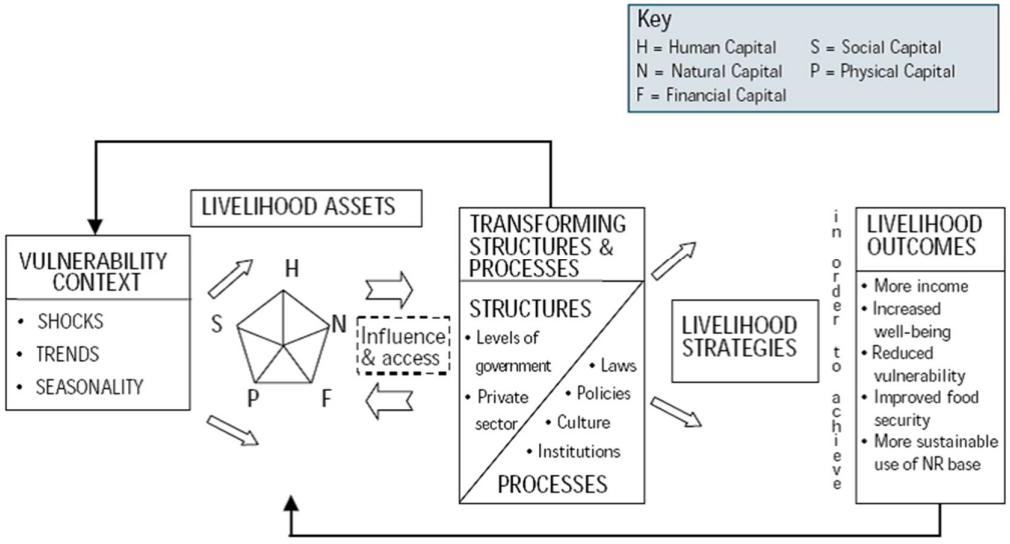


Figure 4.1. Sustainable livelihoods framework (DFID, 2001)

4.2.2. Five dimensions of sustainability

While the concept of five dimensions of sustainability has been briefly introduced in Section 3.5, the focus in that section is mainly to direct the review of SFSCs research. To lay the foundation of the proposed framework, this

section concentrates on the definition and theoretical perspective of this concept and discusses the five dimensions more concretely.

According to World Commission on Environment and Development (1987), sustainability can be defined as "*meeting the needs of today without compromising the ability of future generations to meet their own needs*". It has drawn increasing attention in modern societies, as the adverse environmental impacts caused by human activities are growing overwhelmingly. Therefore, as an extended form of the traditional three-pillar architecture, the five-dimensional sustainability framework was proposed to mitigate the increasing public concerns about the future (Bervar and Bertoncelj, 2016). While the traditional three pillars are identified as social, environmental, and economic (World Commission on Environment and Development, 1987), culture and safety are also incorporated as additional pillars to formulate a new five-dimensional sustainability framework.

4.2.2.1. Social pillar

The definitions of social sustainability vary with different researchers. For example, Sachs (1999) defined it as "*A strong definition of social sustainability must rest on the basic values of equity and democracy, the latter meant as the effective appropriation of all human rights – political, civil, economic, social and cultural – by all people*". Meanwhile, according to Biart (2002), social sustainability "*aims to determine the minimal social requirements for long-term development and to identify the challenges to the very functioning of society in the long run*". While there has been no consensus on a unified definition, it mainly concerns social equity, liveability, community development, human rights, and labour rights (Campbell, 2013).

As indicated by Mani et al. (2015), as a consequence of the growing awareness of equity, health, education, child and bonded labour, social sustainability has gained rapidly increasing attention in recent years. Many studies have evaluated this pillar in the short food supply chain. It can be noted that the contribution of SFSCs to social sustainability mainly consists of three

aspects. The first contribution is the improvement of the social and professional recognition of farmers (Mundler and Laughrea, 2016). Meanwhile, it can also reinforce consumers' trust in food security and quality and increase consumers' involvement in local development (Giampietri et al., 2016; O'Kane and Wijayaa, 2015). Moreover, more job opportunities can also be created for people living in rural areas (Marino et al., 2013).

4.2.2.2. Environmental pillar

As the original concern in the proposal of sustainability, the environmental pillar can be defined as "*a condition of balance, resilience, and interconnectedness that allows human society to satisfy its needs while neither exceeding the capacity of its supporting ecosystems to continue to regenerate the services necessary to meet those needs nor by our actions diminishing biological diversity*" (Morelli, 2011, p. 5).

According to Jabbour and Santos (2008), the environmental dimension mainly consists of environmental management and human resource consumption management. Owing to the difficulty in measuring this pillar, the studies evaluating the environmental impact of SFSCs are relatively limited. The most widely approved environmental benefit is the adoption of more environmentally friendly production techniques, such as better fertilization practices (Aubert and Enjolras, 2015; Forssell and Lankoski, 2015; Mundler and Laughrea, 2016; Jarzębowski et al., 2020; Bui et al., 2021). Moreover, several studies (Cleveland et al., 2014; Forssell and Lankoski, 2015; Jarzębowski et al.,2020) also found that SFSCs can help to reduce carbon footprint during production and transportation. Another well-known benefit is the improvement of biodiversity in the local area, as confirmed by Smith (2008), Mastronardi et al. (2015), Canfora (2016), Berti and Mulligan (2016), Rover et al. (2017), and Mancini et al. (2019).

4.2.2.3. Economic pillar

While there is no standard definition of economic sustainability, it can be noted that economic sustainability is inextricably connected to both social and environmental sustainability (Reddy and Thomson, 2015). As posited by

Meadows et al. (1972), economies will not be sustainable if natural resources are used beyond the limits and if society continues to depend on phenomena that drove growth in the past.

As indicated by Giovannoni and Fabietti (2013), the economic pillar mainly refers to compliance, proper governance, and risk management. From the studies evaluating this pillar of SFSCs, three typical benefits were identified. Firstly, it was found that farmers can regain control of their products through SFSCs (Hinrichs, 2000). Moreover, an increased profit can be obtained among the farmers through the exclusion of intermediates (Sgroi et al., 2014; Tudisca et al., 2015). Thirdly, it can avoid the price squeeze of the traditional food supply chain (Van der Ploeg, 2010), and create sustainable economic growth for the local community (Deller et al., 2017).

4.2.2.4. Cultural pillar

Unlike the traditional three pillars, the cultural pillar is a newly added dimension of sustainability (Scerri and James, 2010; Bervar and Bertoncelj, 2016). As introduced in Section 2.3, the history of this pillar can be traced back to 1995, when cultural sustainability was first proposed. Initially, cultural sustainability was treated as a subcategory of the social pillar (Soini and Birkland, 2014). It was then officially approved as an independent pillar of sustainability during the 3rd World Congress of UCLG in 2010 (UCLG, 2010). It mainly concerns the maintaining of cultural beliefs, cultural practices, heritage conservation, and culture as its entity (Soini and Birkland, 2014).

While this new pillar represents a new aspect of regenerated sustainability, it also contributes to the traditional three pillars (Astara, 2014). The same feature was also confirmed by Tweed and Sutherland (2007). They provided a framework under which culture, a part of which is the architectural heritage, is connected with the three pillars of sustainability. In their research, the environmental dimension focus on the maintenance of the existing stock of buildings, for example, the chemical pollutants in urban environments. They also agreed that the role of historic buildings could help to promote the

economic development in established cultural cities by attracting tourists (ODPM, 2004). The social dimension is more relevant to the need of looking at the architectural and cultural heritage as a part of sustainability because the cultural capital could be preserved for future generations (Bourdieu, 1984). Thus, culture through the architectural heritage has a role to play in and contribute to all three dimensions.

Culture itself can be defined as a set of beliefs, morals, methods, and a collection of human knowledge that is dependent on the transmission of these characteristics to younger generations. In the case of SFSCs study, the cultural dimension mainly focuses on the human knowledge and beliefs about the local food and its networks. Some studies have confirmed the cultural benefits of SFSCs. For instance, many studies have found that direct interactions can improve consumers' belief in the local community (Sage, 2003; Giampietri et al., 2016; Giampietri et al., 2018; González-Azcárate, 2021). Moreover, both Marsden et al. (2000) and Sgroi et al. (2014) found that SFSCs can promote sustainable tourism, which can facilitate the preservation of heritages. Furthermore, Ilbery and Maye (2005) noticed that SFSCs can deliver more knowledge of food culture.

4.2.2.5. Governance pillar

Along with the cultural pillar, governance has also been proposed by some researchers as an additional sustainability pillar (Biermann et al., 2014; Jitmaneeroj, 2016). Although it hasn't been officially admitted as the fifth sustainability pillar, its importance in delivering the Sustainability Development Goals has been declared by many researchers (Biermann, et al., 2014; Williams et al., 2018), and FAO (2017) confirmed the necessity of creating a governance system to measure, monitor, and guide sustainable agriculture. Governance mainly concerns the authoritative steering of social processes. Both governmental and non-governmental actors, such as civil societies, partners, and other private entities, are usually involved in governance activities, which can occur at both local and international levels.

According to Biermann et al. (2014), there are three different aspects of governance, which are good governance, effective governance, and equitable governance. Good governance refers to several qualitative values associated with the processes of rulemaking and their institutional foundations, such as enhanced participation, transparency, accountability, and public access to information (Biermann et al., 2014). Effective governance concerns the institutions' ability on resolving problems related to public policy and effective rules implementation. Equitable governance focuses on the equitable application of the rule of law and the distribution of wealth and opportunity within society, of which a major trend is to reduce extreme forms of economic inequality (Doyle and Stiglitz, 2014).

Although governance has been proposed as an independent pillar of sustainability (Biermann et al., 2014; Jitmaneeroj, 2016), it is closely linked with the traditional social and economic pillars. For instance, good governance can help to fight corruption and protect human rights and rule of law. Meanwhile, a major focus of equitable governance is to reduce economic inequality. Therefore, it can be noted that some social and economic sustainability issues can be addressed through governance measures.

The benefits of SFSCs on this pillar have been confirmed in several studies. For example, the study conducted by O'Kane and Wijaya (2015) found that farmers involved in SFSCs can feel more empowered and equitable. The improved gender equality was also found as an additional benefit of SFSCs by Zirham and Palomba (2015, 2016). Moreover, the livelihoods of low-income people can be improved with increased access to food (Smith, 2008; Jones and Bhatia, 2011; Nonini, 2013; Berti and Mulligan (2016); Deller et al., 2017). Meanwhile, the improvement in farmers' income was also widely recognised by many researchers as a phenomenon to reduce economic inequality, such as Watts et al. (2011); Cleveland et al. (2014), D'Amico et al. (2014), Sgroi et al. (2014), Tudisca et al. (2015), Aubert and Enjolras (2015), Mastronardi et al. (2015), Forssell and Lankoski (2015), Engelseth (2016), Demartini et al. (2017), Leiper and Sather (2017), and Benedek et al. (2017). It can be noted that

equitable governance is more widely acknowledged than good governance, while none of the existing studies has addressed the effective governance aspect. This could be partially caused by the relatively short history of SFSCs, as many initiatives occur in the recent decade. The major research focus has been devoted to investigating the sustainable feature of this new type of food supply system and less attention has been paid to its effectiveness. Nonetheless, more research on this aspect can be anticipated with the blooming of studies into SFSCs.

4.2.3. Moral economy

Initially proposed by a British political economist in 1971, the term "*moral economy*" was originally defined as "*a popular consensus as to what was legitimate and what were illegitimate practices in marketing, milling, baking, etc. This in its turn was grounded upon a consistent traditional view of social norms and obligations, of the proper economic functions of several parties within the community*" (Thompson, 1971, p. 79). The emergence of this concept was caused by the divergence of economic and moral concerns in the political economy (Götz, 2015). Therefore, to bring questions of morality back into the economic sphere, the concept of the moral economy was proposed and developed to involve concerns for goodness, fairness, and justice, rather than solely the modern economic theory.

While moral economy always refers to economic behaviours or arrangements concerned with survival, redistribution, or risk minimisation in early studies (McCarthy, 2006), it has been expanded to include extra factors such as pleasure, friendship, aesthetics, affection, loyalty, justice and reciprocity (Kloppenburg et al., 1996). According to Reuter (2018), the moral economy has become a "*culture‐specific moral framework of norms, values, and practices of mutual aid that typically have operated within local societies and their food systems*". It has been applied to the entire food supply processes (production, exchange, and consumption) in both first and third-world settings (Goodman, 2004).

Although the concept of the moral economy has been proposed for over a half-century, research investigating its application in agricultural food networks is still an emergent area, with the majority of studies conducted within the last decade. For example, Sage (2003) conducted 12 semi-structured interviews and 20 informal discussions with relevant stakeholders of SFSCs. They found that direct interactions in these food systems can help to attain additional moral values, such as ethics of animal welfare, consideration for sustainability, and belief in the local community.

Another study was implemented by Hinson and Bruchhaus (2008). They explored the consumer preferences for locally produced strawberries through a mail survey with 309 useable responses. They found that consumers show more trust in local products and are willing to support local growers. A similar benefit was also confirmed by Smith (2008), Vittersø et al. (2019), and Bui et al. (2021).

Meanwhile, to investigate the scaling up of an organic box scheme in Austria, Milestad et al. (2017) conducted semi-structured interviews with 19 participants and a group discussion with 11 management staff. It was found that the organic box scheme can provide better social justice to its participants. A similar finding was also obtained by Nonini (2013). They interviewed various participants to evaluate a transformation conceptualization through the analysis of the local food movement in North Carolina. They found that the local food system can help to provide food access to more low-income people.

Moreover, Leiper and Sather (2017) investigated the motivations of both farmers and consumers in participating FMs and attempted to elucidate the shared values and morals among both parties. They organised data collection at 5 farmer markets (FMs) and conducted a questionnaire survey with 377 consumers and semi-structured interviews with 17 producers. It was found that the embedded social relationship between farmers and consumers in FMs and other forms of AFNs is a primary characteristic of a moral economy. Moreover,

the localism feature of such food systems also contributes to the moral economy.

Another study was reported by Reuter (2018), who conducted a case study in Indonesia to evaluate the loss of moral economies caused by the modernization of regional food systems. Through comparing and assessing the developments of a local food system in the central highlands, he found that with the rapid modernization, the investigated area had experienced a significant decrease in biodiversity, food security, and social solidarity. Although it was found that some aspects of the moral economy still exist in the current system, such as the personal trust between farmers and wholesalers and their focus on reputation, a renewal and redesign of the local food system that features more moral economy is demanded. Through the sharing of risks and benefits, an effective moral economy can provide mutual insurance, and hence help to improve farmer livelihoods and the resilience of the food systems.

4.2.4. Chinese relationship

As a unique business concept in the Chinese context, Chinese relationship stands for a specific form of relationship, which could be vital to the success of a business. It generally refers to having a personal relationship and trust with someone, which can involve moral obligations and exchanging favours. The essence of a relationship is to build a network of mutually beneficial relationships that can be used for personal and business purposes. The depth of this type of relationship can be much deeper than ordinary business relationships in the west and can involve a fair proportion of personal relationships.

The history of relationships in China, although not fully documented, can be traced back to the era of the Dynasty (Huang, 2009). It emerged as a result of cultural implications of the rule of law, to supplement as an additional insurance on trust among Chinese people in personal and business matters. For those involved in a web of relationships, favours can be much easier obtained from other participants at lower or no cost but may require reciprocations in the

future. Reciprocation is an important component in maintaining a relationship. Together with favour, they form the basis of the relationship. Participants in a web of relationships can receive good reputations when they are willing to give favours to others, and bad reputations when they failed to provide reciprocation to whom they acquired favours before. Participants with a consistent bad reputation will be excluded from the web of relationships and will have more barriers, even compared with outsiders of the web, if they attempt to work with other participants again. Thus, it can be noted that maintaining a good reputation on the web is important to all participants, which can hence explain the reason of In Chinese culture, people tend to treat the relationship as an additional insurance on trust.

Owing to its dominant influence in determining the success of a business in China, this unique concept has received rapidly increasing research interest from the west. For instance, Gold et al. (2001) attempted to clarify some fundamental characteristics of a relationship, such as its origin, form, purpose, and the difference from other forms of networked relationships. A taxonomy of relationships was developed which concerns both cultural and institutional perspectives. Another study was implemented by Luo (2007), which explained the pervasiveness of relationships in Chinese firms and their implications for foreign businesses. He summarized the key themes to fostering a relationship in a business context, with emphasis on the divide between favour exchange and bribery or corruption. Moreover, Huang (2009) emphasized the importance of relationships from the perspective of Confucian ethics, to explain how this form of relationship is valued over any specific "*cost-benefit*" evaluations.

The positive impacts of SFSCs on Chinese relationships have been confirmed by Si et al. (2015). They conducted over 120 semi-structured interviews with various participants of AFNs, such as employees and owners of organic farms, representatives of organic certification bodies, government agencies, consumer associations, NGOs and community organizers, and researchers. The participants were distributed in 13 provinces and municipalities in China,

including Beijing, Liaoning, Shandong, Henan, Anhui, Jiangsu, Shanghai, Zhejiang, Sichuan, Chongqing, Guangxi, Fujian, and Hainan. It was found that AFNs can create a closer social relationship between producers and consumers, thus confirming a positive influence on the Chinese relationship.

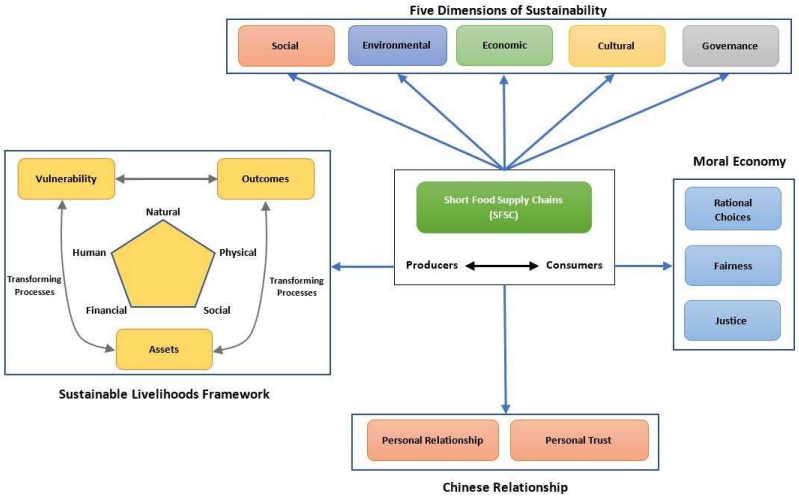
While only one study has been found that investigates the linkage between Chinese relationships and SFSCs, some studies have confirmed the positive impacts of SFSCs on personal trust and relationships in other countries' contexts. For example, Dixon and Richards (2016) performed an analysis on Australian food security; Darolt et al. (2016) conducted semi-structured interviews with various participants (farmers, traders, consumers, and food experts) in France and Brazil to investigate the new producer-consumer relationships in AFNs; Demartini et al. (2017) focused on the general form of SFSCs and investigated the contribution of farmers' motivation through a questionnaire survey in Italy; Zirham and Palomba (2015, 2016) have conducted various forms of interview (open, in-person and telephone) in Italy to analyse the female entrepreneurship phenomenon in SFSCs. While the country context and forms of relationship may vary among these studies, they all have reached similar findings as Si et al. (2015).

4.3. Conceptual framework

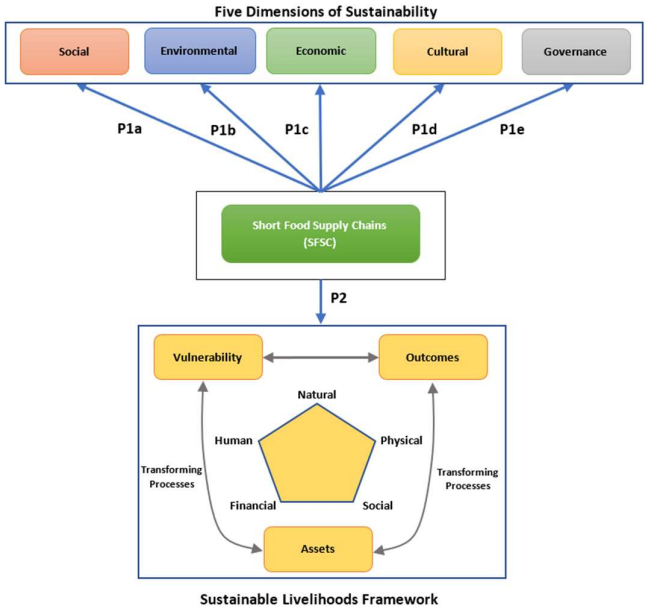
Building upon the constructs and the established inter-relationships outlined in Section 4.2, a conceptual framework is proposed to establish the relationship between SFSCs with five dimensions of sustainability, sustainable livelihoods framework, moral economy, and the Chinese relationship, as depicted in Figure 4.2 (a).

The model suggests that the various processes involved in SFSCs (production, distribution, manufacturing, processing, and packaging) are ultimately livelihood strategies for farmers. Thus, the sustainable livelihoods framework has been adopted to facilitate the evaluation of SFSCs' influence on farmers' livelihoods. Meanwhile, the model predicts from consumers' perspectives that

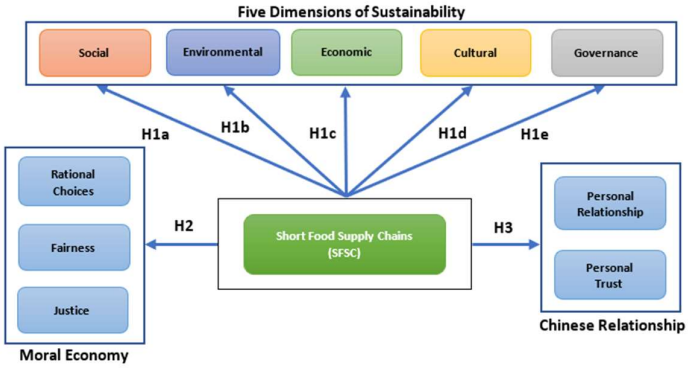
their motivations for participating in SFSCs are vital to the successful implementation of SFSCs. Therefore, a moral economy has been adopted to explore additional motivations other than pricing. More specifically, along with separately evaluating participating parties of SFSCs, the model examines the five pillars of sustainability to assess the benefits of SFSCs on sustainability. Finally, the model evaluates the influence of personal relationships and trust between farmers and consumers on consumers' performance towards participating in SFSCs.



(a) Conceptual framework



(b) Farmers' perspective



(c) Consumers' perspective

Figure 4.2. Conceptual model

This research draws on both farmers' and consumers' perspectives to address the research questions by investigating their motivations for participating in SFSCs. Thus, the relationships set out in the conceptual model are divided into two parts. The first part of the conceptual framework contains only key concepts related to farmers and their perceptions of the benefits of the short food supply chain (see Figure 4.2 (b)). The other component contains key concepts and hypothesized relationships about consumers' motivations toward SFSCs (see Figure 4.2 (c)). The following sections provide processes of hypotheses development from the consumers' perspective (Section 4.4) and proposition development from the farmers' perspective (Section 4.5) based on the theoretical models established in this section.

4.4. Hypotheses development

The relationships set out in the conceptual model from the consumers' perspective (Figure 4.2 (c)) are developed in three sections. The first section associates SFSCs practices with its benefits of sustainability. The second section establishes the proposed accelerating effects of the moral economy on the relationship between SFSCs and consumers' buying performance. The final section links farmers to the consumer through personal trust and relationships during buying activities.

4.4.1. SFSCs practices and sustainability from consumers' perspective

The growing literature on the social, economic, and environmental dimensions along with significant evidence suggested that SFSCs practices towards sustainability are more likely to lead to observable progress.

In the analysis of social SFSCs practices, Giampietri et al. (2016, 2018) found that the direct interactions in SFSCs can reinforce consumers' trust in food security and quality and increase consumers' involvement in local development. A similar finding was also obtained by O'Kane and Wijaya (2015). Moreover, O'Kane and Wijaya (2015) found that farmers could feel more empowered and equitable in Farmer Markets (FMs), a typical face-to-face category of SFSCs. Apart from the social benefits introduced by direct interactions, gender equality was also investigated in SFSCs. Two continuous studies by Zirham and Palomba (2015, 2016) explored the females' role in SFSCs, they found that female features, such as high responsibility and good social manners, can improve food security and provide a more pleasant shopping atmosphere. Moreover, as a form of the local food system, SFSCs can also provide food with improved security to more low-income people (Nonini, 2013). Meanwhile, a positive correlation was also found between the density of FMs and Italian adults' Body Mass Index (BMI), indicating that FMs can provide higher quality food products (Bimbo et al., 2015). Based on the above discussion this study proposes the following:

H1a. *The social benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.*

Unlike the widely acknowledged improvements in social sustainability, research on the linkage between SFSCs and economic sustainability is rather limited. Both studies focusing on FMs found that the direct interactions can help to regain the profit shared by intermediates in conventional food supply systems and facilitate the economic development of local areas (Watts et al., 2011; Benedek et al., 2017). Moreover, Benedek et al. (2017) also found that farmers within FMs are more open to cooperation and tend to be higher

educated. Thus, they can benefit more through direct interactions with customers, and the pleasant social atmosphere can be retained as an added value to the food products. While the economic sustainability of FMs is obvious, there is some controversy over Community Supported Agriculture (CSA). While Balázs et al. (2016) confirmed that CSA can improve farmers' financial situation and facilitate local economic development, both they and Janssen (2010) found that scaling up CSA can be a major challenge. This is because the investment of CSA is much greater for hiring external labours. Thus, it can be a tough decision for growers to adapt to this form of SFSCs. it should be noted that the potential increased costs for small-scale production are not fully evaluated. However, due to limited empirical studies and conflicting results, and in line with the status of Chinese agriculture, the study proposes that:

H1b. *The economic benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.*

Hara et al. (2013) examined the energy consumption of vegetables in the Osaka city region, where they found that the local food movement can effectively reduce energy consumption. Meanwhile, McClenachan et al. (2014) compared the environmental impacts of Community Supported Fisheries (CSFs) and industrial fisheries. CSFs were confirmed to be a more environmentally sustainable alternative with a much smaller carbon footprint. Moreover, Tasca et al. (2017) found that the abandonment of disposable packing and industrial processing in direct distribution can effectively reduce environmental impacts by 20% to 48%. Nevertheless, they also indicated that additional improvements, such as better fertilization practices, are still needed to further improve the environmental sustainability of SFSCs. Based on the above findings, it is hypothesised that:

H1c. *The environmental benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.*

While the cultural pillar represents a new aspect of regenerated sustainability, it also contributes to the traditional three pillars (Astara, 2014). The same feature was also confirmed by Tweed and Sutherland (2007), and they provided a framework under which culture is connected with the three pillars of sustainability. The cultural capital (Bourdieu, 1984) could be preserved for future generations. According to Torjusen et al. (2008), consumers responded that SFSCs increased their knowledge about local agriculture, and it allowed them to give feedback to farmers. Based on the above discussion this study posits that:

H1d. *The cultural benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.*

Governance is important in delivering the Sustainability Development Goals has been declared by many researchers (Biermann, et al., 2014; Williams et al., 2018). FAO (2017) confirmed the necessity of creating a governance system to measure, monitor, and guide sustainable agriculture. Good governance can help to fight corruption and protect human rights and rule of law. Meanwhile, a major focus of equitable governance is to reduce economic inequality. Demartini et al. (2017) mentioned the possible effects of SFSCs on-farm management and food quality, they also suggested that consumers become the third-party certification bodies and communicate with farmers directly about their needs. Based on the above, this study proposes the following:

H1e. *The governance benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.*

4.4.2. Moral economy and consumer's buying performance

Leiper and Sather (2017) investigated the motivations of both farmers and consumers in participating FMs and attempted to elucidate the shared values and morals among both parties. They found that the embedded social relationship between farmers and consumers in FMs and other forms of AFNs

is a primary characteristic of a moral economy. Moreover, the localism feature of such food systems also contributes to the moral economy. Meanwhile, Reuter (2018) conducted a case study in Indonesia to evaluate the loss of moral economies caused by the modernization of regional food systems. Through comparing and assessing the developments of a local food system in the central highlands, he found that through the sharing of risks and benefits, an effective moral economy can provide mutual insurance, and hence help to improve farmer livelihoods and the resilience of the food systems. Based on the above, the study proposes the following:

H2. *The positive effect of the moral economy on the local food system positively influences consumers' motivations for participating in SFSCs.*

4.4.3. Consumer's performance through Chinese relationship

In the Chinese context, the relationship stands for a specific form of relationship, which could be vital to the success of a business. It generally refers to having a personal relationship and trust with someone, which can involve moral obligations and exchanging favours. Chinese people treat 'guanxi' as an additional insurance on trust, so maintaining a good reputation on the web is important to all participants. In the existing studies, Giampietri et al. (2016, 2018) investigated the motivations of consumers' purchasing behaviour in SFSCs and found that the direct interactions in SFSCs can reinforce consumers' trust in food security and quality and increase consumers' involvement in local development. A similar finding was also obtained by O'Kane and Wijaya (2015). Moreover, O'Kane and Wijaya (2015) also found that farmers could feel more empowered and equitable in Farmers Markets, a typical face-to-face category of SFSCs. Therefore, the study proposes the following:

H3. *The effective personal relationship and trust between farmers and consumers have a positive effect on consumers' participation in SFSCs.*

4.5. Propositions development

The relationships set out in the conceptual model from the farmers' perspective (Figure 4.2 (b)) are developed in two sections. The first section associates SFSCs practices with its benefits of sustainability. The second section focused on the sustainable livelihoods framework that has been adopted to facilitate the evaluation of SFSCs' influence on farmers' livelihoods.

4.5.1. SFSCs practices and sustainability from farmers' perspective

As introduced in Chapter 3, the current research on SFSCs agreed that this type of food network meets the benefits of sustainability from the three well-known dimensions (social, economic, and environmental dimensions). Evidence from the relevant literature indicated that farmers could benefit more through direct interactions with customers. Farmers could feel more empowered and equitable in SFSCs, regain the profit shared by intermediates in conventional food supply systems and facilitate economic development of local areas, reduce energy consumption and improve local biodiversity (O'Kane and Wijaya, 2015; Benedek et al., 2017; Balázs et al., 2016; Hara et al., 2013). They are willing to participate in SFSCs due to these added values of sustainability to the food products (Benedek et al., 2017). Meanwhile, Section 4.4.1 emphasized the governance and cultural benefits of sustainability embedded in SFSCs, hypotheses were proposed that these two new aspects of sustainability also have a positive influence on consumers' motivations for taking part in SFSCs. SFSCs not only increased consumers' knowledge about local agriculture but also allowed them to give feedback to farmers. Thus, SFSCs could help farmers to promote the development of food selling activities with local characteristics. Besides, good governance in SFSCs could help to protect farmers' rights, and improve farm management and food quality. Based on the above discussion, this study suggests the propositions:

P1a. *The social benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.*

P1b. *The economic benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.*

P1c. *The environmental benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.*

P1d. *The cultural benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.*

P1e. *The governance benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.*

4.5.2. SFSCs practices and farmer's livelihoods assessment

Originally conceived by the UK's Department for International Development in the 1990s, the Sustainable Livelihoods Framework (SLF) was developed to organize and improve organizations' efforts to eliminate poverty. There are five categories of capital assets (human, natural, financial, physical, and social) within SLF to achieve positive livelihood outcomes (McLeod, 2001). These capital assets are criteria to assess the poor people's livelihoods to some extent. These assets are resources to achieve more materials and also fortune themselves. Some researchers in SFSCs studies noticed that SFSCs brought benefits to farmers' livelihoods. According to Singh (2013), a prominent aspect of SFSCs is to improve the income and livelihood of farmers (Singh, 2013). Farmers can regain the profit shared by intermediates, and hence improve their livelihoods (Hinrichs, 2000). While Smith (2008) focused on the sustainable features of the local food system, he said more complete benefits were found as improving food quality and security, supporting local economic development, and improving the livelihoods of farmers. Based on the above findings, and in line with the argument of SLF, this study suggests the proposition that:

P2. *The positive influence of SFSCs on farmers' livelihood outcomes motivates farmers to participate in SFSCs.*

4.6. Chapter summary

Drawing on the findings from the context and literature review chapters, this chapter introduces the theoretical foundations of this study. Four relevant theories were identified, which are the sustainable livelihoods framework, five dimensions of sustainability, moral economy, and the Chinese relationship. The concept and main components of each theory were introduced, respectively. Three sets of hypotheses were then developed to guide the design of the research. A conceptual framework was proposed that denotes the interconnections between each party and theories. It can be noted that the sustainable livelihoods framework only concerns the participated farmers, and the moral economy and Chinese relationship relate to consumers, while the five dimensions of sustainability affect both farmers and consumers. Table 4.1 and Table 4.2 summarises the hypotheses from the consumers' perspective and propositions from the farmers' perspective developed in this study respectively. Thus, research objective 2 (Section 1.4) is achieved with the well-established conceptual model of this research.

Table 4.1: List of the research hypotheses

No.	Hypothesis
H1a	The social benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.
H1b	The economic benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.
H1c	The environmental benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.
H1d	The cultural benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.
H1e	The governance benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.
H2	The positive effect of the moral economy on the local food system positively influences consumers' motivations for participating in SFSCs.
H3	The effective personal relationship and trust between farmers and consumers have a positive effect on consumers' participation in SFSCs.

Table 4.2: List of the research propositions

No.	Propositions
P1a	The social benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.
P1b	The economic benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.
P1c	The environmental benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.
P1d	The cultural benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.
P1e	The governance benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.
P2	The positive influence of SFSCs on farmers' livelihood outcomes motivates farmers to participate in SFSCs.

Chapter 5

RESEARCH METHODOLOGY

5.1. Introduction

The overarching aim of this study is to investigate SFSCs and sustainability linkages in the context of China. As the conceptual framework of this research has been established in chapter four, this chapter presents and explains the methodological aspects that were used to empirically test the proposed conceptual framework. Thus, the methodology introduced in this chapter provides a detailed process of how to explore SFSCs practices in China. This study has been divided into nine sections. Firstly, a brief introduction of different research paradigms and the rationale for adopting interpretivism were presented (Section 5.2) before identifying the research approaches used in this research (Section 5.3). The chapter continues by discussing the data collection methods (Section 5.4) and presenting the detailed research design process in the following section (Section 5.5), which includes the target population and sampling techniques. Afterwards, the chapter presents the administration processes of field research and survey development in Section 5.6. The chapter goes further by discussing the data analysis process and techniques employed to test the hypothesised relationships (Section 5.7). The chapter then discusses the ethical considerations that were taken during the data collection in Section 5.8. Finally, a summary of this chapter is provided at the end in Section 5.9 before moving on to the data analysis chapter.

5.2. Research paradigm

Management is a discipline coming from social science that explores the life-world with human experience (Crotty, 2015). In social research, there is no unique approach that can fit all social practices. Few social research approaches have been developed such as positivist, interpretive and critical social science, different approaches represent fundamentally different ways of looking at the world (Neuman, 2006). The first two are the most commonly used approaches, and they would be discussed to clarify the approach used by the researcher. To simplify the discussion about the different assumptions and ideas of the approaches, Neuman (2006) answered the distinctions between these approaches in ten questions. Here to help to identify the methodological position of this study, Neuman's (2006) ten questions and answers about positivist and interpretive approaches in social science would be listed below, then the research meanings of this research were explored and answered after each question. Thus, it would be easier and clearer to distinguish the paradigms of this research by combining the researcher's own experience with the knowledge of social science approaches.

1. What is the ultimate purpose of conducting social scientific research?
The purpose of positivist social science is to seek explanations of casual laws of human behaviour that can be tested through data (Turner, 1985). Meanwhile, interpretive research focuses on the understanding of meaningful social action (Blaikie, 1993).

After identifying the existing development of SFSCs and their linkage with sustainability, further study aims to explore the current status of SFSCs in China and their benefits to stakeholders that participate in them. The researcher should not just be an external observer of this study but interpret the social behaviour of the human being studied.

2. What is the fundamental nature of social reality?

The positivists adopt an essentialist orientation to reality, they believe reality is out there waiting to be discovered (Mulkay, 1979). On the contrary, the interpretive approach sees reality as created by human interactions and beliefs with a constructionist orientation (Neuman, 2006).

As SFSCs is a quite new form of the food supply chain that replaces the conventional industrialized counterpart, it is a social construction with the preference of the participants. Farmers and consumers both build, participate in, and influence the SFSCs from every aspect together.

3. What is the basic nature of human beings?

Positivists assume that humans are rational thinking mammals, thus it is sufficient to provide adequate explanations of human thought and behaviour by observing their external behaviour (Durkheim, 1938). Interpretive researchers see people are engaged in creating the meanings of society through interactions, they believe people have their reasons for their actions and it is crucial to learn their reasons even with emotions or prejudices (Neuman, 2006).

In the research of SFSCs, the stakeholders are engaged in the development of SFSCs through their interactions and understanding of it. Thus, their behaviour cannot just be observed externally, the inner thought and beliefs should also be investigated through interviews or survey research.

4. What is the view on the human agency (free will, volition, and rationality)?

While positivist social science emphasizes deterministic relationships, which look more at external forces than mental processes on individual choices and behaviours, this approach assumes most individual reasoning follows the rational logic of decision making (Neuman, 2006). Interpretivists adopt voluntarism that sees human subjective feelings and individual decision-making processes (Neuman, 2006).

As can be learned from the literature view, the quality and price and other external factors can lead to the behaviour of the participants in the food buying processes. But the inner thought and other points could also affect the decision-making system of individuals.

5. What is the relationship between science and common sense?
Positivists see science as different from and prevail over common sense, they even create a positivist language that is more logical with careful thought (Neuman, 2006). Interpretivists see science as no better than common sense, as people use common sense to guide their actions (Neuman, 2006).

Here in this research, when exploring participants' reasons for the selection of SFSCs, it is not always the science that guides the behaviour of customers. In contrast, common sense takes an important place for people to interpret this society and influence the decision-making processes. Thus, not only precise scientific knowledge (the quality and price and other factors of local food) but also common sense (help local development, better shopping atmosphere, and other reasons) should be investigated in this research.

6. What constitutes an explanation or theory of social reality?
The positivist approach seeks nomothetic explanations which rely on the casual laws of human behaviour with valid and logical reasoning (Neuman, 2006). Meanwhile, the interpretive approach is idiographic and inductive in that its theory provides an in-depth description of human lives (Neuman, 2006).

To pursue a higher level of certainty in this SFSCs study, not only the idiographic approach of an in-depth description of the research should be used, but also the nomothetic approach would help to explain the behaviours and feelings of participants with much more certainty.

7. How does one determine whether an explanation is true or false?
Positivist social science has a basic idea that people could recognize truth and false, and the knowledge could be verified by replicating or reproducing others'

research (Neuman, 2006). For the interpretive study, an explanation is true if it is understandable by the people being studied (Neuman, 2006).

It can be learned from the above literature review that different types of SFSCs suit different regions with various cultural and geographic situations. There is not only form of the food chain that with maximum benefits exists everywhere, and this is the reason that the researcher chooses to investigate SFSCs in China when this food chain has been investigated in European countries. Thus, this study should go inner in China to explore its research together with the participants being studied, rather than only do the external observation.

8. What does good evidence or factual information look like?

In positivist social science, the factual knowledge would be empirically observed and understood by being agreed by others (Neuman, 2006). For interpretive social science, evidence cannot be separated from where it happens or the people it involves (Neuman, 2006).

In SFSCs, the research may not be agreed upon if the context in which the action happened is abandoned, and the evidence and facts must be embedded within the meaningful society. This means the research of SFSCs in China cannot leave its exploration in this region.

9. What is the relevance or use of social scientific knowledge?

Positivists use the instrumental orientation in which the knowledge could be used as a tool to achieve goals (Neuman, 2006). While interpretative researchers have the practical orientation that knowledge could be integrated with the inner-life experience of people, researchers could apply new knowledge together with the people being studied by going into their lives (Neuman, 2006).

The researcher for the further SFSCs study should not just be an observer to investigate its development in China, but to go inside the human experience in

the local area, study and apply the knowledge together with the participants being studied.

10. Where do socio-political values enter into science?
The positivist approach seeks objectives in value-free science, and research should be conducted based on empirical evidence without prejudices (Neuman, 2006). On the contrary, interpretive science emphasizes personal feelings and understandings, and there is no single value position that is better than others (Neuman, 2006).

Although the researcher intends to be more objective in her future research based on the empirical data, it is difficult to do so due to the context of the meaningful system. On one hand, the researcher should analyse and interpret the meaningful human experience, and on the other hand, the feelings and understandings of the participants are themselves subjective with values.

After answering the above ten questions by the researcher with her study perspectives, the theoretical perspectives for the author's research are identified as interpretivism underpinned by constructionism. As further research is to explore the development of SFSCs by investigating the context of the local system, the ideograph approach should be conducted to seek the individualising material in that human society. Moreover, the nomothetic approach should also be focused to understand the externally generalising factors of SFSCs in China. Weber (1970) suggested that both idiographic and nomothetic phenomena should be concerned in social science to look for empirical validations of any claims made in that area. Thus, with the theoretical perspectives of interpretivism underpinned in constructionism, both idiographic and nomothetic methods should be applied for future research.

5.3. Research strategy

As identified in Section 5.2, both idiographic and nomothetic phenomena need to be explored in investigating SFSCs in the Chinese context, in other words,

both qualitative and quantitative approaches need to be applied to collect and analyse data for this research.

5.3.1. Qualitative approach

A qualitative approach is often applied to emphasize the detailed examinations of cases that come from the natural flow of social life. Researchers use this kind of approach to present authentic interpretations that are sensitive to specific social-historical contexts (Neuman, 2006). To collect and analyse qualitative data, there are methodologies such as field research and historical-comparative research (Neuman, 2006). Among them, field research is the main methodology used for qualitative research. Field research is a tool to collect and analyse qualitative data with its methods of in-depth interviews and observation (Neuman, 2006). Researchers use this methodology to shape their data not only in the form of numbers but also in other flexible patterns (Neuman, 2006). As an interpretivist perspective underpinned by the epistemology of constructionism, this field of research allows researchers to go inner into the lives of human being studied to experience their feelings and actions (Neuman, 2006). Thus, the in-depth description of the meaningful system would become the appropriate context for field research (Neuman, 2006).

In this study, methods of observation and interview in field research are used to collect and analyse qualitative data, so it helps to explore the detailed and meaningful world of SFSCs in the Chinese context.

5.3.2. Quantitative approach

In contrast to the qualitative approach, quantitative researchers emphasize precisely measuring variables and testing hypotheses that are linked to general casual explanations (Neuman, 2006). Methodologies such as survey research, experimental research, and secondary analysis are listed in this quantitative approach (Saunders et al., 2012). Survey research is a type of methodology from quantitative measurement to collect precise numerical information from its data (Saunders et al., 2012). The methods of survey research in social science include questionnaires and structured interviews

where valid and reliable data are welcome, and it often uses statistical techniques to analyse its data (Neuman, 2006). Other methodologies such as experimental research and secondary research are also used to collect and analyse statistical data (Neuman, 2006). The survey, experimental research, and secondary statistic data help researchers to measure variables and develop casual theories from research (Neuman, 2006).

In this research, secondary data is collected from journal papers, conference papers, governance reports, and other sources to analyse the existing development of SFSCs. Meanwhile, first-hand data are also collected from the survey research to analyse the current situation of SFSCs in the Chinese region.

5.4. Data collection methods

It should be noted that all data can be divided into two subsequent groups: primary and secondary. As indicated by Sekaran and Bougie (2013), primary data mainly refer to the first-hand data collected for the study. The commonly used methods to collect primary data are interviews, observation, and surveys (Saunders et al., 2012). Meanwhile, secondary data are obtained from existing studies, other researchers, or organisations (Bryman and Bell, 2011). Typical sources to acquire secondary data are periodicals, government publications, annual reports, census data, and the media (Sekaran and Bougie, 2013). Owing to the lack of relevant studies in the proposed research area in China, all empirical data used in this study was primary data collected from the fieldwork.

5.4.1 Interview

Employed in both quantitative and qualitative research, an interview is a commonly used data collection method. While the essence of the interview in both types of research is similar, which is to collect information on the issues of interest through questions and answers (Collis and Hussy, 2014), the form and content vary.

In quantitative research, a structured interview is adopted that provides the same prepared questions to all participants, to ensure all interviewees receive the same interview stimulus (Sekaran and Bougie, 2013). Questions in this type of interview are usually very specific and often provide a fixed range of answers, to facilitate the aggregation of gathered replies (Bryman and Bell, 2011). However, it should be noted that both interviewer and interviewees have very little freedom in this type of interview (Berg, 2007).

Meanwhile, two types of interviews are commonly used in qualitative research, which is unstructured and semi-structured interviews. Very similar to the essence of a conversation, the unstructured interview has no predetermined questions, and always evolves from a single question during the interview (Collis and Hussy, 2014). The interviewees can respond freely, and the interviewer is responsible for following up on interesting developments and letting the interviewee elaborate on issues of interest, to guide the direction of the interview (Dörnyei, 2007). This form of interview allows greater flexibility and freedom to both interviewers and interviewees throughout the process of planning, implementing, and organising the interview (Gubrium and Holstein, 2002). Another form of interview commonly adopted in qualitative research is a semi-structured interview. This type of interview is like the intermediate between structured and unstructured interviews. A checklist will always be used to cover the topics that need to be addressed, but additional questions can arise to elaborate on issues of interest (Alshenqeeti, 2014).

It can be noted that although interview has been adopted in both quantitative and qualitative research, the focus and form vary. Qualitative interviews tend to be more flexible with detailed answers, while quantitative interview aims to generate answers that can be coded and processed quickly (Bryman and Bell, 2011).

A typical benefit of the interview is the ability to collect detailed information. However, the effectiveness of this data collection approach has been hindered by several issues. Firstly, it tends to be time-consuming and costly to conduct

(Sekaran and Bougie, 2013). Therefore, an interview is more commonly used in small-scale studies. Secondly, as anonymity cannot be fully assured and the frequent use of voice recording during the interview, the interviewees' answers to certain questions may be inhibited (Bryman and Bell, 2011; Sekaran and Bougie, 2013). Finally, owing to the direct interactions with the interviewer, bias can be introduced into the answers by the interviewees (Saunders et al., 2012).

5.4.2 Observation

Observation is a research process of monitoring, recording, describing, analysing, and interpreting individual(s) activities and behaviours in a natural environment or a lab setting (Saunders et al., 2012). The researcher in the observation process can choose to be within or without participating in the actions or being involved in the setting where actions take place ((Bryman and Bell, 2015).

5.4.3 Questionnaire

Along with the interview, a self-completion questionnaire is another commonly used approach for data collection. As indicated by Sekaran and Bougie (2013), a questionnaire is a "*pre-formulated written set of questions to which respondents record their answers*". The self-completion questionnaire can be administrated in several forms, e.g., telephone, online, face-to-face, and mail (Saunders et al., 2012). According to Bryman and Bell (2011), the most prominent of these forms is the mail questionnaire, which is sent through the post to the respondent first and mailed back to the researcher when completed. Typical benefits of mail questionnaire are the larger covered area (Saunders et al., 2012), involvement of less accessible respondents (Blumberg et al., 2014), greater anonymity (Zikmund et al., 2013), higher response quality (Blumberg et al., 2014), and lower demand on a budget (Blumberg et al., 2014).

Compared with the interview, all forms of the self-completion questionnaire can be cheaper to administer, faster to obtain a large scale of responses, more convenient for respondents, and exclude the potential bias introduced by the interviewer (Bryman and Bell, 2011). However, there are also some disadvantages of the self-completion questionnaire, such as the greater risk of

missing data, lower response rates, the lack of possibilities to prompt and probe, etc. (Bryman and Bell, 2011).

5.5. Research design

5.5.1. Location selection of the study

Ranking fourth in national land area, China has 23 provinces, 4 municipalities, and 5 autonomous regions. While nearly all these regions are agricultural-based areas, it is unrealistic to conduct a macro-level study covering all these areas. Therefore, to seek the balance between the complexity and feasibility of data collection, a pilot city that possesses the essential features of the majority of Chinese areas was selected to conduct this study. Xinxiang city of Henan province was hence selected as the data collection location for this study.

There are three main reasons for selecting this pilot city. Firstly, Henan province is the largest agricultural province in China, with 6.825 million hectares of arable land (China Through A Lens, 2001). Therefore, agriculture can occupy a dominant proportion of the province's economy, and variable forms of food supply systems can coexist in this province. This coexistence can minimize the potential bias caused by consumers forced to buy food products from certain kinds of food supply systems owing to the lack of sufficient choices. Thus, choosing cities in Henan province can help to ensure the selection of certain food supply systems made by both farmers and consumers are spontaneous. Secondly, this province is the birthplace of Chinese civilization with over 3000 years of recorded history, which means the history of agriculture is also longer than in other places. Similar to the previous reason, this feature can also ensure the wide variety of food supply systems in this province, to minimize the potential of forced passive choices. Thirdly, this province is located in the central part of the country, and has a mild climate, leading to a rich variety of agricultural products. This can ensure the surveyed food products are not limited to certain types and can hence increase the credibility of this research. This is because some food products can be

perishable and can be restricted to certain types of food supply systems. Therefore, farming a wide variety of agricultural products can minimize the bias introduced by these types of food products. Possessing these superiorities, Henan province is a major agriculture-export province in China and was hence selected for this study.

Meanwhile, there are 18 cities belonging to Henan province. Among them, Xinxiang was further selected as the data collection venue. This is because Xinxiang has mixed urban-rural geography, which is more convenient for performing short food supply chains. Moreover, it has been reported that 29 new farmer markets and other forms of SFSCs have been built in this city in the last two years (Rural Planning Bureau of Xinxiang, 2017). Therefore, it provides sufficient venues to conduct the data collection.

5.5.2. Study Population and sampling

According to Malhotra et al. (2012), a study population is the aggregation of elements from which samples can be extracted. These elements can be people, events, countries, regions, or companies (Sekaran and Bougie, 2013). Therefore, it can be noted that the targeted population of this study includes farmers trading in the SFSCs and consumers buying fresh food locally in China.

Considering the restrictions on time, cost, and access, the complete surveying of all elements in the study population is impractical (Saunders et al., 2012; Sekaran and Bougie, 2013). Moreover, surveying the population can increase errors and reduce accuracy (Barnett, 2002; Sekaran and Bougie, 2013). Therefore, surveying some samples extracted from the population is preferable, with which generalisations can be made to the entire population (Burns, 2000).

The sampling strategy in the data collection process influences the generalisability of findings and the type of statistical analysis selected (Bryman and Bell, 2015). Therefore, the sampling techniques should be properly selected and adopted. Probability and non-probability sampling are two

different sampling techniques (Malhotra et al., 2012). Non-probability sampling means that the chance of including each population element in the sample is unknown during the selection process (Blumberg et al., 2014). The certain criteria, accessibility, and categories of the elements may influence the selection, some elements of the population have more chance to be chosen than others (Bryman and Bell, 2015). Non-probability sampling is more appropriate when cost and time restrictions are presented and the sampling frame is indeterminate (Blumberg et al., 2014). While probability sampling is a selection process in which the chance of each population element being selected for the sample is known as non-zero or fixed (Malhotra et al., 2012). This allows researchers to make statistical inferences (i.e., generalisations) from the sample being studied to the targeted population (Blumberg et al., 2014). This sampling strategy requires a clearly defined, accurate, and up-to-date sampling frame (Saunders et al., 2012).

Based on the above illustration of the relative notions of probability and non-probability sampling in terms of their generalisability and element accessibility, it is indicated that the utilisation of sampling strategy is determined by research requirements and conditions. The generalisability is of critical importance to the study, the sampling frame and other research elements also are crucial when considering the sampling method that is adopted.

The targeted population of this study includes farmers trading in the SFSCs and consumers buying fresh food locally in China. It should be noted that the selection of farmer participants for this research takes place during the fieldwork itself, as no prior list of the study population can be obtained. Therefore, quota sampling, the non-probability version of stratified sampling, is more appropriate as the sampling frame is not available (Saunders et al., 2012). The adoption of quota sampling can help to ensure flexibility in identifying participants and obtain more responses within the limited time scope (Malhotra et al., 2012). A minimum expectation was predetermined to ensure the collected data are statistically sufficient. Thus, quota sampling for the current study was performed at the farmer markets, the reason for

choosing this most common type of SFSCs was that there were more farmer participants, and these farmers are more likely to express motivations for taking part in SFSCs at markets. The detailed sample selection process is listed in the data administration part (Section 5.6.1).

The sampling strategy for selecting consumers who buy locally fresh food is simple random sampling. This probability sampling enables researchers to make statistical inferences from the sample that represents the targeted population and to exert greater control over sampling error (Bryman and Bell, 2015). The detailed sample selection process is listed in the data administration part (Section 5.6.2).

5.5.3. Interview and questionnaire design

Research design is a vital step in the research process because it influences the research quality and response rate (validity and reliability) of the collected data (Saunders et al., 2012). There are four stages developed in this research design. In the first stage, a thorough literature review of SFSCs, dimensions of sustainability, moral economy, sustainable livelihoods framework, and personal relationship was conducted to develop the measurement model. In the second stage, the selected measurement items were adapted to fit the context of the current study. In the third stage, all the aspects related to the research design of the interview and questionnaire were carefully considered (i.e. questions design, flow and layout, type and format of questions, cover letter, and instructions). In the final stage, an initial draft of the survey was evaluated by experts. This section provides more detailed information on questions designed in interview and questionnaire development.

5.5.3.1 Interview design

The interview was structured to investigate the attitudes and opinions of Chinese farmers about participating in SFSCs. A semi-structured interview is the most applicable approach to this study as it consists of some predetermined questions to cover the research topic while preserving sufficient flexibility for researchers to elicit more information on evolving issues of interest. Moreover, as indicated by Longhurst (2010), semi-structured

interviews are reasonably conversational, which can ease the difficulties in establishing relations and developing rapport with the participated farmers. As the majority of Chinese farmers are unfamiliar with this research-oriented field, adopting semi-structured interviews can hence facilitate the data collection phase.

To develop this interview design, a thorough literature review of SFSCs was implemented to investigate the research perspectives in existing studies firstly. In the second stage, theories related to this topic were identified (i.e., SSCM, sustainable livelihoods frameworks, personal relationships). Afterwards, the design of interview questions and information sheets were carefully considered in the third stage. Finally, an initial draft of the interview questions was further evaluated to ensure the validity and reliability of the data collection. As the first two stages were covered in previous chapters (see chapter three and chapter four), the next part of this subsection concentrates on the remaining two stages.

During the third stage, the interview questions were designed first, which were structured into two parts. Part one mainly contains questions about the participant's background information. Questions in this part were further divided into four groups. The first group concerned the farmer's demographic information, such as age, gender, and education level. The second group focused on the details of products, like the number of co-workers and main grown crops. The third group concentrated on traffic-related information. For instance, the estimated distance travelled and means of transportation. The fourth group contained questions on the produce sale, such as mode of sale, the reason for choosing this mode, average waiting time, and estimated annual revenue. Meanwhile, part two consisted of questions derived from the adopted theories and was organised into three sections. The first section introduced the concept of short food supply chains and then asked the respondents if they have been involved in this type of food supply chain. The second section contained questions related to the five dimensions of sustainability and was divided into five subsections, social, economic, environmental, cultural, and governance, accordingly. Questions in the third section were derived from the

sustainable livelihoods framework, which was also divided into five subsections, namely human, natural, financial, physical, and social assets. The expected outcome of these questions would be analysed and tested through the hypotheses that have been established in chapter four. Thus, it would help to empirically validate and verify whether SFSCs have a positive influence on sustainability and farmers' livelihoods in the Chinese context.

Along with the interview questions, and information sheet documenting relevant information about the project was developed. To ensure the provided sheet is informative, different aspects related to this study and involved participants were included. Firstly, the background information of this project was provided, such as its aim and organizers. Secondly, the sheet clarified to the participants the reason they have been chosen, and their participation was completely voluntary. Thirdly, the sheet explained the procedure of the interview and its associated potential risks. Fourthly, the sheet pointed out that their responses would be strictly confidential and offered them the opportunity to withdraw within a predetermined time scope. Fifthly, the sheet indicated the future usage of their responses. Finally, the contact details of all involved researchers were included in the sheet.

After the completion of the third stage, the final stage before conducting the data collection was to further evaluate the proposed interview questions. As indicated by Majid et al. (2017), a pre-test is an essential part when preparing for interviews. This process can help researchers to evaluate the adequacy of the information sheet to respondents (Bryman and Bell, 2011), and minimize the potential ambiguity in questions that may cause misunderstanding by the participants (Saunders et al., 2012). Therefore, it can be noted that conducting a pre-test can help to reveal the potential deficiencies in the planning phase, and hence improvements can be made before the main fieldwork.

The pre-test in this study consists of two stages. In the first stage, initial versions of the interview questions and information sheet were evaluated by some academics in the field of Operations and Supply Chain Management at

the University of the West of England. They were asked to comment on the design of the overall appearance and the suitability of interview questions. The received comments were adopted to revise some questions, clarify some descriptions, and improve the flow of questions. More information and descriptions were also added to the information sheet to ensure the participants can perceive the project. In the second stage, a pilot study was conducted in one of the selected venues with the revised version of the interview questions and information sheet. This venue was randomly selected from the list of chosen venues. Eight farmers were interviewed at the selected market. The same procedure of main fieldwork was followed, to maximize the reliability of this pilot study. Help from the management team of the market was obtained during the initial approach to these farmers. Afterwards, they were provided with the information sheet, and the researcher explained the project and purpose of the interview. With their approval to participate, the researcher started to interview these farmers according to the predesigned questions. The entire process was voice recorded for further analysis. This process led to the inclusion of questions related to the greenhouse, and to amending the descriptions of some questions. The findings from this pilot study were then presented at an academic conference to discuss with professionals in related research fields, which helped to identify the deficiencies in this pilot study and include some more in-depth questions in the main fieldwork.

5.5.3.2 Questionnaire design

To collect the data on customers' attitudes towards participating in SFSCs, a self-completion online questionnaire was adopted in this study. One advantage of an online questionnaire is that it can be geographically dispersed (Saunder et al., 2012). Moreover, an online questionnaire allows anonymity of the respondents, which helps in enhancing response rate and improving response quality (Zikmund et al., 2013). Meanwhile, an online questionnaire was used as it can be the cheapest to conduct and easiest to circulate, especially considering the vast users of WeChat, a famous chat APP in China. The circulation of the questionnaire can be extremely easy with this APP as users

can share the link of the questionnaire with all their friends with a single click. Therefore, an online questionnaire was preferred in this study.

Similar to the development of semi-structured interviews, the design of an online questionnaire also consists of four stages in this study. All stages were essentially the same with the interview design (see Section 5.5.3.1). Theories related to consumers' a were identified (i.e., sustainability in SCM, moral economy, personal relationship).

During the third stage of survey development, the questions in the questionnaire were designed first, which were also structured into two parts. Questions in the first part concern the respondent's background information, which can be further divided into three groups. The first group focuses on the demographic information of the respondent, such as age, gender, education level, and occupation. The second group relates to the transportation to the shopping venue, like the distance covered and means of transportation. The third group asks about the respondent's favourite type of shopping venue and the estimated shopping frequency. Meanwhile, part two was designed as a rank table, asking the respondents to rate the importance of reasons to shop at each type of shopping venue. A total of four types of shopping venues were identified, which are local farmer markets, farm shops, supermarkets, and others. Meanwhile, different reasons were recognised for the respondents' ratings. These reasons were originated from either one or more corresponding theories, which are the five dimensions of sustainability, moral economy, and personal relationship.

Similar to the interview, an information sheet was also prepared to inform the their background information and their rights to the participants. The information sheet was integrated with the questionnaire, and participants' consent was required to confirm that they fully read and understand the information sheet, before they can access the questionnaire. The content of the information sheet was still available to the respondents even after they

submit the questionnaire, to ensure they can withdraw from the study within the permitted time scope.

In the final stage, the pre-test in this survey development consists of two stages. In the first step, initial versions of the questionnaire and information sheet were evaluated by some academics in the field of Operations and Supply Chain Management at the University of the West of England. They were asked to comment on the design of the overall appearance and the suitability of questions. The received comments were adopted to revise some questions, clarify some descriptions, and improve the flow of questions. More information and descriptions were also added to the information sheet to ensure the participants can perceive the project. In the second step, a pilot study was conducted online through WeChat APP with the revised version of the questionnaire questions and information sheet. This online questionnaire was circulated freely to the Chinese residents who buy fresh food locally in the selected city, and the portal was closed after enough qualified responses were received. The results of the pre-test survey were examined to check the availability and validity of the questions contained in the questionnaire.

5.5.3.3 Development of measurements

Section 5.5.3.2 briefly introduced the construction of the questionnaire and emphasized a 5-point Likert scale that explores the motivations for shopping at SFSCs from consumers' perspectives. The measurement variables were originated from the proposed conceptual model (Figure 4.2 (c)) that comprises five dimensions of sustainability, moral economy, and Chinese relationship. The use of scales from the existing literature is suggested to develop the study's measurements (Bryman and Bell, 2011). The reliability and validity of prior scales have already been examined and thus the adopted scales with established reliability and validity would make the research more reliable (Bryman and Bell, 2011). Moreover, the use of prior measurements helps to verify the findings and to build upon the work of previous research (Bryman and Bell, 2011).

In this research, a systematic review of current literature on SFSCs and their linkages with sustainability was demonstrated in Chapter 3, and the existing measurements of social, economic, and environmental sustainability were extracted and presented in Table 3.4, Table 3.5, and Table 3.6 respectively. Meanwhile, measures of five dimensions of sustainability, moral economy, and Chinese relationship were described in theoretical foundations and hypotheses development in Chapter 4. Therefore, the adoption of measures was mainly based on a prior scales from existing literature, but a few measurements were adapted to fit the context of this research. Table 5.1 provides the measurement items of the research model.

Table 5.1. Measurement items

Construct	Item No.	Measure	Source
Social sustainability	1	I prefer buying locally as it offers me opportunity to have social interaction with farmers.	Jarzębowski et al. (2020)
	2	I feel my voice has been heared if I buy locally.	Giampietri et al. (2016, 2018)
	3	I think buying locally can improve food quality and farmers empowerment simultaneously.	Leiper and Sather (2017)
	4	I feel I contribute to improve the farmer's socio-economic conditions.	Hinson and Bruchhaus (2008)
Environment sustainability	1	I feel contributing to increase in local biodiversity by buying locally.	Mancini et al. (2019)
	2	I feel in power to influence farmers to use sustainable farming practices.	Bui et al. (2021)
	3	I believe locally produced food contains less packaging waste.	Tasca et al. (2017)
	4	I prefer buying locally because the carbon footprint is low.	Loiseau et al. (2020)
Economic sustainability	1	I prefer buying locally as I believe famers get higher share of the profits.	Jarzębowski et al. (2020)
	2	I think buying locally contributes to the local economy.	Milestad et al. (2017)

	3	I prefer buying locally as I can access high-quality food with fair price.	Leiper and Sather (2017)
	4	I prefer buying locally because I think it improves quality of life, for farmers and for society.	Benedek et al. (2017)
Cultural sustainability	1	I believe in buying locally as I have a great understanding of locally grown agricultural products.	Ilbery and Maye (2005)
	2	I prefer buying locally as I can touch and feel the products and choose the one I like.	Giampietri et al. (2016, 2018)
	3	I choose to buy locally because I have greater trust in locally grown products.	Jarzębowski et al. (2020)
	4	I prefer buying locally as I get a chance to bargain.	Vittersø et al. (2019)
Governance sustainability	1	I feel confident in buying local food products if there is a certification body reinforcing the product quality.	Zhou (2015)
	2	Buying locally offers opportunity for customers to participate in food quality requests and check.	Si et al. (2015)
	3	I think farmers consumers interactions could be an alternative to certification bodies in food supply chains.	Si et al. (2015)
	4	I think consomers can help to deal with unsold products by buying them at discounted price.	Elghannam et al. (2017)
Moral economy	1	I prefer buying locally as it offers fair trade for local farmers.	Maye and Kirwan (2010)
	2	I trust in buying locally because I can check the good standards of animal welfare.	Sage (2003)
	3	I think buying locally can address environmental concerns.	Canfora (2016)
	4	I think buying locally can support local farmers and local development.	Benedek et al. (2017)
Chinese relationship	1	I prefer buying locally because it appears more trust worthy due to direct communication with producrers.	Jarzębowski et al. (2020)

	2	I prefer buying locally as I think its important to develop personal relationship with producers.	Si et al. (2015)
	3	I think buying locally helps to increase social inclusivity.	Milestad et al. (2017)
	4	I think the personal relationship motivates farmers to produce healthy and safe food.	Si et al. (2015)

As identified in Section 5.2, both qualitative and quantitative approaches need to be applied to collect and analyse data for investigating SFSCs in the Chinese context. In this section, a more detailed description of the design of data collection methods was explained. A strong mixed and triangulation approach would be adopted in this research, the current status of SFSCs in the Chinese region would be empirically studied by observing the types, location, size, food categories, and other factors of SFSCs, collecting qualitative data through interviews from farmers and quantitative data through questionnaires from consumers.

5.6. Data collection administration

5.6.1 Interview administration

Studies conducted at the organizational level seek valid information from farmers in SFSCs. After the completion of the field research design, the preparations for the interview were considered sufficient. The qualitative data collection process followed the same procedures as the interview pre-test of this study.

The selected location (Xinxiang city) has had no less than 30 farmer markets since 2017 (Rural Planning Bureau of Xinxiang, 2017), which helped to provide wide coverage and abundant research population elements in this study. After excluding the farmer markets that failed the criteria of this research sampling frame, 5 farmer markets that fitted in the sampling frame were identified to conduct the data collection. The more detailed observation and selection process of the SFSCs shopping venues included in this study is carefully

illustrated in the next coming chapter (see Section 6.2). 6 farmers from each farmer market were randomly selected for semi-structured interviews, which resulted in 30 farmers being included in this interview research. In August 2019, the farmer participants were recruited from the chosen farmer market directly to take part in the study on-site at a convenient time that day. Only the farmers who sold fresh food were considered eligible for the study. These participants were notified that they took part in a voice-recorded, semi-structured interview to explore their motivations and opinions about SFSCs and their linkage with sustainability. After the data collection process, the interview transcripts were translated and coded in English using an inductive coding strategy and analysed using the theoretical framework conducted in Chapter 4.

5.6.2 Questionnaire administration

The survey was constructed using Qualtrics and distributed through WeChat APP, a very popular social mobile phone application that almost all Chinese people are using nowadays. With the functionality of this application, the online questionnaire can hence be easily distributed among customers. It should be noted that the distribution was restricted within the pilot city, Xinxiang, to ensure the availability of various forms of food supply systems. The data collection started in March 2020 and lasted approximately one month, when sufficient data have been collected. As Sheehan (2001) calculates that the average rate of return of e-mail surveys reached 24%, Sellitto et al. (2020) also state that about a 20% response rate is satisfactory for an e-mail survey. To analyse data and evaluate hypothesis with a sufficient sample, this questionnaire and a follow-up message have been distributed facilitated by Wechat among 10 local groups, each group had 200 to 300 members there at that time. Therefore, given a population of about 2500 people, the expected sample of valid responses was around 500 people with a supposed 20% response rate. Finally, the number of valid returns reached 532 (21%). After the data collection process, the results and questions transcripts were translated and coded in English analysed using the theoretical framework developed in Chapter 4.

5.7. Data analysis process and techniques

As introduced in the previous section, a range of data collection methods were utilised in this study. The uses of questionnaires, notebooks, and voice recorders were the main source of captured data. Information related to the farmers was collected using semi-structured interviews, while data of customers were gathered through an online questionnaire. The data collection phase was conducted in the selected city and lasted approximately two months. A total of 30 farmers participated in the interview and 532 qualified online questionnaires were acquired from customers of interest.

5.7.1. Qualitative data analysis process and techniques

To assist the analysis of the qualitative data collected from the semi-structured interview, an iterative, layered process of coding was adopted. According to Owen (2014), coding refers to the assigning of labels to data to facilitate the understanding of dialogues, observations, and interactions during qualitative fieldwork. While there is still no consensus on the terminology of conducting coding, it generally involves a movement from generating descriptive codes that are closer to the data to generating more abstract conceptions of the research topics (Bryman, 2008).

Three distinct steps were identified for conducting the coding process in this study. The first step is to implement an open or initial coding (Strauss and Corbin, 1998; Charmaz, 2006). Through making simple categorisations, researchers can establish a basic understanding of the collected data and obtain an initial estimation of its scope and richness. Therefore, the recorded interviews were transcribed verbatim first, which helped to extract the raw interview data and presented them in a textual form to enable readability. Afterwards, translations from Mandarin to English were carried out by the researcher, and the accuracy of translations was checked by a member of the supervisory team, both of whom are native Mandarin speakers and have been living in the UK for many years. Descriptive codes were then assigned that individual lines of the text had different basic codes to succinctly summarise and capture their meaning. It should be noted that while this descriptive

process can generate a multitude of different codes, it lays the foundation for a more analytical coding process.

The second step can be referred to as axial coding or focused coding. This step aims to derive more conceptual codes of the collected data from the initial descriptive one and develop core categories. According to Bryman (2008, p.551), it involves "*reassembling the data by searching for connections between the categories that have emerged out of the coding*". Therefore, this step is more iterative and may need to review the data in several ways. This process only ceases when no new themes or concepts related to the research emerge, which is also called theoretical saturation.

The final step is theoretical or selective coding. The discrete concepts and categories identified previously will be further developed and refined in this step. As the final stage in data coding, selective coding is a heuristic process of reconstruction and reconstitution that often needs the researcher to refer back to the raw data (Price, 2012). During this process, one category will be chosen as the core concept, and other categories will be grouped around this core concept to help explain the observed phenomena.

To facilitate the above coding process, NVivo was adopted to conduct the data analysis. Originally developed in 1999, NVivo has become a popular software for computer-aided qualitative data analysis (Richards and Richards, 2003). Benefiting from its typical advantages, such as high efficiency, transparency, and multiplicity, NVivo has been widely adopted to facilitate the analysis of qualitative data (Hoover and Koerber, 2011). Therefore, the transcribed verbatim of the recorded interviews was imported to the software, where the described coding process was performed.

After the process of selective coding, the generated outcomes will be used to compare with the predetermined theoretical framework. This procedure can facilitate the investigation into the current status of SFSCs in China, and the evaluation of the applicability of the proposed theoretical framework.

5.7.2. Quantitative data analysis process and techniques

5.7.2.1 Sample description

This study sought the participation of Chinese consumers who bought local fresh food. To gain a better understanding of the nature of the sample, frequency and descriptive analyses were used. The analysis provides basic demographic information of respondents (e.g., gender, age, education level, etc.) and their shopping venues and frequency of buying locally fresh food. Moreover, the analysis provides general information on SFSCs participating opinions and their linkage with sustainability, moral economy, and personal relationship.

5.7.2.2 Techniques for analysing quantitative data

After the data collection, four steps were followed to facilitate the quantitative data analysis: (1) identifying and handling missing data; (2) data preparation and cleaning; (3) descriptive statistics; (4) hypothesis evaluation. The detailed process of analysing quantitative data is illustrated in the next chapter (see Section 6.3). This section introduces the statistical techniques used for each stage.

Similar to the analysis of qualitative data, another computer-aided software, Statistical Package for the Social Sciences (SPSS), was utilised to facilitate the analysis of the quantitative data collected from the survey. Initially released in 1968, SPSS has been acquired by IBM in 2009 and has been widely used for statistical analysis in social science research. Owing to its standardised procedures for quantitative data processing and analysis, the adoption of this software can help to ensure the validity and reliability of the findings (Sarantakos, 2013). Meanwhile, the data manipulation and analysis can also be much easier after the data are imported into SPSS (Saunders et al., 2012).

Moreover, a reliability test was also performed to check the reliability of the survey instrument and the internal consistency of responses across questions (Sarantakos, 2013). While many methods can be adopted for the reliability test, Cronbach's Alpha is the most commonly used method to measure the inter-

item reliability and internal consistency of a questionnaire survey (Pallant, 2010). As indicated by Fellow and Liu (2008), the acceptance level on the measurement of internal reliability of the questionnaire instrument ranges from 0 to 1, between which the reliability increases accordingly.

Meanwhile, the six steps outlined by Sarantakos (2013) were followed to ensure the computer-aided analysis of quantitative data has been conducted systematically and logically. The benefits of following this procedure can lie in three aspects, which are reducing the possibility of errors, reducing the opportunities for misinterpretation, and minimizing the risk of drawing wrong conclusions (Saunders et al., 2012). These six steps are proposed as,

- Data preparation by searching and eliminating possible errors and omissions.
- Importing the prepared data into the SPSS for analysis.
- Presenting the findings from the analysis in graphical and table forms.
- Implementing inferential statistical analysis of the data.
- Utilizing figures and tables to present the data and explain the findings.
- Concluding the analysis of the findings.

Following this predefined procedure, descriptive analysis was integrated once the prepared data has been imported into SPSS. As the simplest way to analyse quantitative data, descriptive analysis can provide a general overview of the findings through the computation of statistical information, such as the mean, median, standard deviation, and percentages of the variables (Pallant, 2010; Naoum, 2013). The central tendency can be measured with mean, median, and mode values, and the dispersion of data can be evaluated from standard deviation (Seale, 2005). With both information, factors affecting the customers' choice of a certain type of shopping venue can be ranked and investigated. The outcomes from this survey will be used to compare with the proposed theoretical framework, which can facilitate the investigation of Chinese consumers' attitudes towards different shopping modes and the evaluation of the applicability of the proposed theoretical framework.

5.7.2.3 Structural Equation Modelling

To test the interaction effect of SFSCs on the relationship between sustainability, moral economy, and the Chinese relationship, this study also adopted the structural equation modelling to evaluate the hypotheses established in this study (see Section 4.5). Structural equation modelling (SEM) is an extension of factor analysis. It was originally developed as a statistical method to model linear relations among observed and hypothesised latent variables, and hence evaluate substantive theory from empirical data (Jöreskog, 1973; Bentler, 1980; Bollen, 1989). It is commonly referred to as the second generation of multivariate analysis method, which can be used to test hypotheses about the influences among interacting variables. Hypotheses can involve correlations and regression-like relations among observed and latent variables. Its roots back to the 1920s, when path analysis was developed to quantify unidirectional causal flow in genetic data. It was further developed by social scientists and has been increasingly used since the 1960s (Maruyama, 1998). While SEM can examine a single relationship at a time, it also can examine the relationship among multiple independent and dependent variables within the same model (Hair et al., 2014). Moreover, it can be used to generate theories and concepts (Tabachnick and Fidell, 2007). Furthermore, it also can assess the fitness between the model and the collected data (Yuan, 2005).

There are two families of SEM almost from the very beginning (Rigdon et al., 2017). The first family is covariance-based SEM (CB-SEM), which commonly uses software such as LISREL, Mplus, AMOS, and EQS. The second family is composite-based SEM, among which the most famous approach is partial least squares SEM (PLS-SEM). Commonly used software is smartPLS, PLS-Graph and VisualPLS. While each family of approaches has its respective benefits and drawbacks, it should be noted that CB-SEM is more suitable for theory testing and confirmation and PLS-SEM is more appropriate for prediction and theory development. Therefore, this study uses CB-SEM to examine and analyse the collected data within the proposed model. To

facilitate the SEM analysis in this study, the IBM Analysis of Moment Structures (AMOS) software version 26.0 was used.

AMOS was originally released by Smallwaters Corporation in 1989, to provide an alternative to LISREL, EQS, COSAN, and MILS (Arbuckle, 1989). It was later incorporated with SPSS in 2003. Selecting AMOS is because it is considered easy-to-use and user-friendly compared to other software such as LISREL and EQS (Blunch, 2008), and also can estimate and present the model.

According to the hypotheses proposed in Section 4.4, the structural model for this study was developed in AMOS, as shown in Figure 5.1.

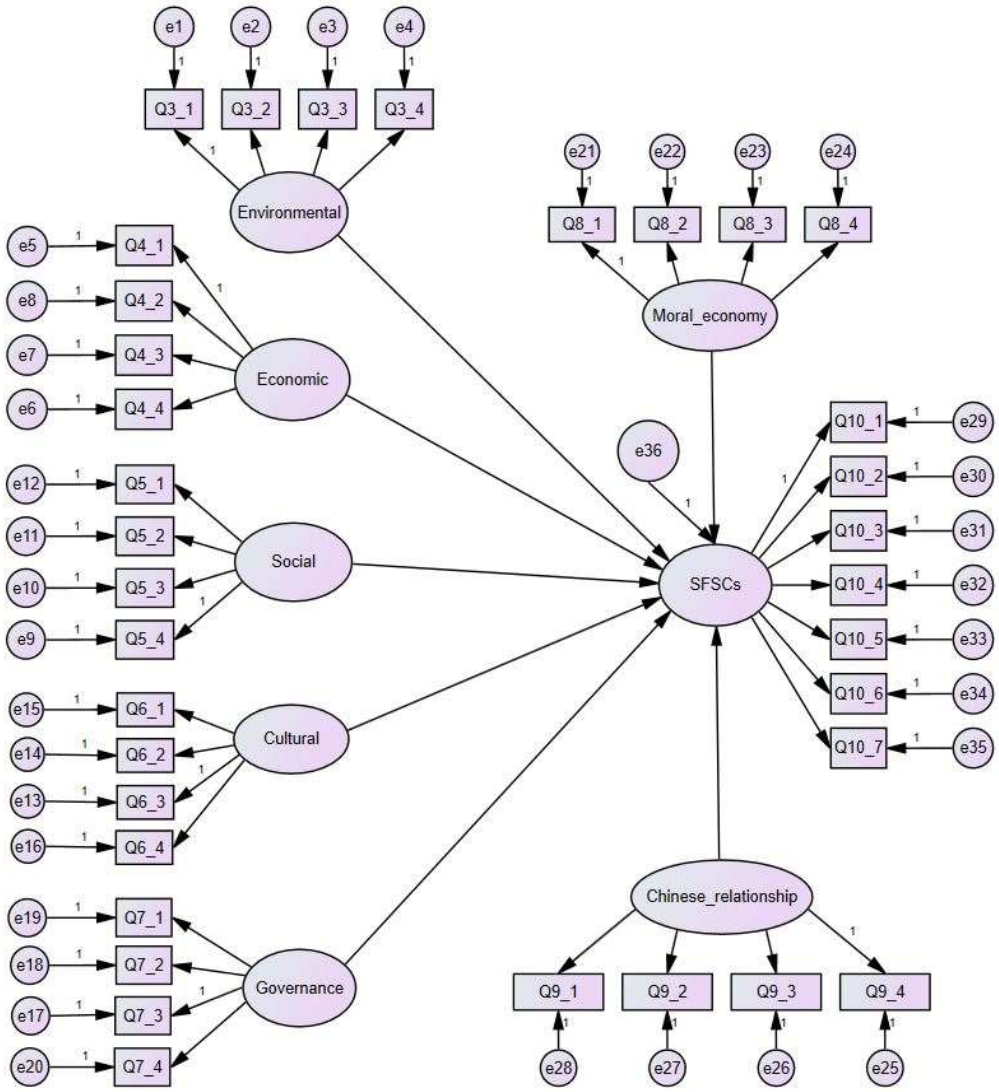


Figure 5.1. The structural model

5.8. Research ethical considerations

As a prominent component in determining the successful implementation of social science research, research ethics has drawn rapidly growing attention in recent decades (Brydon, 2006). According to Diener and Crandall (1978), participating in social science research may potentially harm their development, career prospects, or future employment. Although these harms in social science research could be very rare, the purpose of ethics could help to ensure that the research is conducted professionally and participants understand the

essence of the research and its potential influence on them (Bell and Bryman, 2007). As indicated by Hay (2003), researchers' behaving ethically is crucial to facilitate the protection of participants' rights, maintenance of a favourable climate for continued research, and public trust and guarantee of accountability. Therefore, it can be noted that proper ethical considerations are essential to the successful implementation of social science research.

According to Guillemin and Gillam (2004), there are two dimensions of ethics, i.e., procedural ethics and ethics in practice. Procedural ethics refer to obtaining approval from a proper ethics committee, while 'ethics in practice' concerns the ethical issues that occurred during the implementation of research. Procedural ethics mainly concerns the initial planning phase when researchers can identify potential issues and propose mitigation solutions. An important focus during this phase was obtaining ethical approval for the research from related institutions and organisations. This external evaluation can help to ensure the protection, confidentiality, anonymity, justice, and respect of participants involved in the proposed research (Birch et al., 2002; Hay, 2003). However, it should be noted that no matter how well prepared, many of the things that happened during the implementation of research is spontaneous and cannot be foreseen. Therefore, ethics in practice also demand sufficient consideration. The researcher should pay particular attention to ensuring the encountered ethical issues during the implementation of research are properly dealt with.

As one of the founding principles of research ethics, informed consent helped to respect the dignity and worth of involved participants and their right to self-determination (Miller and Boulton, 2007). It can be used to explain the nature and content of the research to the participants and offer them the opportunity to decide whether to be involved in the research activity. According to Edwards (2010), there are four criteria in designing a qualified consent. The first criterion is that sufficient information must be provided to the participants before their decisions. Secondly, all participants must be mentally competent to determine

their participation. Thirdly, the participants cannot be coercive or pressured when making a decision. And finally, the decision must be made with intention.

Therefore, an informed consent form (see Appendix A) was created and checked by the ethics committee at the University of the West of England. Printed versions of the designed consent form were distributed to the farmers and customers in the selected Chinese farmer markets. The consent form was provided together with a participant information sheet (see Appendix B), to ensure that succinct information about the proposed research project and the influence of their participation is provided.

As the proposed data collection would be conducted in or near Chinese rural areas, it should be anticipated that not all participants can interpret the provided documents easily. Thus, gaining informed consent in Chinese rural areas should be treated with extra caution to prevent any unnecessary awkwardness or breakdown in the rapport between researcher and participants. Therefore, after obtaining ethical approval (Reference No: FBL.18.11.023) from the research committee at the University of the West of England, all corresponding documents are translated into mandarin. As the researcher and one of the supervisors are native Chinese speakers, these documents are first translated by the researcher, and the accuracy of the translations is then checked by the corresponding member of the supervisory team, who has been living in the UK for over two decades. Moreover, to ensure the informed consent can be understood by the participants, support from the management team of the selected markets will be sought, which can help to minimize the potential of misunderstandings between the interviewer and participants. The involvement of members of the management team can also help to ensure the smooth conduction of the data collection, as it will be easier to maintain rapport throughout the entire interview process, especially at the beginning of encounters. This is because participants tend to be more familiar with the management team, and more trust in the research can be obtained from their presence.

Throughout the data collection phase, particular attention was paid by the researcher to ensure all encountered ethical issues are properly dealt with, and no ethical conflicts will be raised. An enjoyable chatting atmosphere was maintained during the entire interview. The researcher would ensure all participants are well aware of their rights in advance and could cease or quit the research freely within the agreed time scope.

5.9. Chapter summary

This chapter has detailed the research methodology adopted to test the proposed conceptual framework. The philosophical foundations of this study have been outlined, underpinned by an interpretivist epistemology. Research methods of both survey and field research have been adopted to investigate the current status and people's attitudes towards SFSCs in China.

The qualitative study aims to explore the relationships among the research concepts specifically from the perspective of farmers. Semi-structured interviews were conducted with 30 farmers to gather information about their motivations for participating in SFSCs, and their opinions on the linkage between SFSCs and sustainability, personal relationships with consumers, and sustainable livelihoods. The qualitative study uses the interview method to collect data from farmers and the thematic data analysis technique to analyse the interview data.

The quantitative study aims to test hypotheses. A questionnaire survey with 532 participants was implemented for data collection. The primary aim of this survey is to investigate the customers' attitudes towards purchasing in SFSCs and identify the influential factors that affect their decisions, while aspects related to sustainability, personal relationship, and moral economy are also included. SEM was conducted to analyse the data.

The statistical analysis techniques were selected and explained for both quantitative and qualitative data analysis stages. The rationale for choosing

software NVivo to analyse qualitative data, SPSS, and AMOS to analyse quantitative data was introduced. CB-SEM was highlighted as it helped to test the hypotheses established in Chapter 4 from quantitative data analysis.

Chapter 6

FINDINGS AND ANALYSIS

6.1. Introduction

This study aimed to identify and explore SFSCs practices in China on the performance of sustainability and its effect on consumers and farmers' participation. This study also aimed to empirically validate and verify the proposed conceptual framework in the Chinese context. To achieve this, the preceding chapter detailed the methodology that was used to collect data. This chapter presents the results of the data analysis.

This chapter consists of two major sections, corresponding to the different target groups of farmers and consumers, respectively. Each major section has several sub-sections that document the descriptive results and detailed analysis of the collected data. The chapter is structured as follows. Section 6.2 provides the qualitative data analysis from the farmer's perspective, a detailed description of the study sample, and the process of evaluating the related hypotheses are provided in this section. While Section 6.3 presents the quantitative data analysis from the consumer's view. The process of preparing and cleaning data, analysing descriptive statistics, and testing the structural model is reported in this section. Finally, Section 6.4 provides a summary of the chapter.

6.2. Qualitative data analysis

As introduced in Section 5.4 research design, field research was conducted in Xinxiang city of Henan province to facilitate collecting qualitative data from farmers who participated in SFSCs. Although this study initially aimed to randomly select 10 medium-sized farmer markets in the city as the data collection venues, the feasibility of this option was found insufficient in practical.

This was mainly caused by two reasons. The first reason was the locations of some farmer markets. Although these farmer markets were all distributed in and around the urban area of the city, access to some farmer markets could be restricted, due to the transportation issue. Moreover, most customers at these farmer markets were wholesalers, instead of ordinary consumers.

This phenomenon also contributed to the second reason for the infeasibility of the initial data collection plan, the ambiguous characterisation of farmer markets. Although the website of the city's government claimed to have over 30 farmer markets, they can be divided into three groups, and only one of them satisfied the definition of farmer markets in this research. The first group was the research target, where farmers directly sell food products to consumers. Meanwhile, the customers in the second group of farmer markets were mainly

wholesalers instead of ordinary consumers. The third group was where these wholesalers sell the products to ordinary consumers. A small difference in the geographical locations of these farmer markets was also noticed in the field research. The first type of farmer markets had a higher tendency in a mixed urban-rural area, while the following two types were more distributed in rural and urban areas, respectively. This phenomenon can be easily interpreted by the travel distance. In a mixed urban-rural area, where both farmers and consumers can travel to the venues easily, they tended to prefer shopping face-to-face directly. For farmers living in rural areas, they preferred to sell to wholesalers that come to the rural areas for convenience purposes. While for consumers living in urban areas, their only option was to purchase from wholesalers, as they were not willing to travel to mixed or rural areas.

Owing to the restrictions in travel and ambiguity of farmer markets' definition, the initial data collection plan was proved infeasible for this research. Nonetheless, after visiting most farmer markets in the city, five venues that satisfy this study's criteria were identified to conduct the data collection. Six farmers from each farmer's market were randomly selected for semi-structured interviews.

6.2.1. Descriptive results

Some basic demographical information of the participant farmers is listed in Table 6.1. It can be noted that among the 30 participant farmers, the gender ratio of female to male is 19:11, which indicates a higher involvement (63.3%) of female farmers in this form of the agriculture food system. Meanwhile, it should be noted that the average age of these participants is about 53 years old. The oldest participant is 70 years old, while the youngest participant is 40 years old. Meanwhile, as shown in Figure 6.1(a), the female participants tend to be more distributed in the lower age segment, while males have a higher probability in the older range. Meanwhile, the average age of different genders should also be noted, it is 49.2 years old for participating female farmers and 59.4 years old for male farmers.

Table 6.1. Interview farmer demographics

ID	Gender	Age	Education	Duration	Income (£/year)	Farm type
1	Male	60+	None	40+ years	4600	traditional
2	Male	60+	None	50+ years	3000	traditional
3	Male	60+	Primary	60+ years	2200	traditional
4	Male	60+	None	50+ years	2600	traditional
5	Male	50-60	Primary	30+ years	4000	traditional
6	Male	40-50	Secondary	20+ years	7600	greenhouse
7	Male	60+	None	50+ years	2200	traditional
8	Male	40-50	Secondary	20+ years	9100	greenhouse
9	Male	60+	Primary	40+ years	2100	traditional
10	Male	50-60	Primary	30+ years	3200	traditional
11	Male	50-60	Primary	30+ years	4200	traditional
12	Female	50-60	Secondary	30+ years	4600	traditional
13	Female	40-50	Secondary	20+ years	8500	greenhouse
14	Female	40-50	Secondary	30+ years	7400	greenhouse
15	Female	40-50	Secondary	20+ years	6800	traditional
16	Female	50-60	Primary	30+ years	6400	traditional
17	Female	50-60	Primary	30+ years	4700	traditional
18	Female	40-50	Secondary	20+ years	6100	traditional
19	Female	50-60	Secondary	30+ years	5200	traditional
20	Female	50-60	Primary	30+ years	4900	traditional
21	Female	40-50	Primary	20+ years	5600	traditional
22	Female	40-50	Secondary	30+ years	4800	traditional
23	Female	50-60	Secondary	30+ years	5300	traditional
24	Female	40-50	Secondary	20+ years	7600	greenhouse
25	Female	50-60	Primary	30+ years	5200	traditional
26	Female	50-60	Secondary	30+ years	5500	traditional
27	Female	50-60	Secondary	30+ years	4600	traditional
28	Female	40-50	Primary	30+ years	6000	traditional
29	Female	40-50	Secondary	20+ years	8400	greenhouse
30	Female	50-60	Secondary	30+ years	2300	traditional

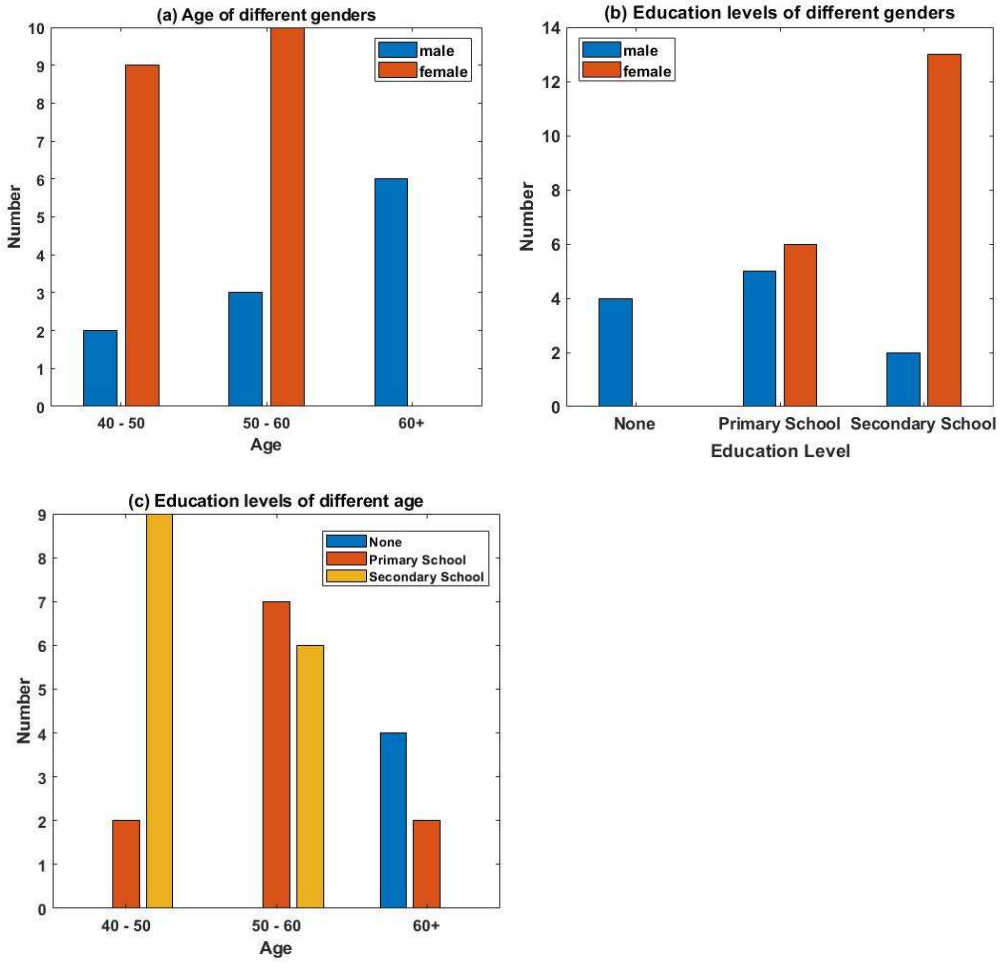


Figure 6.1. Demographical information

From the education perspective, all interviewed participants tend to be less educated, as the highest education level of all participants is secondary school. A gender-related phenomenon is also noticed that female participants tend to receive higher education than males, as shown in Figure 6.1(b). Among all female farmers, 13 participants (68.4%) went to secondary school, while only 6 (31.6%) went to primary school. While among the male participants, 4 (36.4%) of them never received any education before, 5 (45.4%) went to primary school, and only 2 (18.2%) went to secondary school. A high correlation has also been found between age and education, as older farmers tend to receive less education (Figure 6.1(c)). This phenomenon can be easily interpretable considering the modern history of China and the increasing trend can be regarded as a positive outcoming of reforms in Chinese education. Moreover,

it should also be noted that based on the interview, all participant farmers were found to be professional farmers and have been engaged in farming activities since their late 10s or early 20s. Meanwhile, all their farms are small or medium-sized and are managed either on their own or with their spouse, without any hired co-workers.

Along with farmers' demographical information, details and sale of their products were also addressed during the interview. It was found that based on their farming produce, these interviewed farmers can be roughly divided into three groups. The first group consists of 5 farmers. Their main produce is wheat, and their profits are lower than other farmers. The second group involves 6 farmers with a greenhouse. Owing to the temperature control function of their greenhouses, they can grow vegetables that are usually cultivated in different seasons, such as cucumber and kidney bean, which grant them the highest profits. The third group has 20 farmers, which represents most Chinese farmers. Instead of focusing on one type of plant, they grow a wide variety of produce, such as cabbage, carrot, coriander, spinach, and tomato. The difference in profits can be significant among these three groups, as the average earning of the second group is approximately four times of the first group. While farmers owning a greenhouse can make more profits, it should be noted that the development of a greenhouse demands permission from the local government and a one-off payment of approximately £10,000. Therefore, this type of greenhouse culture may not be suitable for all farmers.

Meanwhile, through questions related to their traffic information, it was found that all interviewed participants live near their selected farmer markets, and all their goods are transported using trailers. None of the participants travelled over 10 km to sell their products. Moreover, it should be noted that all five farmer markets require an entrance fee, payable by farmers before they are permitted to sell in the venue. The price of the entrance fee of each farmer's market is similar and can cost approximately £300 per year. However, farmers

living in selected villages, which contributed to the development of the farmer market, are entitled to free entry, similar to benefits to given communities.

6.2.2. Proposition evaluation - Five dimensions of sustainability

Following the propositions proposed in Section 4.5.1, this section evaluates the influence of SFSCs on the five dimensions of sustainability from farmers' perspectives. The collected interview data were analysed to investigate how SFSCs can motivate farmers' participation and what benefits on sustainability can farmers obtain from SFSCs.

6.2.2.1. Social pillar

This section aims to evaluate proposition "*P1a. The social benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs".* The designed questions mainly consist of three aspects, which include food quality, the shopping atmosphere, and the social connection with fellow farmers, respectively. The coding results of farmers' attitudes on the social dimension of sustainability are presented in Table 6.2.

Table 6.2. Farmers' attitudes on the social sustainability of SFSCs

Category	Factor	Total count	Representative quote
Food quality	Usage of pesticide	27	*"My family eats the same agricultural products as I sell"* *"I have been undertaking farming activities for over 40 years and nothing wrong ever happen."* *"I only used minimum pesticide"*
	External monitor	6	*"Officers from the local government always come to check my produce in the greenhouse and stop me from selling them if they failed to pass the test"*
Shopping atmosphere	Direct interaction with customers	30	*"Talking with customers is enjoyable, as we can share information on many things"* *"It's enjoyable to chat with them, especially those return customers"*

Social connection	Communication with fellow farmers	28	*"Coming here to chat with other farmers is the main drive for me to sell my products here, as staying at home is too boring"* *"By setting a unified price, customers can't take advantage of us"*

As listed in Table 6.2, two factors related to social sustainability were addressed from the food quality perspective, namely the usage of pesticides and external monitoring. During the interviews with participant farmers, it was found that all participant farmers claimed their agricultural products have better quality than those sold in supermarkets. While only 3 farmers have stated that they never used any forms of pesticides during the cultivation, the remaining 27 interviewed participants have confirmed that they only use the minimized pesticides during the initial several months and have ceased the usage for a long period before selling these products. The usage of pesticides in the early stage is mainly to prevent plant diseases and insect pests, as their products may suffer from deteriorated appearance caused by them and hence reduce the competitiveness during trading. Although these farmers also used pesticides, they have stated that the minimized dose was adopted. During the interview, they have shown solid confidence in their food safety as they stated that "*My family eats the same agricultural products as I sell*" (farmer ID: 1, 2, 4-8, 12, 13, 15-18, 21, 22, 24-30), or "*I have been undertaking farming activities for over 40 years and nothing wrong ever happens*" (farmer ID: 1-4, 7, 9).

However, despite their confidence in the food quality, a potential issue with the dosage of pesticides was noticed by the researcher during the interview. While these 27 farmers all stated that their usage of pesticides was minimized, the adopted dosages vary among these farmers. It was found that only 8 of them will refer to the instructions to determine the dosage of pesticides, while the remaining 19 farmers' usage of pesticides was based on their experience. Since their selections of the pesticide's brand were inconsistent, the exact chemical content of adopted pesticides can vary with different pesticide brands.

Thus, it should be noted that although these farmers have guaranteed the quality of their products, the risk of misuse of pesticides can still cause potential problems. Therefore, more awareness and information about the usage of pesticides should be provided to these farmers to minimise the risks of switching to different brands of pesticides. Moreover, appropriate quality checks from local governments or other authorities can also help to ensure the safety of these agricultural products.

Another factor raised during the interview is the external monitoring of food quality. As identified from the pesticide dosage issue, although the interviewed farmers have prioritised food safety, there is still a lack of external monitoring from the local government or other authorities. Among the 30 interviewed farmers, only those 6 participants that own a greenhouse have received regular spot-check tests from the government, while all other farmers can directly sell their agricultural products without any forms of regulation. This phenomenon also reflects some issues in the existing agricultural system in China. As developing the greenhouse demands government approval, it is hence much easier to locate the farms and monitor the quality of the produce. However, with the increasing number of migrant workers moving away from the rural area, it is very difficult to trace the owners and status of certain farmlands. Therefore, monitoring the food quality of these traditional farms can be more difficult than those from greenhouses.

From the perspective of the shopping atmosphere, the direct interactions with customers were raised during the interview. These participants all confirmed that direct interaction with customers is a significant motivation that drives them to participate in SFSCs. They have stated that "*Talking with customers is enjoyable, as we can share information on many things*" (farmer ID: 1-9, 11, 16-23, 26-30) and "*It's enjoyable to chat with them, especially those return customers*" (farmer ID: 1-7, 10-18, 24-27). They all enjoy the chatting and relaxed shopping atmosphere at these farmer markets. It should be noted from the previous section that the average age of interviewed farmers is 53 years old. Most of them are living alone or with their spouse and tend to have rather

limited opportunities to chat with other people. Therefore, several interviewed farmers have stated that they very cherish the social interactions with customers during the selling activities. Moreover, during the interview, 8 farmers mentioned that they have been involved in the traditional form of food supply system before. Wholesalers will come to their farms to procure agricultural products at a much larger scale but a lower price. They all admitted that directly selling to those wholesalers is more convenient, as they don't need to move their agricultural products between their farms and farmer markets. However, they still prefer to sell their products directly at the farmer markets, as they can enjoy social communications with customers and make better profits.

From the social connection's perspective, an important factor that motivates these farmers to participate in SFSCs is the communication and relationship with other farmers. This factor has been mentioned by 28 participant farmers as another important reason for their selling at the selected venues, as some farmers (farmer ID: 1, 3-14, 19-21, 25-30) have stated that "*Coming here to chat with other farmers is the main drive for me to sell my products here, as staying at home is too boring*". According to these interviewed farmers, they can share product information and negotiate a unified price of certain products within the same farmer market, as they (farmer ID: 1-7, 10-18, 24-27) confirmed, "*By setting a unified price, customers can't take advantage from us*". Through direct communications with fellow farmers, they can gain more information on the farming status of nearby villages, and the revenue of other agricultural products, and reduce the risk of vicious pricing. Moreover, they can also share experience in farming and increase the potential of collaboration through developing personal relationships with fellow farmers. The only exception was two female farmers that lived in different villages than other farmers and have demonstrated a rather introverted personality. During the entire data collection phase, it was found that these two farmers seldomly chatted with other farmers and positioned their products away from the main crowd. During the interview, they indicated that it felt very difficult to be involved with other farmers, as most of them were coming from two or three nearby

villages, and they tend to know each other in advance. Nonetheless, during the interview, it was found that both farmers were very shy in communicating with the researcher and other customers. Thus, it can be noted that their introverted personality may restrict them from fitting in with the community, especially because several interviewed participants have made friends with farmers living in other villages.

Based on the aforementioned discussion, this thesis suggests the following proposition: Proposition 1a "The social benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.".

6.2.2.2. Economic pillar

This section aims to evaluate proposition "*P1b. The economic benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.".* The questions mainly include the changing tendency of revenue in recent years, and the profits gained at farmer markets compared with selling to wholesalers. The coding results concerning the economic dimension of sustainability are presented in Table 6.3.

Table 6.3. Farmers' attitudes on the economic sustainability of SFSCs

Category	Factor	Total count	Representative quote
Change of revenue	Living cost	30	*"My income is barely enough to maintain my daily life, but what if I may get ill"* *"Everything is more expensive these days"*
	Governmental policy	24	*"It's becoming more and more difficult to earn some money"* *"So many people are planting and selling agricultural products, and the price keeps decreasing"*
	Production cost	17	*"The brand of pesticide I used before is no longer available, and the new brand is almost 1.4 times more expensive"* *"It only cost me about 30 RMB every month to commute between my farm and the farmer's market, but it rose to almost 45*

			RMB this year, which is nearly 1.5 times than before" *"The entrance fee to this venue is unnecessary, I have to sell more products to cover the cost"*
Profit difference	Direct sale	8	*"The price of selling to wholesalers is much lower than selling directly to customers"*
	Avoidance of vicious pricing	23	*"They always say other people's products are cheaper and negotiate with me to a lower price"* *"Everybody here tends to know each other, and no one wants to have a bad reputation, thus people are all trying to avoid vicious pricing"*

From the perspective of revenue's changing tendency, three related factors were identified living cost, governmental policy, and production cost. Diverse opinions on the changing tendency of revenue were obtained during the interview. The participant farmers can be roughly divided into three groups. The first group consists of 21 farmers, who stated that their profits were slowly increasing over the past five years. A total of 6 farmers that own greenhouses form the second group, which believed their incomes were increasing at an acceptable speed. The remaining 3 farmers argued that their profits were levelled in recent years. It should be noted that this difference was mainly caused by their forms of farming. Farmers belonging to the first group were the most common type at these selected farmer markets. Their main produce was seasonal vegetables, such as tomatoes, carrots, and spinaches. Meanwhile, farmers of the second group were more favoured selling off-season vegetables. While the third group's farmers also sold fresh vegetables, their main product was wheat. Therefore, it can be noted that owing to the limited availability of greenhouses, the competition between farmers growing off-season vegetables tends to be less fierce, and their profits increased faster due to the customers' increasing demand for these vegetables. Meanwhile, selling fresh vegetables is more profitable than selling wheat, as the latter is more dependent on large scales of cultivation. Nonetheless, it should be noted that all interviewed

farmers stated that their profits from farming were still insufficient, especially considering the faster inflation of commodities. Therefore, the imbalance between the increasing speed of living costs and selling revenue is the main concern of these interviewed farmers and a major drive for their participation in farmers' markets.

Another factor related to the change in revenue was governmental policy. According to those interviewed farmers, although their incomes were levelled or increasing at a different speed, their purchasing power has been decreasing, especially during the past five years. As stated by them (farmer ID: 1-5, 7, 9-12, 14-23, 30), "*It's becoming more and more difficult to earn some money*". The major cause of this decreasing purchasing power is the rapidly increasing number of farmers. According to the interviewed farmers, owing to some relevant government policy and support, the revenue of farming reached its peak about five years ago which can be approximate twice the purchasing power of this year. Many people living in rural areas have hence been attracted to farming since then. The fierce competition and the involvement of wholesalers have caused vicious pricing and led to decreasing profits in recent years, quoted to the interviewed farmer (farmer ID: 1-11, 17, 22, 27, 30), *"So many people are planting and selling agricultural products, and the price keeps decreasing*".

The third factor associated with the change in revenue raised during the interview was production cost. A total of 17 participant farmers have stated that the cost to maintain production has been increasing, which has further compressed their profit margin in recent years. This production cost mainly includes the purchase of essential farming-related products, transportation fees during the selling of the products, and other administrative charges, such as the entrance fee, etc. According to these farmers, the increasing costs of these related items have started to impair their profits. This issue has been reflected by many statements from the farmers, though not the same, share a similar meaning, most notably "*The brand of pesticide I used before is no longer available, and the new brand is almost 1.4 times more expensive*"

(farmer ID: 1-7, 9-12, 17, 27); "*It only cost me about 30 RMB every month to commute between my farm and the farmer market, but it rose to almost 45 RMB this year, which nearly 1.5 times than before*" (farmer ID: 3-5, 7, 9, 10, 30); "*The entrance fee to this venue is unnecessary, I have to sell more products to cover the cost*" (farmer ID: 2-6, 11-13, 20, 22, 30).

From the profit difference perspective, two factors were raised during the interview, namely direct sale and avoidance of vicious pricing. It was found that the higher revenue of direct sales is another important factor that motivates these farmers to join SFSCs. As nearly all interviewed farmers were not satisfied with their income, higher revenue is hence a significant factor that influences their decision. It should be noted that when wholesalers are involved, they always tend to take advantage of the lack of pricing information and hence steal most of the profits from farmers. As indicated by the eight farmers (farmer ID: 2, 10-12, 15, 22, 26, 28) involved in the traditional form of food supply system before, "*The price of selling to wholesalers is much lower than selling directly to customers*". Although the convenience of selling to wholesalers is widely admitted by the interviewed farmers, they all preferred to directly sell to customers to regain the profits shared by wholesalers and hence increase the total revenue.

Meanwhile, another significant benefit of selling at farmer markets is the avoidance of vicious pricing. As indicated by some farmers, the phenomenon of vicious pricing used to be very common when they were selling separately. The wholesalers and customers tend to take advantage of the insufficient pricing information and hence lower the prices, quoted from the interview "*They always say other people's products are cheaper and negotiate with me to a price lower than my expectation*" (farmer ID: 1, 3-7, 9-12, 15-17, 25-27, 30). Some farmers may be too anxious to sell their products and are willing to reduce the prices voluntarily. Both cases have deteriorated the marketing of their agricultural products and led to reduced profits. However, the issue of vicious pricing has been greatly mitigated when they are selling in farmer markets. According to some farmers (farmer ID: 1-7, 11, 12, 14-17, 21, 23-26,

29), they all come from nearby villages and know each other, which helps them to negotiate a unified price of certain products, as they stated, "*Everybody here tends to know each other, and no one wants to have a bad reputation, thus people are all trying to avoid vicious pricing*". Therefore, it can be noted that through participation in farmer markets, the risk of vicious pricing can be minimized, and these farmers can enjoy a higher profit.

With the significant economic benefits outlined above, this thesis suggests the following proposition: Proposition 1b "The economic benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.".

6.2.2.3. Environmental pillar

To facilitate the evaluation of proposition "*P1c. The environmental benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs."*, the designated questions focusing on the environmental pillar mainly include the ecology aspect and the environmental-related issues during the delivery of products. The coding results concerning the environmental dimension of sustainability are presented in Table 6.4.

Table 6.4. Farmers' attitudes on the environmental sustainability of SFSCs

Category	Factor	Total count	Representative quote
Ecology	Biodiversity	21	*"Mixing and changing types of products can not only help to reduce the risk of low price of one or two agricultural products in certain periods, but also help to protect and enhance the conditions of the soil, or the soil will lose fertility if only planting same produce for a long period"*
	Usage of pesticides	27	*"I have been farming for so many years, I know how many pesticides should be used"*
	Burning wheat straws	24	*"I have been taught to burn these straws since I learn to farm when I was young"*

			"I know burning straws have huge smokes, and there is a potential risk of fire, but I don't have other options. The straws are useless elsewhere"
Product delivery	Food mile	30	*"I prefer to sell in this farmer's market is mainly because it's closer to my farm"* *"I know there are other farmer markets around the city, but the profits are similar, and the commuting fee is cheaper with this one"*

From the perspective of ecology, factors raised during the interview were biodiversity, usage of pesticides, and burning wheat straws. It should be noted that none of these interviewed farmers has ever heard of the exact term biodiversity. This phenomenon could be caused by the relatively limited education these farmers have perceived and the lack of enough government propaganda. However, although they never heard of the term before, some of their behaviours have demonstrated the consideration of biodiversity. As indicated by the interviewed farmers (farmer ID: 1-5, 7, 9-12, 17, 19-23, 25-28, 30), they tend to plant a wide variety of agricultural products and rotate between different kinds every 1 or 2 years. When asked about the reason, they stated that "*Mixing and changing types of products can not only help to reduce the risk of low price of one or two agricultural products in certain periods, but also help to protect and enhance the conditions of the soil, or the soil will lose fertility if only planting same produce for a long period*". It can hence be noted that their planting preferences have helped to improve biodiversity eventually, but it's mainly experience-oriented, instead of driven by clear consciousness and knowledge of this matter.

Another factor related to ecology is the pollution caused by using pesticides. As discussed in the social pillar, while all farmers demonstrated that they have minimized the usage of pesticides, their main concentration is on food safety, and none of the interviewed farmers has considered the environmental pollution caused by pesticides before. Moreover, although some farmers have consulted instructions to decide on pesticide amount, these interviewed

participants indicated that their determination on pesticide usage is mainly based on experience, as they (farmer ID: 1-12, 14-23, 25-28, 30) stated: "*I have been farming for so many years, I know how many pesticides should be used*". This vagueness of pesticide usage also reflects the farmers' unconscious of the environmental pollution caused by pesticides.

Burning wheat straws is another factor raised during the interview. It was found that apart from the six farmers owning a greenhouse, all other farmers tend to prefer burning wheat straws at the end of each farming season. This behaviour has a long history among Chinese farmers, as indicated by the interviewed farmers (farmer ID: 1-5, 7, 9-12, 15-23, 25-28, 30), "*I have been taught to burn these straws since I learn to farm when I was young*". While they admitted that there have been some government brochures or slogans about the drawbacks of burning wheat straws, they don't have alternative options to deal with the straws, especially considering burning the straws can help to improve the fertility of the soils. It can be noted from this issue that even the farmers are aware of the environmental impacts of their behaviours, it can still be comprised by other factors, such as lack of alternative options and economic concerns, as quoted from the farmers, "*I know burning straws have huge smokes, and there is a potential risk of fire, but I don't have other options. The straws are useless elsewhere*" (farmer ID: 2-5, 7, 9-12, 17, 18, 20-23, 25-28, 30).

From the perspective of the delivery of the product, a food mile factor was identified during the interview. As all interviewed farmers live in nearby villages, their covered food miles are relatively small. It was found that none of the interviewed participants travelled over 10km between their farm and the market, and most of them live less than 5km away from the market. As the customers were also living in the neighborhood of these farmer markets, it hence leads to very small food miles covered by these agricultural products. According to these participants, this close geographic distance is also an important factor that motivates them to choose this farmer's market, as stated by the farmers, "*I prefer to sell in this farmer's market is mainly because it's*

closer to my farm" (farmer ID: 1-30). As the transportation of their products is sole via trailers, long travel distance is hence unrealistic for these farmers. Meanwhile, some farmers also declared that "*I know there are other farmer markets around the city, but the profits are similar, and the commuting fee is cheaper with this one*" (farmer ID: 1-30). It can hence be noted that these farmers' preference in their selected farmer markets was mainly to minimize the travel distance and reduce the efforts of moving agricultural products. While these farmers were not familiar with the concept of food mile and were not aware of the environmental benefits associated with it, their selection of selling venues has resulted in very small food miles.

Based on the discussion above, it can be noted that although the participant farmers are less aware of environmental protection, their activities and habits have contributed to this sustainability pillar. Thus, this thesis suggests the following proposition: Proposition 1c "The environmental benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.".

6.2.2.4. Cultural pillar

The designated questions in this section mainly focus on the Chinese feature on the cultural aspect, to evaluate Proposition "*P1d. The cultural benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.*". The coding results concerning the cultural dimension of sustainability are presented in Table 6.5.

Table 6.5. Farmers' attitudes on the cultural sustainability of SFSCs

Category	Factor	Total count	Representative quote
Chinese feature	Relationship	30	*"If you have done something bad, people will know, and they will turn to other places to buy"*
	Attitudes towards sustainable agriculture	23	*"I think protecting the environment is important, but it's too far from me, and my major concern is on how to earn more profits to improve my life"*

From the perspective of the Chinese feature, two factors were obtained relationship and farmers' attitudes towards sustainable agriculture. It was found that all participant farmers paid extra attention to their relationship with customers and admitted the importance of this factor in their business. It tends to be the underlying reason for them to maintain the quality, security, and price of their products. Nearly all interviewed farmers have mentioned that they cherish the relationship with consumers and are willing to maintain it with extra cautions, which seems to be an additional benefit of the direct social connections between farmers and consumers in SFSCs. This factor was also validated with the large proportion of return customers. Most interviewed farmers have many return customers, with whom they have been very familiar. Farmers with a higher rate of return customers are also very proud as they believe that return customers are a good indicator of the quality of their products, which can improve their sense of social identity. Another reason mentioned by some of the participant farmers was the importance of reputation. As most customers tend to be from neighbourhood areas, farmers lost consumers' trust will have deteriorated reputation, and cannot survive from the competition with fellow farmers, as they stated: "*If you have done something bad, people will know, and they will turn to other places to buy*" (farmer ID: 1-30).

Unlike the importance of trust and social connection with customers, which has been widely recognised by the interviewed farmers, their attitudes towards sustainable agriculture have been ambiguous. Firstly, the definition of sustainable agriculture is new to most of them. Among the 30 interviewed farmers, only 4 of them have heard of the exact term before from news programmes. Meanwhile, none of these farmers knew the exact definition and contents of this concept. However, after explaining this concept to them, some farmers mentioned that they have received some relevant information, either from the government's brochures or slogans, most notably is "*Stop burning wheat straws*". While they all agreed that sustainable agriculture is important, they argued that "*Stop burning wheat straws*" is impossible, as burning wheat straws can help to fertilize the foils and they don't have other efficient options

to remove straws. Therefore, two findings can be drawn from these farmers' attitudes towards sustainable agriculture. Firstly, the current education and propaganda on sustainable agriculture among Chinese farmers are still insufficient. These farmers have very limited knowledge of this concept. Secondly, after they have acquired relevant information on sustainable agriculture, they may still ignore it due to economic concerns and the lack of alternative solutions, as they (farmer ID: 1, 2, 4, 5, 7, 9-12, 15-23, 25-28, 30) stated: "*I think protecting the environment is important, but it's too far from me, and my major concern is on how to earn more profits to improve my life*". Thus, appropriate alternative options with high feasibility should be provided to ensure that sustainable agriculture can be implemented in practice.

While the evidence for cultural sustainability is less obvious than the aforementioned pillars, most participant farmers still agree with some of its factors, especially the relationship-related ones. Thus, this thesis suggests the following proposition: Proposition 1d "The cultural benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.".

6.2.2.5. Governance pillar

To evaluate proposition "*P1e. The governance benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.*", the designated questions for the governance pillar mainly focus on the involvement and role of local authorities. The coding results concerning the governance dimension of sustainability are presented in Table 6.6.

Table 6.6. Farmers' attitudes on governance sustainability of SFSCs

Category	Factor	Total count	Representative quote
Local authorities	Involvement	30	*"I have been undertaking farming activities for many decades since I was young, and I never received any forms of check or examination from the government"* *"I need to get the official approval from the relevant government's department before*

			they allow me to build a greenhouse. Moreover, some officers will also come to my farm regularly to pick some samples of my produce and examine them in their labs, if the test failed, they don't allow me to sell my produce for the concern of safety" *"I need to pay a charge of entrance fee before I can sell my products in the markets, or the organizers won't allow it. But for farmers living in some villages, they are entitled to free entry"*
	Role of contribution	11	*"The charge of the entrance fee is unnecessary, the organisers only appear when collecting the money, and it's unfair that farmers from some villages can benefit from an entry free of charge, as they never ask for help from the government of my village when building the venues"*
	Quality examination	30	*"I just need to load my products and directly drive here to sell"* *"I have received regular spot checks on my product, but there are no further examinations before I sell them"*

From the perspective of local authorities, three factors were raised during the interview, which are the involvement of authorities, their roles in contribution, and the examinations of food quality. It was found that the local authorities have very limited involvement in most farmers' farming and selling activities. Regarding the farming activities, a distinct difference was based on the farmers' type of agriculture. For those interviewed farmers conducting ordinary farming, they claimed that there was no monitoring or regulations from the local authorities, as they (farmer ID: 1-5, 7, 9-12, 15-23, 25-28, 30) stated, "*I have been undertaking farming activities for many decades since I was young, and I never received any forms of check or examination from the government*". However, for those six farmers involved in greenhouse farming, they needed local authorities' approval to build the greenhouse, and have received regular spot-check tests from the local authorities, quoting from the farmers (farmer ID:

6, 8, 13, 14, 24, 29) "*I need to get the official approval from relevant government's department before they allow me to build a greenhouse. Moreover, some officers will also come to my farm regularly to pick some samples of my produce and examine them in their labs, if the test failed, they don't allow me to sell my produce for the concern of safety*". It should be noted that as building a greenhouse can contain some safety risks, the involvement of related authorities can act as external regulators and help to minimize the potential risks. Moreover, the spot checks are also easier to implement as the locations of these greenhouses were registered with the authorities. The lack of similar monitoring on ordinary farming is also mainly caused by the issues in the organisation of farming lands, due to the increasing ratio of migrant workers. Meanwhile, another involvement of local authorities was during the selling activities, when all interviewed farmers were organised by the authority of the venues. While these farmers didn't receive external monitoring of their selling activities, they need permission from the organisers before vending in the markets. This permission can either be paid daily or free of change if they live in villages that have contributed to building the venues. As stated by the farmers (farmer ID: 2-6, 11-13, 20, 22, 30), "*I need to pay a charge of entrance fee before I can sell my products in the markets, or the organizers won't allow it. But for farmers living in some villages, they are entitled with a free entry*".

Meanwhile, the opinions on local authorities' role vary among these interviewed farmers. From the farming perspective, the six farmers conducting greenhouse farming favoured the initial building approval from local authorities, as they claimed that this measure can effectively reduce the number of rivals. However, they all thought regular spot-check tests were unnecessary, which might interfere with their daily routines. Similar opinions were also reported from farmers conducting ordinary farming, as they claimed to favour the current status without receiving much monitoring from local authorities. Meanwhile, from the selling perspective, farmers entitled to free entrance were extremely happy with the organisations of authorities of the venue. However, the opinions varied among those farmers that need to pay an entrance fee daily. Some farmers (63.3%) also supported the authorities, as they thought a

better organisation of the shopping venue can be obtained with them, and it can help to avoid vicious pricing and potential conflicts between farmers and consumers or fellow farmers. While other farmers (36.7%) claimed that the organisers were not making many contributions, and the charging of entrance fee was too expensive and unnecessary, as they (farmer ID: 2-6, 11-13, 20, 22, 30) stated that "*The charge of the entrance fee is unnecessary, the organisers only appear when collecting the money, and it's unfair that farmers from some villages can benefit from an entry free of charge, as they never ask for help from the government of my village when building the venues*". It can be noted that while some participants were not satisfied with the charge of entrance fee, most of the interviewed farmers agreed that these organisers have helped to manage the venues and maintain the marketing order.

The quality examination was another factor raised during the interview. While the six farmers owning greenhouses have received regular spot checks from the local authorities, all interviewed farmers have confirmed that there were no additional examinations on the food quality before selling. They can directly sell the products without any monitoring or regulations from the local authorities, as they stated, "*I just need to load my products and directly drive here to sell*" (farmer ID: 1-5, 7, 9-12, 15-23, 25-28, 30) and "*I have received regular spot checks on my product, but there are no further examinations before I sell them*" (farmer ID: 6, 8, 13, 14, 24, 29). Although these farmers have claimed that their products were safe and the usage of pesticides was minimal, the lack of appropriate examinations from local authorities still may cause potential problems and should be addressed and solved.

Similar to the cultural pillar, governance sustainability is less evident than the other pillars. Nonetheless, most of the interviewed farmers favoured the governance benefits of vending in the selected venue. Thus, this thesis suggests the following proposition: Proposition 1e "The governance benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.".

6.2.3. Proposition evaluation - Sustainable livelihood framework

The influence of SFSCs on enhancing the sustainable livelihoods of farmers (proposition "***P2.*** *The positive influence of SFSCs on farmers' livelihood outcomes motivate farmers to participate in SFSCs*") was evaluated in this section, which has been divided into five subsections following the asset type, as shown in Figure 4.2. Qualitative data from interviews among farmers' livelihoods were used to examine this hypothesis.

6.2.3.1. Human assets

The designated questions in this section mainly focused on information related to the family members of interviewed farmers. Sample questions were focused on the number of their family members, the highest education level in their household, and the jobs of the next generation.

An interesting finding was obtained when investigating the number of their family members. While the Chinese government has promoted the one-child policy over the past four decades, it was found that each interviewed farmer has at least two children. The cause of this phenomenon might be the lack of information on the governmental policies during that time, as the next generations of these interviewed farmers only have one child in each family. Meanwhile, it should be noted that only the spouse of one female farmer has died, spouses of the rest farmers were either living with them or working as migrant workers in other cities. Therefore, it can be noted that all these farmers tend to have a relatively huge family, especially since most of them already have grandchildren.

A dramatic change in education level was also recorded between these farmers and the younger generation. As listed in Table 6.1, the highest education level of these farmers is a secondary school, while among their children of them, their education ranges from high school to master's degree. It should be noted that China was experiencing war and invasion when these farmers were young, which could explain why they received less education. Meanwhile, the advancement in the education level of the next generations is

mainly caused by the government's policy of nine-year compulsory education and their attitudes towards education. As reflected by many interviewed farmers, they believe that receiving higher education is the only measure to improve their children's lives and stop continuing to work as farmers, which are less decent and suffer from poverty. It should be noted that this belief is also very common in Chinese culture.

This type of belief was also reflected in the question regarding the jobs of the next generation. It was found that none of their children continues to work as farmers. Most of the next generation has taken professional jobs in the service industry, such as technicians, cooks, and nurses, after finishing their studies in high school. Meanwhile, those having received higher education tend to work in the education, financial, or engineering industry. While the jobs they undertook were closely related to their level of education, which confirms the belief of those interviewed farmers, their salary may not directly reflect this difference, as some professional workers can make a higher profit than people undertaking other jobs. Nonetheless, considering the trade-offs between profit and workload, it should be noted that people with higher education still can receive a better balance between both factors. Moreover, all these next generations have earned much more than their parents, with an average ratio of approximately 2 to 3. This higher income also reflects the reason for the younger generation's preference to not work as farmers.

6.2.3.2. Natural assets

Two questions concerning the natural assets were predesigned, which focus on their farming land and the changing tendency, respectively.

Unlike farmers in European countries, who tend to own a large scale of farming land, the interviewed Chinese farmers own a much smaller land scope, normally between 0.81 and 1.62 hectares. This is mainly because the farming activities in Chinese rural areas are still mainly based on human labour. Thus, these farmers were only capable of maintaining a relatively smaller scale of farming land.

Moreover, it was also found that the farming land owned by most interviewed farmers keeps decreasing. According to some farmers, the local authority has been negotiating with them about renting their lands. They can lend their lands to the local authority at a fixed rate for unified cultivation. The benefit of lending the land is that they don't need to do farming activities and can avoid the risks of low harvest. However, the profits can be between one third to half of the normal cultivations. As most farmers are elder around their 50s, they are not physically capable of performing farming activities on a large scale of lands. Therefore, they prefer to lend some lands to the local authorities, and plant vegetables on their remaining lands, which can be directly sold to customers at farmer markets with higher profits, which can compensate for the loss from their lent lands.

6.2.3.3. Financial assets

The questions regarding financial assets focus on three different aspects. The first question is about whether their annual income can support their livelihoods, the second asks about their savings from previous years, and the third question concerns financial support from organizations.

It was found that almost all interviewed farmers have reported a lack of enough income, only the six farmers owning greenhouses were satisfied with their income. While most of them admitted that there is a slight increase in their profits every year, the margin is not comparable to the inflation of commodities. Thus, the difficulty in supporting their livelihoods keeps increasing, especially considering the necessity of saving money for medical treatments as they are getting older. However, it should be noted that as they also consume their farming products, their daily expenses can be minimal if they stay healthy. Therefore, their income can still basically cover the maintenance of their livelihoods.

Meanwhile, these interviewed farmers all have bank savings from previous years. A major concern of these farmers was that they are getting older,

becoming more prone to illness, and less capable of undertaking farming activities. Thus, they had to save money to mitigate these crises and prepare for their elder lives. However, as stated in the previous question by some farmers, while they were trying to reduce their daily expenses and deposit some money in their savings, the exact situation was dominated by the harvest and market price. In recent years, they might have to borrow from their savings, instead of depositing into them. However, it should be noted that these circumstances were relatively rare, as their profits from farming can still cover their basic maintenance fee.

Although undertaking farming activities were not directly linked to financial support from any organizations, these farmers can receive some additional benefits from the local government policy. For instance, their children can receive free study for the nine-year compulsory education. Moreover, the government has released a new pension scheme, specified for residents living in rural areas. They only need to pay a minimal amount of money every year and can receive a pension after they become older than the thresholds, 60 yrs for males and 55 yrs for females. Another support policy is focusing on medical treatments. Specific healthcare insurance was designed for Chinese farmers, which can pay more than 50% of their medical expenses if they were suffered from more serious diseases. Therefore, it should be noted that while these farmers haven't received any direct financial support, they are entitled to many benefits, specifically designed to improve their livelihoods.

6.2.3.4. Physical assets

For physical assets, the questions mainly focused on the recent improvements in roads and transportation in their villages.

It was found that although the improvements in roads and the availability of low-priced trailers are not motivations for their participation in SFSCs, they are the prerequisites that allow them to travel between their villages to their selling venue. Without this easy transportation means, these farmers cannot travel to the farmer's market with their products at a reasonable cost. As stated by some

farmers, they can only sell their products to wholesalers that come to their village, and barely have any possibility of negotiating the price several years ago. With the improved transportation, they can have more options for selling their products and can hence avoid being exploited by the wholesalers.

6.2.3.5. Social assets

The designated questions in this section mainly concern four aspects of social assets, namely personal farming skill improvement, gender equality, satisfactory life, and relationship with fellow farmers.

All interviewed farmers claimed that they experienced no improvements in their farming skills over the past several years. They reported that they have been undertaking the same farming procedures for over at least three decades, and their farming techniques were mainly based on experience. They have not received any forms of training on their farming skills from the local authorities. However, while they have not received any formal support from the local government, nearly all farmers have stated that officers from local authorities have disseminated them brochures about new farming-related products and banned farming measures, especially to stop them from burning wheat straws. Thus, it can be noted that although these interviewed farmers haven't improved their farming skills directly, they still have received essential updates on farming activities from the local authorities, which can be partially regarded as improvements in their farming skills.

Meanwhile, while female farmers occupied a larger proportion of 63.3% of all participants, none of the interviewed farmers was aware of any significant influence of women's participation in farming. Through chatting with the participants, it seems that the difference in gender in performing farming activities can be minimized. The female farmers' participation is mainly caused by the stress of living. It was found that among the 19 female participants, the husbands of seven females were working as migrant workers and were not living at home. Meanwhile, eight husbands had other jobs but helped to farm occasionally. Three of them were physically unfit to undertake farming

activities, and one female's husband has already passed away. During the interview, all these female farmers have stated that their participation in farming was mainly driven by the need of earning income to support their lives. Therefore, it can be noted that gender does not have much influence on participation in farming activities.

The interviewed farmers' responses to the satisfaction of their lives in recent years showed an interesting tendency. While all farmers have indicated that their lives have been deteriorating, especially during the past five years, their opinions vary slightly. It was found that their evaluations of satisfactory lives are highly dependent on their incomes, as farmers owning greenhouses tend to be more satisfied with their lives, while other farmers, especially those with lower income, were more likely to complain about the increasing difficulty in maintaining their costs. Nonetheless, it should be noted that all interviewed farmers were concerned about the decreasing profits over the past few years and were desperate to increase their revenues.

When asked about their relationships with fellow farmers and if they can seek help from them, the answers vary significantly. While most farmers have stated that they had a good personal relationship with one or more fellow farmers, two female farmers have indicated that they were not familiar with other farmers. The major reason causing these special cases is that these two farmers lived in different villages than other farmers and have demonstrated a rather introverted personality, as they seldomly chatted with other farmers and positioned their products away from the main crowd. Despite these two special cases, the rest farmers tended to offer and receive help from each other frequently. The most common type of help they shared was to look after each other's products when they took breaks. However, bigger favours, like borrowing money from others, were still very rare among these farmers.

Following the evaluation of the five assets of the sustainable livelihood framework, it can be noted that while some assets of farmers' livelihood are less evident, the participant farmers generally agree that participating in

SFSCs can help to improve their livelihood in most aspects. There, it can be noted that proposition “P2. The positive influence of SFSCs on farmers’ livelihood outcomes motivate farmers to participate in SFSCs” was validated with the data from interviewed farmers.

6.2.4. Comparison with existing studies

As most existing studies reviewed in Chapter 3 investigated the sustainability benefits of SFSCs from farmers’ perspectives, it would hence be beneficial to compare with these existing studies to further explore the difference in the findings.

As listed in Table 6.1, it can be noted that the average age of all interviewed male participants is 59.4 years old, while that of all female farmers is 49.2 years old. This phenomenon is not restricted to the interviewed farmers, as the majority of sellers at the farmer's market are younger females. Although increasing the involvement of females in SFSCs can benefit from improved food security, a more pleasant shopping atmosphere, and improved gender equality (Zirham and Palomba, 2015; Zirham and Palomba, 2016), it should be noted that farming still tends to be a male-dominated activity in developed countries. As the gender proportion and age tendency are rather distinct from existing studies, the cause of this phenomenon was further investigated during the interview. It was found that younger males in these families are mainly migrant workers, who moved to larger cities to work in construction sites or factories to earn extra income. It should be noted that in China, farm machinery is still not available to most farmers. Therefore, all farming-related activities, such as planting and harvesting, are still achieved by farmers manually. The lack of technological advancements has hence restricted the size of farming, as most farms in China are either medium or small-sized. Moreover, it was also found that governmental support for farming is very limited. Thus, the income depending solely on farming is insufficient for a Chinese family, especially when their children need to study in college. Younger males working as migrant farmers are hence a common solution to earn extra income and financially support the family (Lu and Xia, 2016). As farming is more profitable

in developed countries, it can hence be noted that the livelihood of Chinese farmers is tougher. Moreover, the large number of migrant workers has also caused multiple social issues, mainly associated with their poor working and living conditions. Thus, increasing the profit of farming in China is a prominent issue that needs government support and guidance.

Meanwhile, another huge difference in the farmer demographic is the education level, as the perceived education of farmers in China is significantly lower than in other reported studies in developed countries. The lack of education is also reflected in the absence of sustainable agriculture, the usage of pesticides, and the ignorance of biodiversity (Chen and Zheng, 2016). It can be noted that in developed countries farmers' motivations for participating in SFSCs are mainly spontaneous, such as reducing energy consumption (Smith, 2008), improving biodiversity (Canfora, 2016), and regaining the profits shared by intermediates (Benedek et al., 2017). However, although Chinese farmers enjoyed some typical advantages of SFSCs, such as increased profit and direct communication with customers, their participations in SFSCs are more like a passive choice, as they tend to have rather limited knowledge of SFSCs and their benefits.

Along with the demographic difference, the farmers' opinions on the five sustainability pillars of SFSCs also differ to some extent. It should be noted that the earliest research investigating the social sustainability of SFSCs was implemented by Sage in 2003 when he explored the benefits of direct interactions in SFSCs. Since then, the social benefits of SFSCs have been extensively investigated. The most widely acknowledged social benefits of SFSCs in existing studies are identified as improved food quality and security (Hinrichs, 2000; Marsden et al., 2000; Hinson and Bruchhaus, 2008; Smith, 2008; Jones and Bhatia, 2011; Bimbo et al., 2015; Engelseth, 2016; Leiper and Sather, 2017), additional employment opportunities (Ilbery and Maye, 2005; Sgroi et al., 2014; Falguieres et al., 2015; Tudisca et al., 2015; Mundler and Laughrea, 2016; Rover et al., 2017), and the regained consumers' trust (Hinson and Bruchhaus, 2008; O'Kane and Wijaya, 2015; Giampietri, 2016;

Giampietri, 2018). Meanwhile, the friendly shopping atmosphere (Hinson and Bruchhaus, 2008; Watts et al., 2011; Zirham and Palomba, 2015; Benedek et al., 2017; Leiper and Sather, 2017) and the social connection with customers and fellow farmers (Beckie et al., 2012) are also noted as the improved social sustainability of SFSCs. Based on the results from the conducted pilot study, it can be noted that a high correlation can be found between the farmers' opinions on this social pillar. The interviewed Chinese farmers also approve of most of these social benefits, most notably, the improved food quality, the friendly shopping atmosphere, and the social connections with other people. While none of these interviewed farmers has directly approved the benefit of regaining consumers' trust, they have indicated that they have many repeat customers, which shows the underlying consumers' trust in their products. However, it should be noted that the potential of creating more employment opportunities is denied by all the interviewed farmers. This could be caused by the characteristics of Chinese farms, as they tend to be smaller scale and rarely adopted any farming machinery. Thus, these Chinese farms are mainly operated and maintained by the farmers and their spouses, restricting the potential of hiring additional labourers. Nonetheless, it can still be noted that the Chinese farmers' opinions on the social pillar of SFSCs are highly correlated with the existing studies conducted in developed countries.

Owing to the difficulty in measuring the economic effects of SFSCs, the improvements in economic sustainability are less evident than in the social pillar. Thus, the acknowledged economic benefits of SFSCs are rather limited. The most typical economic benefit is identified as the regained profits shared by intermediates (Hinrichs, 2000; Marsden et al., 2000; Smith, 2008; D'Amico et al., 2014; Sgroi et al., 2014; Tudisca et al., 2015; Balázs et al, 2016; Engelseth, 2016; Demartini et al., 2017; Leiper and Sather, 2017). This is the most widely acknowledged economic feature of SFSCs in the existing studies. Meanwhile, some researchers (Watts et al., 2011; Smith, 2008; Migliore et al., 2015; Balázs et al, 2016; Benedek et al., 2017; Elghannam et al., 2017) also found that SFSCs can have a positive influence on the local economy. Although the improvements in economic sustainability are fewer than the

social benefits, a high correlation was also found between the interviewed farmers and these existing studies. While the increased profits of SFSCs are also approved by these Chinese farmers, none of them has felt contributing to the local economy. This could be caused by the lack of governmental propaganda. Moreover, a unique finding of this study is that Chinese farmers admitted that participating in SFSCs can reduce the risk of vicious pricing. This phenomenon hasn't been discussed in the existing studies before. This could be also caused by the characteristics of Chinese farms. As small-scale farming can involve many competitors, and hence increase the potential risk of vicious pricing. Nonetheless, participating in SFSCs can effectively avoid this phenomenon and increase the farmers' profits in return.

Unlike the social and economic pillars, the comparison of findings on the environmental pillar is rather distinct. While similar to the economic pillar, the improvements in the environmental sustainability of SFSCs are less evident. There are still some existing studies that have found a close linkage between environmental sustainability and SFSCs. For instance, several studies have found that SFSCs can effectively reduce energy consumption (Connelly et al., 2011; Hara et al., 2013; Cleveland et al., 2014; McClenachan et al., 2014; Forssell and Lankoski, 2015; Canfora, 2016; Sellitto et al., 2018). Meanwhile, Tasca et al. (2017) found that the abandonment of disposable packing and industrial processing in direct distribution can effectively reduce environmental impacts by 20% to 48%. Moreover, the improved biodiversity (Mastronardi et al., 2015; Berti and Mulligan, 2016; Rover et al., 2017) and the higher tendency to adopt environmental-friendly practices (Aubert and Enjolras, 2015; Forssell and Lankoski, 2015; Mundler and Laughrea, 2016) are also confirmed as the environmental benefits of SFSCs. However, during the pilot study, it was found that the interviewed Chinese farmers are almost unconscious of environmental protection and have never considered this factor before. These farmers have never heard of environmental sustainability before and the vagueness in pesticides usage can also reflect their unconscious on this factor. Although these interviewed farmers have regularly changed their farming products and maintained relatively small food miles, their motivations are not concerning

environmental protection. This phenomenon could be caused by the lack of relevant knowledge and governmental propaganda, as the guiding policy of the development of the Chinese food supply system has been "*pollution first and then elimination*" (Tan, 2007). Thus, these interviewed farmers' unconscious of environmental protection could be easily interpreted.

Since existing studies haven't considered the culture and governance of sustainability, the comparison cannot be implemented. But from the findings of this study, it can be noted that participating SFSCs can bring benefits on both dimensions.

6.3. Quantitative data analysis

As introduced in the research design of Section 5.4, a survey was implemented with a predesigned online questionnaire. The online questionnaire was designed to collect the survey data. The questionnaire was distributed through WeChat, a very famous social mobile phone application that almost all Chinese people have been using nowadays. With the functionality of this application, the online questionnaire can hence be easily distributed among customers. It should be noted that the distribution was restricted within the pilot city, Xinxiang, to ensure the availability of various forms of food supply systems. A target number of 550 responses was set as a stopping criterion for the quantitative data collection. The entire data collection period lasted approximately two weeks. Four steps were followed to facilitate the quantitative data analysis: (1) identifying and handling missing data; (2) data preparation and cleaning; (3) descriptive statistics; (4) hypothesis evaluation.

6.3.1. Handling missing data

As indicated by Hair et al. (2014), missing data refer to usable information or answers when one or more questions that do not exist for analysis in a survey. Missing data can be caused by three reasons, which are data collection problems, data entry errors, and refusal of respondents to provide answers to certain questions. Missing data can add potential bias to the results, which subsequently affects the generalizability of findings (Tabachnick and Fidell,

2014). To mitigate the potential issues caused by missing data, a pre-selection was implemented to filter the obtained responses. Only fully completed questionnaires were selected and treated as qualified responses. The submitted questionnaires were examined daily, and those with missing data were excluded from the results. Therefore, a total of 550 responses were collected and 532 qualified responses were selected for this study.

6.3.2. Data preparation and cleaning

After the desired amount of responses was collected, the next step was to prepare them to facilitate further analysis. As outlined in Section 5.5.2 and Appendices, the questionnaire was mainly designed with scale and single choice questions, which allows easy coding of the results. After examining all collected responses, these questionnaire results were imported into SPSS 26 to allow further analysis. For some questions with extra "*other*" options, the results were grouped and assigned with additional codes. The processed SPSS data were also imported to SPSS AMOS 26 to evaluate the proposed hypotheses.

6.3.3. Descriptive statistics

As described in Section 5.5.2, questions concerning the background information of the respondents were included in the predesigned questionnaire. The questions in this section were mainly designed as single choice, focusing on their demographic information, transportation-related information, and the preferred shopping venue and frequency.

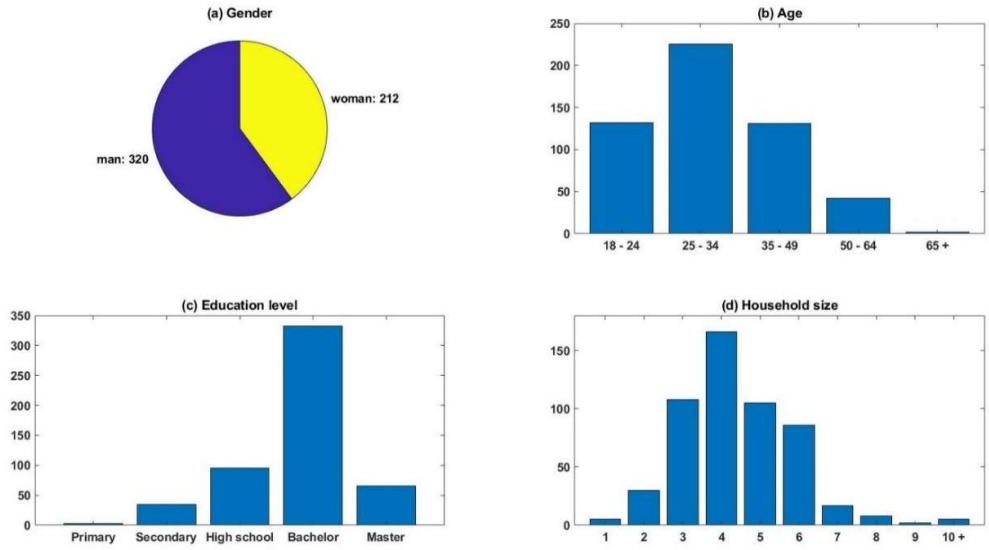


Figure 6.2. Descriptive results of customers' demographic information

From the perspective of demographic information, questions concerning the gender, age, education level, and household size of the respondent were included in the questionnaire. A descriptive analysis of the obtained results is illustrated in Figure 6.2.

As shown in Figure 6.2 (a), the gender ratio between male and female respondents is approximately 1.51. As the respondents were selected randomly during the distribution of questionnaires, the gender ratio hence cannot indicate a higher proportion of male customers. However, it does validate that many Chinese males are also involved in food shopping activities.

The distribution of respondents' ages is shown in Figure 6.2 (b), It can be noted that customers aged between 25 years old and 34 years old have the largest accumulated number of 225, which occupies 42.3% of all participants. The number of participants aged within 18 – 24 years old and 35 – 49 years old segments are almost the same, with 132 and 131 participants, respectively. Elder people occupy a relatively smaller proportion, with only 42 participants aged between 50 and 64, and only 2 were older than 65. From the age distribution, it can be noted that younger and middle-aged adults (18 – 49 years

old) form the majority group of this survey, with 488 participants occupying a proportion of 91.7%. This phenomenon can be easily explained as this survey was distributed using WeChat, a mobile phone-based application. It should be noted that although older Chinese people tend to also have their mobile phones, they are more concentrated on basic functions and are less frequently using these additional applications. However, for the younger generation and middle-aged Chinese people, WeChat has been the main social platform in recent years, which allows the questionnaire to be easily distributed to them. While this phenomenon can cause a higher proportion of younger and middle-aged respondents, it should not have a large impact on the validity of the collected sample. This is because in Chinese culture, most elder people live with their offspring, and food shopping is more likely the responsibility of these middle-aged offspring. Therefore, although the proportion of respondents does not reveal the age distribution of the Chinese population, it correlates with the composition of customers to a certain extent.

The education levels of the respondents were also acquired from the survey. As illustrated in Figure 6.2 (c), a sum of 398 participants went to universities, which occupies a proportion of 74.8%. Meanwhile, 96 participants graduated from high school, occupying a proportion of 18.0%. 35 participants graduated from secondary school and 3 respondents only went to primary school. From this distribution of education levels, it can be noted that the majority of participants have completed the nine-year compulsory education, which was officially regulated by the Chinese government's policy since 1986. This distribution also correlated with the participants' age. As most participants were younger or middle-aged, they all benefit from this policy and have acquired a relatively high education level.

From the distribution of household sizes shown in Figure 6.2 (d), it can be noted that most participants live with two or three generations (87.4% for household sizes between 3 and 6). This also correlates with the age distribution, as it is a very common phenomenon that middle-aged couples

have one or two children, and may live with some of their parents, who help them to take care of their children.

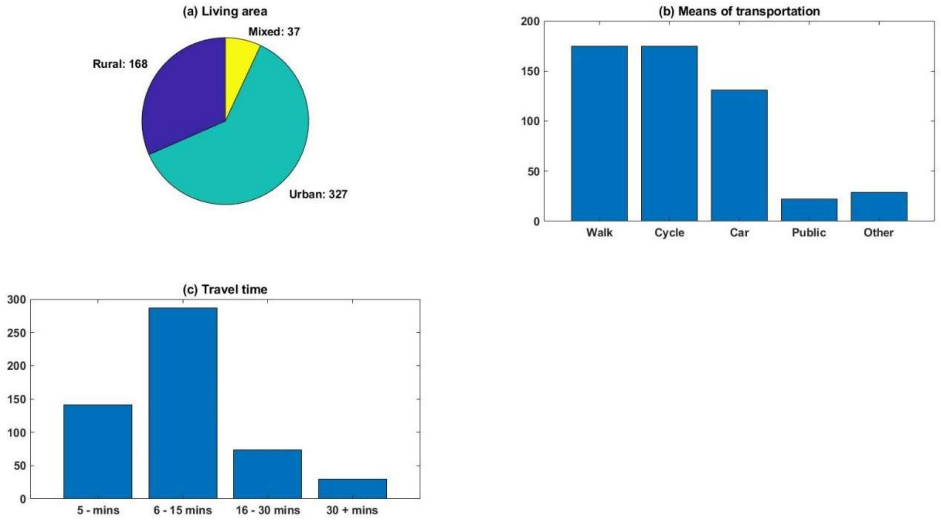


Figure 6.3. Descriptive results of customers' Transportation information

The descriptive results of transportation information are shown in Figure 6.3. It can be noted from Figure 6.3 (a) that most respondents live in an urban area, with 327 counts and occupying a dominant proportion of 61.5%. Meanwhile, only 168 participants (31.6%) live in rural areas, and the remaining 37 people live in mixed areas. The larger proportion of urban residents can be caused by two main reasons, the first cause is that people living in rural areas have a higher tendency of owning farmland and growing their agricultural products, which in turn reduces their need to purchase the food markets. Moreover, this survey was disseminated using a chatting app on mobile phones, and rural residents tend to show less possession and attention to these technology products. Thus, the likelihood of having rural residents participating in this survey may hence be restricted. Nonetheless, the higher proportion of urban participants reflects the actual situation in the Chinese context. Therefore, the validity of the collected sample can be ensured.

The distribution of respondents' means of transportation is illustrated in Figure 6.3 (b). It can be noted that walking and cycling are the two most preferred transportation means by these participants, each has an accumulated number

of 175. Meanwhile, ranking third is shopping by car, which has 131 participants and occupies a proportion of 24.6%. Public transportation is the least preferred option with only 22 respondents (4.1%), while the remaining 29 participants categorized their transportation means as others. From the distribution of transportation means, it can be noted that since walk and cycling are preferred by most respondents, they tend to live at a convenient distance to their selected shopping venue, which could be a prominent factor in their shopping preference.

Along with the means of transportation, the distribution of travel time is shown in Figure 6.3 (c). It can be noted that the majority of respondents spent between 6 and 15 minutes travelling for food shopping, which occupies a proportion of 53.9% (287) of all participants. Meanwhile, 141 participants (26.5%) travelled less than 5 minutes and 74 respondents (13.9%) travelled between 16 and 30 minutes. Only 30 participants (5.6%) travelled for more than 30 minutes. The high distribution in short travel time ranges correlates with the finding from these respondents' transport means that they prefer to shop at nearby venues.

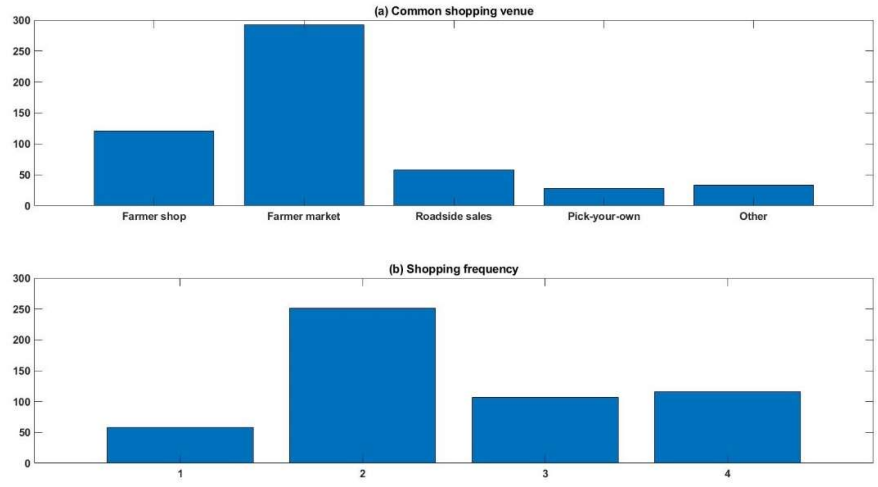


Figure 6.4. Descriptive results of customers' Shopping information

Figure 6.4 presents the results of respondents' preference for shopping venues and frequency. The preferred shopping venue is illustrated in Figure

6.4 (a). As shown in Figure 6.4 (a), the farmer's market was the most preferred form of shopping venue, with an accumulated number of 292 respondents, occupying a proportion of 54.9%. Meanwhile, the farmer's shop is the second favorite shopping venue, with 121 participants (22.7%). The remaining 119 participants preferred to shop in roadside sales (58), pick-your-own (28), and other forms of the venue (33).

Meanwhile, their shopping frequency was also summarized in Figure 6.4 (b). It can be noted that the majority of respondents (251) preferred food shopping twice a week. 223 respondents shopped more frequently, three times (107) or four times (116) a week, and 58 participants shopped only once per week. As the percentage of people shopping more than once a week occupies a dominant proportion of 89.1%, it can be noted that most of these respondents have a relatively high requirement for the freshness of food. Meanwhile, this frequent shopping behaviour also reveals the fact that travelling to these shopping venues is not a constraint for them.

From the presented demographic information of respondents, three general trends can be noted. Firstly, a high correlation was found between their age and education level. It should be noted that younger participants tend to hold higher education levels. Among participants older than 50 years old, the proportion of graduating from high school and below is much higher than younger participants. This phenomenon reveals the fact that education is occupying a very important position in the current Chinese culture, which is in a rapid transition from an agriculture-based developing country to a modern developed country. From the perspective of the majority of Chinese people, receiving higher education has become one of the prominent, if not the most prominent, options to improve their livelihood and overcome poverty. Secondly, regardless of how they travel to the shopping venue, these participants would very seldomly spend over 30 minutes on the road. This indicates that the convenience of shopping is very important to their decision-making. Thus, their locations should be carefully selected when designing new shopping venues. Thirdly, while there are plenty of farmer markets and farmer

shops in the pilot city already, pick-your-own is relatively rare and only has very limited instances. From existing studies investigating pick-your-own in developed countries, it can be noted that this type of SFSCs has received extensive research focus and government or local authorities' support. Many researchers have found that pick-your-own can benefit tourism and possess additional cultural values, both of which are relatively unique features compared with the other forms of SFSCs (Hara et al., 2013). Therefore, extra attention should be drawn to this type of SFSCs, which can potentially generate more benefits in the longer term.

Along with the above demographic analysis, the validity and reliability of the survey result were evaluated first to ensure the design of the questionnaire and obtained results are suitable for further analysis. To examine the validity of the results, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test was conducted to examine the distribution of the data and sampling adequacy of data for factor analysis. KMO is a statistic that indicates the proportion of variance in variables that might be caused by underlying factors and a higher value generally indicates a factor analysis can be implemented with the obtained data. The equation for the KMO test can be represented as,

$$MO_j = \frac{\sum_{i \neq j} r_{ij}^2}{\sum_{i \neq j} r_{ij}^2 + \sum_{i \neq j} u}$$

where MO_j is the outcome of the test, r_{ij}^2 is the correlation matrix, u is the partial covariance matrix. Meanwhile, Bartlett's test of sphericity compares the observed correlation matrix to the identity matrix. A small significance value denotes that the variables are correlated, and factor analysis may be useful with the data. The obtained results are listed in Table 6.7.

Table 6.7. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.966
Bartlett's Test of Sphericity	**Approx. Chi-Square**	18797.708
	df	595
	Sig.	.000

It can be noted from Table 6.7 that the KMO value is 0.966. According to the classification from Kaiser, it falls in the marvellous segment of 0.90 to 1.00. Thus, it can be noted that the sum of partial correlations is not large relative to the sum of correlations, indicating that factor analysis should obtain distinct and reliable factors. Meanwhile, the significance value of Bartlett's test is 0.000. Thus, the observed correlation matrix is not an identity matrix, denoting that the original variables are correlated. Based on the results from KMO and Bartlett's test of sphericity, it can be noted that the obtained survey results are valid and suitable for conducting factor analysis.

Along with validity analysis, a reliability analysis was also conducted on each variable and all items. Cronbach's alpha is a measure of internal consistency, which is used to determine if a set of items can be treated as a group. Cronbach's alpha is usually used as a measure of scale reliability. The equation for Cronbach's alpha can be represented as,

$$\alpha = \frac{N\bar{c}}{\bar{v} + (N-1)\bar{c}}$$

where N is the number of items, $\bar{c}$ is the average inter-item covariance among the items and $\bar{v}$ is the average variance. The computed Cronbach Alpha values are shown in Table 6.8. As it is evident from the table, the Cronbach alpha value for all the variables was greater than 0.8, which indicates the reliability is very ideal.

Table 6.8. Reliability Scores

Variables	Cronbach Alpha Value (>0.7)	No. of Items
SFSC	0.954	7
Economic	0.906	4
Environmental	0.934	4
Social	0.941	4
Governance	0.916	4
Cultural	0.934	4
Moral	0.935	4
Relational	0.942	4
All items	0.973	35

6.3.4. Statistical evaluation-Five dimensions of sustainability

Similar to Section 6.2.2, this section aimed to examine the effect of SFSCs on the performance of sustainability and how these effects can motivate customers' buying behaviour (hypotheses *H1a* – *H1e*).

To facilitate the evaluation of the linkage between SFSCs and the five dimensions of sustainability, the collected survey responses are summarised in Table 6.9.

Table 6.9. Five dimensions of sustainability

Variables	Mean	Dev. St.	1	2	3	4	5
			No.				
Social dimension							
I prefer buying locally as it offers me the opportunity to have social interaction with farmers.	3.34	1.40	74	79	131	89	159
I feel my voice has been heard if I buy locally.	3.38	1.42	70	90	112	89	171
I think buying locally can improve food quality and farmers' empowerment simultaneously.	3.38	1.42	75	80	114	95	168
I feel I contribute to improving the farmer's socioeconomic conditions.	3.37	1.40	73	76	129	89	165
Economic dimension							
I prefer buying locally as I believe farmers get a higher share of the profits.	3.74	1.22	34	51	124	131	192
I think buying locally contributes to the local economy.	3.66	1.26	43	51	131	127	180
I prefer buying locally as I can access high-quality food at a fair price.	3.74	1.22	41	36	132	136	187
I prefer buying locally because I think it improves the quality of farmers' lives.	3.81	1.21	34	42	120	132	204
Environmental dimension							
I feel contributing to improving local biodiversity by buying locally.	3.23	1.40	86	81	131	95	139
I feel in power to influence farmers to use sustainable farming practices.	3.19	1.43	97	78	116	108	133

I believe that locally produced food contains less packaging waste.	3.30	1.42	83	79	115	103	152
I prefer buying locally because the carbon footprint is low.	3.28	1.46	90	84	104	96	158
Cultural dimension							
I believe in buying locally as I have a great understanding of locally grown agricultural products.	3.18	1.44	96	86	117	92	141
I prefer buying locally as I can touch and feel the products and choose the ones I prefer.	3.37	1.44	83	75	105	102	167
I choose to buy locally because I have greater trust in locally grown products.	3.29	1.44	89	75	111	105	152
I prefer buying locally as I get a chance to bargain.	3.24	1.46	95	78	117	89	153
Governance dimension							
I feel more confident in buying local food products if there is a certification body reinforcing product quality.	3.42	1.46	81	71	109	84	187
Buying locally offers an opportunity for customers to participate in food quality requests and check.	3.32	1.41	80	78	121	99	154
I think interactions between farmers and consumers can be an alternative to certification bodies in food supply chains.	3.26	1.42	89	76	122	99	146
I think consumers can help to deal with unsold products by buying them at a discounted price.	3.26	1.39	79	86	123	104	140
Highly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Highly agree.							

As shown in Table 6.9, each sustainability dimension has four constructs concerning different aspects of customers' attitudes and motivations towards SFSCs. It can be noted that the economic dimension has received the highest approval from survey participants, with an average mean value of 3.74 and an average standard deviation of 1.23. The large mean and small standard deviation values indicate that almost all participants highly agree with the statements about social motivations, and they believe in the positive benefits of participating in SFSCs on social sustainability. Among the four social constructs, the fourth factor receives the most approval "*I prefer buying locally*

because I think it improves the quality of farmers' lives", with the largest mean value and smallest standard deviation. From the survey results, it can be noted that about 63.16% of participants choose either agree or highly agree with this factor, which is also the factor that receives the highest score among all questionnaire items. From the perspective of average mean value, the social and governance dimension ranks second and third, while the environmental dimension receives the least approval when compared with other dimensions. Meanwhile, from the perspective of average standard deviation, the economic dimension obtains the most approval with the least dissension. While the average standard deviations of the other four dimensions are similar, the cultural dimension receives the largest average standard deviation of 1.44, which reveals that the participants' opinions on these constructs vary more significantly than other sustainability dimensions. The least approved construct about the sustainability dimensions also belongs to the cultural dimension, as its first construct, "*I believe in buying locally as I have a great understanding of locally grown agricultural products*", receives the smallest mean value of 3.18. Regarding the social dimension, the second and third constructs, "*I feel my voice has been heard if I buy locally*" and "*I think buying locally can improve food quality and farmers empowerment simultaneously*", have obtained the same levels of approval from participants. Regarding the environmental dimension, the third construct, "*I believe that locally produced food contains less packaging waste",* receives the highest level of approval, with about 47.9% of participants chose either agree or highly agree. Meanwhile, the second construct, "*I feel in power to influence farmers to use sustainable farming practices*", is the least approved construct within the environmental dimension. It should be noted that this construct also ranks the second least approved item among all sustainability constructs. Regarding the governance dimension, its first construct, "*I feel more confident in buying local food products if there is a certification body reinforcing product quality*", receives the highest approval among sustainability dimensions other than economic. Meanwhile, although the dissensions vary, the last two constructs, are the least approved governance constructs and shared the same mean value of 3.26.

From the results of all sustainability constructs summarised in Table 6.9, it can be noted that the economic constructs have received much higher approval from participants than other dimensions. It is easily interpretable as the economic benefits are easier to reveal. The same principle also applies to the environmental dimension, as the improvement in environmental sustainability is the most difficult to measure and the four constructs of this dimension receive the least approval from the survey participants. Meanwhile, the second construct of the cultural dimension receives the highest approval among dimensions other than economic. This construct, "*I prefer buying locally as I can touch and feel the products and choose the ones I prefer*", reveals the fact that most participants are aware of the demand for a quality monitor and control from official authorities. The lack of this quality control scheme is also one of the most imminent problems faced by SFSCs in China. This finding also coincidences with the findings in a previous study, which investigated the SFSCs in the pilot city from the farmers' perspective (Wang et al., 2018). According to the interviewed farmers, only agriculture products from the greenhouse receive regular checks from the local government, all other produces receive no external monitoring and they can sell these products to consumers freely without any regulations. Thus, it can be noted that developing a quality control scheme for products sold in SFSCs can be vital to the success of promoting SFSCs in the Chinese context.

Moreover, there are several significant differences between our findings and existing studies that should be noted. In most existing studies, the social pillar of sustainability is found to be the most prominent factor that motivates people's participation in SFSCs. The impacts of some typical social benefits, such as direct interaction (Hinson and Bruchhaus, 2008; Sgroi et al., 2014; Tudisca et al., 2015; Demartini et al., 2017) and improved product quality (O'Kane and Wijaya, 2015; Engelseth, 2016; Leiper and Sather, 2017) are widely acknowledged. However, based on the collected responses in our survey, it was found that while most respondents also agree with the social benefits of SFSCs, the influence of this pillar is less prominent than the

economic pillar and hence is not the primary drive to motivate their participation.

Another huge difference lies in the economic pillar. The economic benefits of SFSCs are a bit ambiguous among existing studies, which are highly dependent on the form of SFSCs. For instance, studies focused on FMs found a positive influence on economic sustainability (Watts et al., 2011; Jones and Bhatia, 2011; Benedek et al., 2017). Meanwhile, studies investigating CSA found that the economic benefits of SFSCs are less evident (Janssen, 2010; Balázs et al., 2016). As concluded by Charatsari et al. (2019), the potential economic benefits of participating in SFSCs tend not to be the main motivation for their participation. However, findings from this study suggest that the economic pillar is the most prominent motivating factor among the respondents. Interestingly, the importance of economic benefits was also confirmed in another study conducted in China (Zhang et al., 2019).

As China ranks fourth in territory size and different Chinese cities can have diverse urban-rural compositions, it can be noted that we still lack sufficient evidence to reach a convincing conclusion that can represent the entire Chinese context. Nonetheless, from the above two major differences, it can be inferred that the underlying cause is related to the context of the studies, e.g. developing and developed countries. Since most existing studies were conducted in developed countries, the income and livelihood of participants are much better than in developing countries. Thus, the participants tend to focus less on the price of the commodities and pay more attention to other added values, such as social interaction and feeling of contribution to the local community. However, in developing countries, the margin of profit is smaller, and hence economic benefits can dominate the choice of most participants. Moreover, most Chinese customers tend to live a fast pace of life and are less likely to maintain a spontaneous social connection with the farmers (Zhang et al., 2019). As the proposed study is conducted in a mixed urban-rural city, where the average income of citizens is not very promising, the reversed

impacts of the social and economic pillars on existing studies can hence be easily interpretable.

6.3.5. Statistical evaluation-Moral economy

This section evaluates hypothesis "*H2. The positive effect of the moral economy on the local food system positively influences consumer's motivations in participating SFSCs*". The survey responses concerning the linkage between SFSCs and moral economy are summarised in Table 6.10.

Table 6.10. Moral economy

Variables	Mean	Dev. St.	1	2	3	4	5
			No.				
Moral economy							
I prefer buying locally as it offers fair trade for local farmers.	3.30	1.37	72	87	122	108	143
I trust in buying locally because I can check the good standards of animal welfare.	3.22	1.42	88	85	118	102	139
I think buying locally can address environmental concerns.	3.22	1.43	93	76	125	95	143
I think buying locally can support local farmers and local development.	3.28	1.44	89	77	112	101	153
Highly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Highly agree							

It can be noted that the first construct, "*I prefer buying locally as it offers fair trade for local farmers*", is the most approved factor concerning the moral economy. The standard deviation of this variable is also the smallest among the four constructs. It should be noted that while the mean values of the other three variables are still larger than 3, they are still relatively smaller than other variables under different hypotheses. The smallest mean values are with the second and third construct. The second construct, "*I trust in buying locally because I can check the good standards of animal welfare*", also has a smaller standard deviation than the third construct. This means that the participants are less agree with this variable and are more doubtful about the benefits of SFSCs on animal welfare. It should be noted that the most common types of SFSCs in China are farmer shops and farmer markets, both of which are major

in selling crops. Thus, the relatively lower level of approval of this variable can be easily interpreted. Meanwhile, the third construct, "*I think buying locally can address environmental concerns*", nearly receives the same level of approval. Since the measurement of environmental impacts is very difficult to achieve and the existing evidence of environmental benefits of SFSCs is less well-known in the Chinese context, the relatively low level of approval can hence be easily interpretable.

6.3.6. Statistical evaluation-Chinese relationship

Finally, Table 6.11 presents the survey responses about the Chinese relationship in SFSCs, to evaluate hypothesis "*H3. The effective personal relationship and trust between farmers and consumers have a positive effect on consumers' participation in SFSCs*". It can be noted that the third construct, "*I think buying locally helps to increase social inclusivity",* is the least approved factor with the smallest mean value and largest standard deviation. The most approved construct in this sector is the fourth item, "*I think the personal relationship motivates farmers to produce healthy and safe food*", which has the largest mean value of 3.30 and smallest standard deviation of 1.40. It can be noted that the direct interaction with farmers and the fostering of personal relationships both contribute to the customers' belief in the improved quality of the food products in SFSCs.

Table 6.11. Chinese relationship

Variables	Mean	Dev. St.	1	2	3	4	5
			No.				
Chinese relationship							
I prefer buying locally because it appears more trustworthy due to direct communication with producers.	3.29	1.42	83	77	129	89	154
I prefer buying locally as I think it's important to develop a personal relationship with producers.	3.25	1.42	82	89	123	88	150
I think buying locally helps to increase social inclusivity.	3.23	1.45	94	82	112	96	148

I think personal relationship motivates farmers to produce healthy and safe food.	3.30	1.40	77	85	123	96	151
Highly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Highly agree.							

6.3.7. Statistical evaluation-SFSCs

Finally, the survey responses about SFSCs are summarised in Table 6.12. The fifth construct, "*I think SFSCs can positively influence governance sustainability*", receives the least approval from participants, with the smallest mean value of 3.14. Meanwhile, social sustainability is the most approved construct. Moreover, most participants reached a consensus on the seventh construct, "*I think SFSCs can positively influence Chinese relationship*", while the largest divergence of opinion occurs with the first, second, and fourth constructs. Nonetheless, it can be noted that based on the statistical results, most participants approve of the positive correlations between SFSCs, five dimensions of sustainability, moral economy, and the Chinese relationship.

Table 6.12. SFSCs

Variables	Mean	Dev. St.	1	2	3	4	5
			No.				
SFSCs							
I think SFSCs can positively influence social sustainability.	3.42	1.46	80	78	96	94	184
I think SFSCs can positively influence environmental sustainability.	3.28	1.46	90	82	106	95	159
I think SFSCs can positively influence economic sustainability.	3.28	1.45	90	80	103	108	151
I think SFSCs can positively influence cultural sustainability.	3.34	1.46	82	89	95	96	170
I think SFSCs can positively influence governance sustainability.	3.14	1.44	100	84	126	88	134
I think SFSCs can positively influence the moral economy.	3.28	1.41	82	83	110	115	142
I think SFSCs can positively influence Chinese relationships.	3.20	1.36	81	88	128	113	122
Highly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Highly agree.							

6.3.8. Structural model evaluation

Along with the statistical evaluation of the survey responses, structural equation modelling was also used to evaluate the hypotheses proposed in Chapter 4. As preliminary requirements, some model fitting indicators were examined first to evaluate the fitness between measurement and the structural model. It should be noted that many absolute and incremental fit indices exist. However, there is no consensus on which index should be selected or what normative threshold standard should be considered (Hooper et al., 2008). Following indices are hence selected in this study: the chi-square fit test index (CMIN/DF), the comparative fit index (CFI), the normed fit index (NFI), and the root mean square error of approximation (RMSEA).

The chi-square index tests whether an unconstrained specified model fits the covariance/correlation matrix as well as the empirical data. A problem with this test is that the larger the sample size, the more likely it is for the model to be rejected. For these reasons, the chi-square fit test (CMIN/DF) adjusts the chi-square index for the degrees of freedom. Values as large as five are accepted as an adequate fit, but more conservative thresholds are two or three (Arbuckle 2009). The NFI and CFI vary from 0 to 1 and are derived from a comparison of the hypothesized model with the independent model. Meanwhile, the RMSEA incorporates a discrepancy function criterion (comparing observed and predicted covariance matrices) and a parsimony criterion; it should be less than or equal to 0.05 (0.08) for a good (adequate) model fit (Hu and Bentler 1999). The obtained results are summarised in Table 6.13. As listed in the table, the result of the chi-square fit test is 5.773, the NFI and CFI values are close to 0.9, and the RMSEA value is smaller than 0.1. Thus, it can be noted that the model fitting results are acceptable.

Table 6.13. Model fit index

Index	CMIN	df	CMIN/DF	NFI	CFI	RMSEA
Value	3192.209	553	5.773	0.834	0.859	0.095

close to 0.9, and the RMSEA value is smaller than 0.1. Thus, it can be noted that the model fitting results

To guarantee the validity of the structural model, the composite reliability (CR) and average variance extracted (AVE) were also computed to check the convergent validity. The obtained results are listed in Table 6.14. As CR is larger than 0.7 and AVE is greater than 0.5 (Segars, 1997), it can be noted that the proposed construct convergence validity of the measurement model is adequate.

Table 6.14. Convergent validity

Variable	Item	Estimate	CR	AVE
Environmental	Improve biodiversity	0.856	0.934	0.781
	Sustainable farming practices	0.897		
	Less packaging waste	0.871		
	Low carbon footprint	0.910		
Economic	Higher profit	0.833	0.906	0.706
	Improve local economy	0.836		
	High food quality with fair price	0.842		
	Improve life quality	0.851		
Social	Direct interaction	0.920	0.941	0.799
	Voice heard	0.870		
	Improve food quality	0.880		
	Improve socioeconomic	0.905		
Cultural	Understand local products	0.878	0.934	0.780
	Pick directly	0.885		
	More trust in local products	0.899		
	Chance to bargain	0.871		
Governance	Need certification body	0.840	0.914	0.728
	Chance for food quality monitoring	0.901		
	Interaction to improve trust	0.845		

	Unsold products with lower price	0.825		
Moral economy	Fair trade	0.865	0.935	0.783
	Animal welfare	0.872		
	Improve environment	0.918		
	Support local farmers	0.884		
Chinese relationship	Direct communication	0.906	0.942	0.804
	Personal relationship	0.894		
	Increase social inclusivity	0.880		
	Improved food quality	0.906		
SFSCs	Social sustainability	0.713	0.921	0.625
	Environmental sustainability	0.808		
	Economic sustainability	0.780		
	Cultural sustainability	0.795		
	Governance sustainability	0.755		
	Moral economy	0.824		
	Chinese relationship	0.850		

After passing the fit and convergence test, the final structural model was computed. The results assessing the hypotheses were shown in Figure 6.5 and Table 6.15. It can be noted that only the P-value of SFSCs and the Chinese relationship is 0.137, larger than 0.05. Thus, it should be noted that all five dimensions of sustainability are positively correlated with SFSCs, meaning hypotheses H1a – H1e are validated. Meanwhile, the same finding can be obtained between moral economy and SFSCs, indicating that hypothesis "*H2. The positive effect of the moral economy on the local food system positively influences consumer's motivations in participating SFSCs*" is also confirmed. However, since the P-value of the Chinese relationship is larger than 0.05, it can be noted that the correlation between the Chinese relationship and SFSCs is less prominent. Thus, hypothesis "*H3. The effective personal relationship and trust between farmers and consumers have a positive effect on consumers' participation in SFSCs*" is not supported by the empirical data.

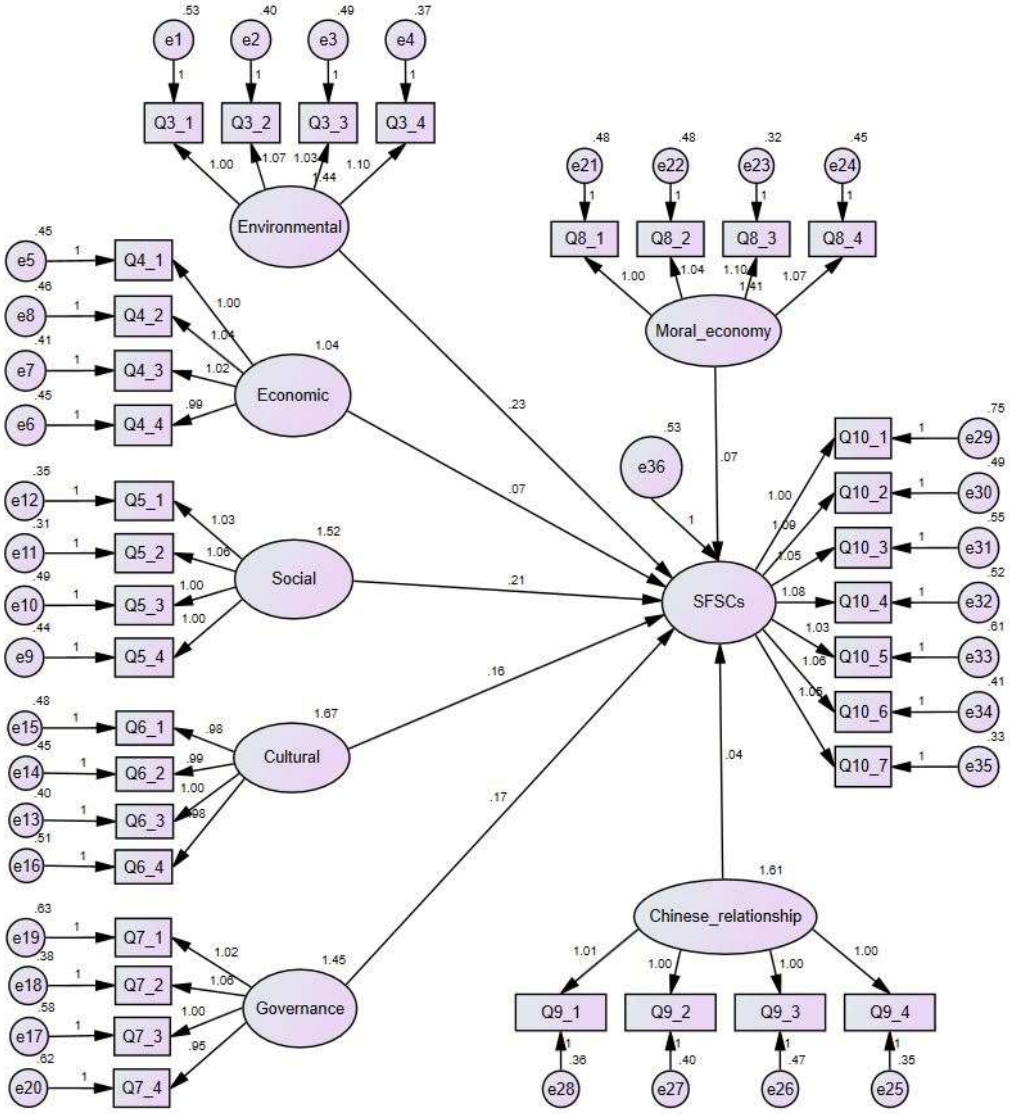


Figure 6.5. Final Structural Model

Table 6.15. Estimates

			Estimate	S.E.	C.R.	P
SFSCs	<---	Environmental	0.234	0.031	7.475	***
SFSCs	<---	Economic	0.071	0.035	2.022	0.043
SFSCs	<---	Social	0.207	0.030	6.912	***
SFSCs	<---	Cultural	0.163	0.028	5.816	***
SFSCs	<---	Governance	0.170	0.030	5.579	***

SFSCs	<---	Chinese relationship	0.041	0.027	1.486	0.137
SFSCs	<---	Moral economy	0.070	0.030	2.366	0.018

6.3.9. Comparison with existing studies

Although existing empirical studies on consumers in SFSCs are limited, a comparison was conducted with reviewed literature in Chapter 3 to highlight the findings from this study.

In most existing studies, the social pillar of sustainability is found to be the most prominent factor that motivates people's participation in SFSCs. The impacts of some typical social benefits, such as direct interaction (Hinson and Bruchhaus, 2008; Sgroi et al., 2014; Tudisca et al., 2015; Demartini et al., 2017, Jarzębowski et al., 2020) and improved product quality (O'Kane and Wijaya, 2015; Engelseth, 2016; Leiper and Sather, 2017) are widely acknowledged. However, based on the collected responses in our survey, it was found that while most respondents also agree with these social benefits of SFSCs, their most prominent motivation is the improvement of the farmers' lives.

Meanwhile, the economic benefits of SFSCs are a bit ambiguous among existing studies, which are highly dependent on the form of SFSCs. For instance, studies focused on FMs found a positive influence on economic sustainability (Watts et al., 2011; Jones and Bhatia, 2011; D'Amico et al., 2014; Benedek et al., 2017). Meanwhile, studies investigating CSA found that the economic benefits of SFSCs are less evident (Janssen, 2010; Balázs et al., 2016). As concluded by Charatsari et al. (2019), the potential economic benefits of participating in SFSCs tend not to be the main motivation for their participation. A similar finding was also obtained from this study.

Another huge difference lies in the environmental pillar. While the environmental benefits of SFSCs are also confirmed in existing studies (Wills and Arundel, 2017), they are usually less prominent than other pillars.

However, based on the SEM analysis, the environmental dimension is found to be a very prominent motivation for consumers' participation. Constructing about SFSCs produce less packaging waste receives a high level of approval.

Moreover, the comparison cannot be implemented regarding the culture and governance of sustainability, as existing studies haven't considered them. But from the findings of this study, it can be noted that participating SFSCs can bring benefits on both dimensions.

6.4. Chapter summary

This chapter presented the process and results of data analysis. Following the research design in the preceding chapter, this chapter was divided into two parts, the analysis of qualitative data from the interview with farmers and the quantitative data from an online questionnaire with consumers. Qualitative and quantitative data analysis provided both sample descriptive analysis and statistical evaluation for propositions and hypotheses respectively. The proposed conceptual framework was tested by evaluating the hypothesised relationships (established in Chapter four) with data analysis results.

Based on the evaluation of the responses from 30 farmers and 532 consumers, the evaluation results of the proposed proposition and hypotheses are summarized in Table 6.16. From the qualitative data analysis, the proposed relationships between SFSCs with the performance of sustainability and sustainable livelihood were suggested. For quantitative research, SEM was used to evaluate the hypotheses with the empirical data. Hypothesised relationships between SFSCs with sustainability and moral economy were supported respectively, while the relationship between SFSCs with Chinese relationships was rejected. By analysing empirical data and examining the hypotheses established from the conceptual framework, the proposed conceptual framework has been empirically validated and verified in the context of Chinese SFSCs practices, thereby finishing the research objective 3 (Section 1.4).

Table 6.16. Summary of hypotheses and proposition evaluation

No.	Hypothesis	Results
H1a	The social benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.	Supported
H1b	The economic benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.	Supported
H1c	The environmental benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.	Supported
H1d	The cultural benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.	Supported
H1e	The governance benefits of SFSCs on sustainability positively influence consumers' motivations for participating in SFSCs.	Supported
H2	The positive effect of the moral economy on the local food system positively influences consumers' motivations for participating in SFSCs.	Supported
H3	The effective personal relationship and trust between farmers and consumers have a positive effect on consumers' participation in SFSCs.	Rejected
No.	**Propositions**	**Results**
P1a	The social benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.	Suggested
P1b	The economic benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.	Suggested
P1c	The environmental benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.	Suggested
P1d	The cultural benefits of SFSCs on sustainability positively influence farmers' motivations for participating in SFSCs.	Suggested
P1e	The governance benefits of SFSCs on sustainability positively influence farmers' motivations towards participating in SFSCs.	Suggested
P2	The positive influence of SFSCs on farmers' livelihood outcomes motivates farmers to participate in SFSCs.	Suggested

Chapter 7

CONCLUSIONS

7.1. Introduction

In the preceding chapter, an empirical examination of the data is provided, and the results of the proposed hypotheses are reported. This chapter summarises, discusses, and integrates the results in Section 7.3. Firstly, the thesis is recapped to summarize the research process and key outcomes from each chapter (Section 7.2). Afterwards, a critical and reflective discussion about the realisation of the aim and objectives is presented (Section 7.4). Then, the theoretical contribution and practical implications of this research are highlighted in Section 7.5. The chapter ends by outlining the limitations of this study and suggesting directions for future research.

7.2. Recapping the thesis

Chapter 1, the introduction to this research, identified the main problems with the industrialized agri-food system and the key issues that required attention. Thus, SFSCs have emerged as alternative food systems with the feature of sustainability. The aim and objectives of this research were founded upon the need to investigate SFSCs and sustainability linkages in the Chinese context. Chapter 2 contextualised agri-food supply chains debates and outlined five dimensions of sustainability.

Chapter 3 conducted a systematic literature review to analyse, synthesise, and integrate existing empirical SFSCs studies with a specific focus on their linkages with sustainability. The research regions, theories, and methodologies introduced in the studies were extracted from the literature to have a further understanding. This fed into the conceptually-oriented Chapter 4, which united previously disparate SFSCs and sustainability (cultural and governance dimensions), sustainable livelihoods framework, moral economy, and Chinese relationship. The conceptual framework was built to guide data collection and analyses. Chapter 5, the methodology, introduced the research paradigm, the adopted strategy, and the design of data collection and analyses in detail.

With the explicit research process guide from Chapter 5, both qualitative data collected from farmers by semi-structured interviewing and quantitative data from consumers through online questionnaire collection were presented in Chapter 6. Then this primary and empirical evidence was analysed and linked directly back to the theoretical material in Chapter 4 through hypotheses assessment.

A brief recap of this thesis (previous chapters) shows how this study has made sets of theoretical and empirical contributions. The future research dimensions can be pointed out in this study. These contributions and future work are

discussed later in this chapter after the discussion of the key empirical findings and evaluation of the research aim and objectives.

7.3. Key empirical findings

The key empirical findings are from the data analysis of perspectives of 30 participating farmers and 532 consumers in China. Each finding suggests mixed results for understanding SFSCs and their hypothesised relationships. This discussion of the study results is structured into four sections. The first section discusses the relationship between SFSCs practices and sustainability performance from both farmer and consumer's perspectives. The second section focuses on the relationship between SFSCs practices and farmers' livelihood outcomes. The third section presents the discussion of the effects of moral economy. Finally, section four presents the discussion of the relationship between farmer's selling performance and consumer's buying performance.

7.3.1. SFSCs and the performance of sustainability

The study predicted a positive relationship between SFSCs and sustainability on their social performance (H1a and P1a). The qualitative data from farmers' perspectives and quantitative data from consumers' perspectives provided support to this prediction. Thus, the participation of farmers and consumers in SFSCs was found to be effective to improve social sustainability performance. These are the results from participant farmers who all claimed local food in SFSCs had better quality. Besides, the enjoyable shopping atmosphere and social interactions with other farmers became one motivation that drives farmers to participate in this activity. The participant consumers agreed that social interaction with farmers allows their requests to be heard, and the food quality is improved when buying locally.

The study expected a positive relationship between SFSCs and sustainability in their economic performance (H1b and P1b). The analysis of consumer and farmers' data provided evidence to support this expectation. That is, the joint activities in SFSCs practices are effective to enhance the economic performance of sustainability. This result is from the findings that farmers are

willing to sell products at SFSCs due to direct sales and avoidance of vicious pricing. Findings from participant consumers showed that they prefer SFSCs products with high quality at a fair price, and they believe buying locally could help farmers get a higher share of profits and contribute to the local economy.

The study also argued that SFSCs positively influence environmental sustainability performance (H1c and P1c). The study succeeded in supporting this hypothesis. From farmers' evidence, it confirms that SFSCs have helped to improve biodiversity and reduce food miles. Frome consumers' perspectives, similar findings were found that participating in SFSCs would improve local biodiversity and decrease carbon footprint. Besides, it contains less packaging waste when buying food from SFSCs venues.

In addition to the impact of SFSCs on three well-known pillars of sustainability (social, economic, and environmental pillars), the study predicted a positive effect of SFSCs on cultural sustainability performance (H1d and P1d). The study data from both farmers' and consumers' sides provided support for this hypothesis. This appears to benefit social identity and environmental protection in SFSCs as farmers' acknowledgement of SFSCs and their linkage with sustainability would effectively enhance the cultural performance of sustainability in SFSCs practices. Evidence from participating consumers shows that SFSCs help them have a great understanding of locally grown agricultural products. Meanwhile, this type of SFSCs in China allows consumers to touch and choose the products and offers them the chance to bargain with farmers.

Besides, the study predicted that SFSCs positively influence governance sustainability performance of sustainability (H1e and P1e). The findings provide support to the prediction. Farmers' joint activities of SFSCs would receive the local authority of the venues and those who sell greenhouse products also need to accept governance monitoring of food quality examination. Consumers as the third-party monitoring body allow themselves to participate in food quality requests and price checks.

7.3.2. SFSCs and sustainable livelihoods outcomes

The study posited that SFSCs positively influence farmers' livelihood outcomes (P2). The results suggested that taking part in SFSCs could enhance farmers' livelihood outcomes. This is found in farmers' increased livelihoods assets. Evidence shows that besides the annual profits of SFSCs practices, the education level of these farmers and their next generation, earnings from their farming land, assets of road and transportation type, personal farming skill, gender equality, satisfactory life, and relationship with fellow farmers have increased after joining SFSCs in recent years. The participant farmers generally agree that participating in SFSCs can help to improve their livelihood from most aspects of the sustainable livelihoods framework.

7.3.3. SFSCs and moral economy

The study predicted that the positive effect of the moral economy on the local food system positively influences consumers' motivations for participating in SFSCs (H2). The analysis did support this prediction. That is, the benefits of a moral economy motivate consumers to take part in SFSCs practices. This result is from the quantitative materials that fair trade, animal welfare, environmental concerns, and local development would influence consumers' motivations towards taking part in SFSCs.

7.3.4. SFSCs and Chinese relationship

The study posited that the Chinese relationship between farmers and consumers influences consumers' participation in SFSCs (H3). The analysis of quantitative data from consumers' perspectives did not support this prediction. Thus, the positive relationship and trust between farmers and consumers to improve their SFSCs participating motivations were found to be ineffective. Although many consumers admitted that direct interaction with farmers helps to develop personal relationships and trust, which would motivate food quality and safety. The statistical evaluation shows that this hypothesis is not supported by the empirical data.

The evaluation results of SFSCs and the related proposed hypotheses are summarized in a hypotheses and propositions assessment table (Table 6.16). These key findings above have answered the three research questions outlined in Chapter 1, each research question and its corresponding answers are listed in Table 7.1, and these answers are in the form of hypotheses evaluation.

Table 7.1. Summary of research questions and findings

Research questions	Answers (hypothesis evaluation)	Results
RQ1. How SFSCs conform to the dimensions of sustainability?	(H1a/P1a) SFSCs positively influence social sustainability performance	Supported/ Suggested
	(H1b/P1b) SFSCs positively influence economic sustainability performance.	Supported/ Suggested
	(H1c/P1c) SFSCs positively influence environmental sustainability performance.	Supported/ Suggested
	(H1d/P1d) SFSCs positively influence cultural sustainability performance.	Supported/ Suggested
	(H1e/P1e) SFSCs positively influence governance sustainability performance.	Supported/ Suggested
RQ2. What is the role of SFSCs in enhancing the sustainable livelihoods of farmers in China?	(P2) SFSCs positively influence farmers' livelihood outcomes.	Suggested
RQ3. What are the farmer and consumers' motivations to participate in SFSCs in China?	(H2) The positive effect of the moral economy on the local food system positively influences consumers' motivations in participating SFSCs.	Supported
	(H3) The effective personal relationship and trust between farmers and consumers have a positive effect on their participation in SFSCs.	Rejected

Research question 1:

How SFSCs conform to the dimensions of sustainability?

This research question has been answered after analysing the related hypotheses from H1a to H1e and propositions from P1a to P1e. SFSCs positively influence the performance of sustainability from social, economic, environmental, cultural, and governance dimensions.

Research question 2:

What is the role of SFSCs in enhancing the sustainable livelihoods of farmers in China?

This research question has been answered after evaluating the related proposition P2. SFSCs play an important role in improving farmers' livelihoods from many aspects of the sustainable livelihoods framework. Detailed answers have been presented in Section 7.3.2.

Research question 3:

What are the farmer and consumers' motivations to participate in SFSCs in China?

This research question has been answered with the evaluation of conceptually-oriented hypotheses H2 and H3. Answers show that direct interaction between farmers and consumers, local development, fair trade, animal welfare, food quality, and environmental protection motivate the joint activities of farmers and consumers in SFSCs practices in China.

7.4. Revisiting the aims and objectives

This research was inspired by questions and gaps related to the sustainability and SFSCs in the Chinese context, including the role that SFSCs have in enhancing livelihoods outcomes of farmers, and consumers' participating motivations among SFSCs. The research was driven and guided by a vital aim and four incrementally focused objectives. The extent to which the research aim and objectives were achieved is listed in Table 7.2, and then each aim and objective is presented to discuss how they are achieved.

Table 7.2. Summary of the achievement of the aim and objectives

Aim/objective number	Description of aim/objective	Achieved?
Aim	Investigate the SFSCs and sustainability linkages in the context of China	Achieved

Objective 1	Critically explore the sustainability and SFSCs linkages by conducting a systematic review of the literature on sustainable SFSCs practices	Achieved
Objective 2	Develop a conceptual framework highlighting sustainability, sustainable livelihoods, and consumer-farmer relationship in the implementation of SFSCs	Achieved
Objective 3	Empirically validate and verify the proposed conceptual framework in the context of Chinese SFSCs practices	Achieved
Objective 4	Provide theoretical contribution and practical implications that can improve the understanding of farmers' and consumers' participation in SFSCs in China	Achieved

Aim:

Investigate the SFSCs and sustainability linkages in the context of China.

The research aim was not a specific or detailed guideline on how this study should be done, but it provided insights into the nature of SFSCs with their close linkages with sustainability, and how they can contribute to the food supply systems and sustainability in the Chinese context. Using mixed methods and both qualitative and quantitative approaches, primary research was empirically conducted with consumers and farmers in the Chinese region. Besides, a novel contribution has been made to this thesis through the innovative theoretical framework and practical implications.

Objective 1:

Critically explore the sustainability and SFSCs linkages by conducting a systematic review of the literature on sustainable SFSCs practices.

Chapter 2 contextualised the key themes in this research and Chapter 3, the systematic literature review, summarized the relationships between the two key themes of sustainability and SFSCs. This provided the foundation of the conceptual framework which is both conceptual and practice-based from the existing empirical literature. Research methods and participants were also initially learned and identified, this enabled the methodology design and research location selection. Thus, the results of objective 1 (Chapter 3) fed into theoretical framework development (Chapter 4) and methodology design (Chapter 5).

Objective 2:

Develop a conceptual framework highlighting sustainability, sustainable livelihoods, and consumer-farmer relationship in the implementation of SFSCs.

Chapter 4 presented an established conceptual framework based on the findings from the systematic literature review (Chapter 3) and highlighted theories of sustainability, sustainable livelihoods of farmers, moral economy, and farmer-consumer relationship. This framework focuses on supply chain dynamics, relationships, and practices adopted by farmers and consumers. After objective 2 was achieved, the research questions on questionnaires and interview forms were designed (Chapter 5) based on this conceptual framework.

Objective 3:

Empirically validate and verify the proposed conceptual framework in the context of Chinese SFSCs practices.

This objective has been fulfilled in Chapters 5-7 and particularly in Chapter 6, as Chapter 5 provided the methodology about how to collect and analyse data, Chapter 6 presented the detailed process of validating and verifying the proposed framework through data analysing in the context of Chinese SFSCs practices, and this discussion re-visited the empirical findings from the application of SFSCs conceptual framework. This third objective is important in terms of its vital research findings within the fields of SFSCs and sustainability.

Objective 4:

Provide theoretical contribution and practical implications that can improve the understanding of farmers' and consumers' participation in SFSCs in China.

After the above 1-3 objectives are achieved (Chapter 2-7), this research has enabled several innovative contributions to be drawn out and for implications to be considered in this chapter (Chapter 7), detailed information was

presented in the next section.

7.5. Contributions

The findings of this thesis unveiled that SFSCs practices conform to the five dimensions of sustainability and improve the farmers' livelihoods and moral economy. Moreover, several primary motivations for the participation of farmers and consumers are also confirmed, such as the improved food quality, the friendly shopping atmosphere, the social connections with other people, the improvements in the moral economy and farmers' livelihoods, etc.

This study improves our understanding of the SFSCs practices in the Chinese context by highlighting the critical role of sustainability performance embedded in the farmer-consumer relationship. The remaining part of this section outlines the theoretical contribution and practical implications of this study.

7.5.1. Theoretical contributions

This research contributes to both growing literature on short food supply chain management and the broader literature on sustainability performance in several important dimensions.

Firstly, a broad literature study of SFSCs and sustainability has been completed to analyse the origins, definitions, and theoretical backgrounds of this research area. This study has found that most existing studies have mainly focused on empirically exploring a particular type of SFSCs practices in a particular country. The benefits of SFSCs as sustainability in existing literature have not been well-declaimed. Thus, a systematic literature review on the topic of SFSCs and their linkages with sustainability is vital in this research. A systematic review of existing literature aims to identify the findings from prior studies. Meanwhile, a literature review in the systematic process helps to unveil the gaps and thus provides further directions for research that builds upon this study.

A systematic literature review has been conducted by exclusively studying the empirical practices of SFSCs and their impact on social, economic, and environmental dimensions of sustainability. This literature study is necessary for further research because the empirical evidence testing the relationship between sustainability and SFSCs is scarce in the existing literature. Through systematically analysing and synthesizing the prior research, the gaps have been presented that only the three well-known pillars of sustainability have been explored in investigating the benefits of SFSCs, no literature directly highlights the cultural or governance dimension of sustainability in this area. Meanwhile, the current studies in this area have mainly focused on European and other developed countries, and empirical evidence in developing countries is limited. The importance of conducting this empirical research in the Chinese context is unveiled in this systematic review. Moreover, the theoretical frameworks from existing literature have been extracted and analysed. Evidence shows that there are only a few theoretical models have been mentioned in prior studies, and thus it is vital to establish a well-organized theoretical model that fit the context of this research.

By establishing and adopting a theoretical framework that fits the Chinese context in this research, this particular and creative model contributes to the theories from the following dimensions.

Firstly, this study adds two additional dimensions of sustainability (cultural and governance dimensions) in SFSCs where previous studies have predominantly focused on the well-known three pillars (social, economic, and environmental pillars). This focused examination of literature also provides a clear understanding of the SFSCs varieties, research techniques, and research regions in the SFSCs study, which has been used to help to identify the research methodology in this study.

Secondly, the findings of this study add to the limited existing research that links SFSCs to livelihoods assessment. Although a considerable number of studies have provided evidence of SFSCs' benefits for farmers from social,

economic, and environmental dimensions, efforts to examine SFSCs performance on farmers' sustainable livelihoods outcomes are sparse.

Thirdly, this study has deepened the understanding of the impact of the moral economy on consumers' buying motivations towards SFSCs. A better understanding of the SFSCs practices can help to improve sustainability performance benefiting both farmers and consumers and motivating them to participate in SFSCs activities.

Fourthly, this study provides empirical evidence in a developing country context, specifically in the Chinese context. Since most existing studies on SFSCs were focusing on the developed countries' context, the divergence in several aspects within the findings can help to address the difference caused by the level of development. It also helps to understand the role that cultural differences play in SFSCs to a certain extent.

Fifthly, by organising and integrating the sustainability, livelihoods assessment, moral economy, and Chinese relationship theories in short food supply chain management research, this study increases the understanding of the positive influence that SFSCs can bring to both consumers and farmers.

Finally, by adopting structural equation modelling in quantitative data analysis, which is a rising statistic approach in supply chain management and has not been applied in SFSCs research area, this study offers a more reliable way to investigate the validity and reliability of the quantitative study in SFSCs area.

7.5.2. Practical implications

SFSCs participants are under investigation by academic researchers and government organizations to analyse their joint activities and motivations in SFSCs practices. This study provides practical implications that help participants and policymakers to better understand and manage sustainable SFSCs.

This study indicates that taking part in SFSCs is a favourable approach for farmers to make a living. Developing interactions with consumers to create an enjoyable working atmosphere, establishing collaborative venues by which fellow farmers could share information and exchange knowledge, and improving livelihoods outcomes and resources (e.g. human and financial capital), are effective motivations for farmers to make joint efforts in SFSCs practices. The enhanced working conditions and shared knowledge provide farmers with a chance to make a self-livelihood assessment report. The realization of adopting and implementing sustainability in their SFSCs benefits their livelihoods outcomes should motivate farmers to develop sustainable planting and selling approaches toward presenting high-quality and environmental-friendly products.

Secondly, the study found evidence for the impact of the implementation of sustainable SFSCs on consumers' buying performance. The consumers' participating activities in SFSCs can contribute to local development through buying local products. Fair trade for farmers, improved animal welfare, enhanced environmental protection through reduced food miles and pesticide usage, and the most common concern about food quality is, therefore, the vital motivations to enhance consumers' buying performance

in SFSCs. Owing to the knowledge of sustainable SFSCs and the corresponding positive influence, consumers' performance in requesting and volunteering to become the third-party certificating body can help to monitor and check food quality and price. Thus, the collaboration with farmers on sustainable SFSCs leads to increase consumers' motivations, which in turn can improve food quality, farmer's profits, and local development.

Finally, the study uncovered that governance plays an important role in the implementation of sustainable SFSCs. The results show that the performance of sustainability in SFSCs enhanced the motivations of farmers and consumers to participate in SFSCs practices. Thus, this finding will help policymakers in designing local and regional policies to promote and monitor sustainable

farming practices and encourage farmers and consumers to adopt SFSCs practices to serve local development. Moreover, the study also provided a theoretical foundation and empirical evidence on enhancing farmer's livelihoods outcomes through SFSCs activities, which can offer a guide for governance to improve sustainable livelihoods of farmers in terms of guaranteeing their livelihood assets of education, land, transportation, equality, and satisfactory working conditions.

7.6. Limitations and future research directions

Despite the significant contributions of this research, several limitations need to be listed, as these limitations can switch into grounds for future research on sustainable SFSCs research in the context of China and the broader literature on this area.

Firstly, the current study creatively highlighted and added the linkage between cultural and governance sustainability with SFSCs by examining the positive effects on their relationships in the Chinese context. Future research should be extended to empirically examine these hypotheses to provide a further understanding of the relative importance of cultural and governance dimensions of sustainability in SFSCs practices. Meanwhile, salient research on SFSCs with their effective influence on the moral economy, and sustainable livelihood outcomes of farmers should be conducted in the future to support the theoretical framework established in this study. Moreover, as the hypothesis of the positive relationship between SFSCs and the Chinese relationship is examined to be ineffective, new theories and more empirical evidence need to be explored to investigate SFSCs and their related hypotheses in the Chinese context for future study.

Secondly, this study tested the conceptual model using the sample from the selected city in China. Although the city for data collection was carefully selected following a set of criteria to ensure it fits in testing the model and excludes the potential basis, it limits the generalizability of the results due to

specific characteristics of the location and culture. Considering the vast territory and huge disparity between different regions of China, different results would almost certainly have emerged in other contexts. Thus, future research can replicate the study in different locations and venues.

Thirdly, farmers' perspectives and consumers' motivations for participating in SFSCs were captured by mixed-method data collection. Qualitative data from farmers were collected through semi-structured interviews to test a part of the conceptual model (performance of sustainability, sustainable livelihood framework), while quantitative data from consumers were statistically analysed to examine another part of the conceptual model (performance of sustainability, moral economy, and Chinese relationship). Future research can address this limitation by collecting objective data from consumers and quantitative data from farmers. More valuable insights can be gained from collecting qualitative data and hearing voices from consumers. More specifically, perspectives of sustainable SFSCs and the surmise of potential reasons for farmers' participation can be sought from the consumers' side through in-depth interviews. While the information on farmers' participation in SFSCs practices can be obtained from the farmers' side through survey research. The enormous amount of quantitative data collection and analyses may help to reduce the potential bias and thereby improve the validity and reliability of the future study.

Fourthly, as the questionnaire is disseminated using a popular chatting app on mobile phones, the involvement of rural residents and elder people can be restricted. This phenomenon is also reflected in the age distribution of the participants (Figure 6.2b), which is more centralized to the range of younger and middle-aged. Although this distribution may not have a large impact on the analyses of perspectives from the consumers' side, future research that replicates the same survey via a different platform (i.e. face-to-face questionnaire) with more elder consumers can help to evaluate the potential difference.

Finally, this study suggests that SFSCs and sustainability have positive relationships in the Chinese context by testing the proposed conceptual model. The research can be expanded to other developing countries that heavily rely on the agricultural sector and where SFSCs are rising, such as Brazil, Vietnam, and Thailand. It can further improve the investigation into the difference in SFSCs adoption between these developing countries. Moreover, the existing literature on SFSCs mainly focuses on the three well-known pillars of sustainability (economic, social, and environmental pillars) in developed countries, a comparison of this theme between this empirical study and the existing literature has been made in Section 6.2.4. Future research based on the corresponding conceptual framework in developed countries can be provided, therefore conducting a comparative study of sustainable SFSCs between developed and developing countries goes further on this topic.

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Appendices

Appendix A

Informed Consent Form

University of the West of England
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United Kingdom
BS16 1QY

Name of student: Meng Wang
Name of supervisor: Prof. Vikas Kumar

Title of research project:
Evaluating the role of Short Food Supply Chains as a driver of sustainability: Empirical Evidence from China

Aim of the research:
This study aims to investigate the SFSCs and sustainability linkages in the context of China. Following research objectives are hence identified to ensure the thesis consistently follow the aim of this research.

Participation in the research:

☐ I agree to being involved in the semi-structured interviews and conversations with Meng Wang.

☐ I give permission to Meng Wang to digitally record interviews.

☐ I give permission to Meng Wang to take noted of the interviews.

☐ I give permission to Meng Wang to process and store information related to the interviews.

What will happen to my data?

Data will be used for Meng Wang's PhD research, will be published in the PhD thesis and/or used in other academic papers for conference and/or journal.
Your real name will not be used, and all the collected data will be kept anonymous.

Who do I contact if I have questions?

Meng Wang will be happy to answer any questions you may have during the entire process (contact details below)

Consent:

I confirm that I understand the above information. The nature, demands and risks of the project have been explained to me.

I understand that I may withdraw my consent and discontinue participation without penalty and without having to give any reason.

Participant's Signature: _____
Date: _____

Researcher's signature: _____
Date: _____

Researcher contact details:

If you have any questions about the research or would like to know what we find out, please contact:

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For ethics concern, please contact:
University's Research Ethics Committee
researchethics@uwe.ac.uk

Appendix B

Participant Information Sheet

(A corresponding Mandarin copy will be provided during the data collection)

Information about the project:

This PhD research project aims to investigate the Short Food Supply Chains and sustainability linkages in the context of China.

Who is organizing the study?

The study is organised by the University of the West of England (UWE). The researcher is Meng Wang, conducting this research in the pursuit of her Ph.D. and being supervised by Prof. Vikas Kumar, Prof Mohammed Saad and Dr Ximing Ruan from University of the West of England.

Why have I been chosen?

You have been selected due to the nature of your work and/or involvement in the Short Food Supply Chains.

Do I have to take part?

No. Participation is voluntary.

What will it involve, if I participate?

We would like to ask questions and learn more about your involvement in Short Food Supply Chains, how it influences your life, and your attitudes towards it. The interview will be conducted in person and will take approximately 30 minutes.

What are the risks associated with this project?

We do not expect there to be any risks, discomfort, or harm in participating in this study. Previous experience has shown that participating in such studies

can help you get more insights on your own experience by sharing it with the researcher. We anticipate that this research will have the same effect.

Ethics:

The ethical considerations of the research at the University of the West of England are controlled by the Research Ethics Committee. They protect your safety, rights, wellbeing and dignity. This study has been reviewed and given permission to proceed.

Data protection and confidentiality:

In processing your personal information, we follow the terms and conditions of the 2016 General Data Protection Regulation. We will hold your data securely in a locked cabinet and upload to the H Drive of XA UWE system, both sources will be access restricted to corresponding researchers only, and not make it available to any third party unless permitted by yourself or required to do so by law.

Withdrawal options:

You can withdraw your participation, including after you have taken part in the research, at any time until three weeks after the completion of the interview. You only need to inform the researcher via any channel (see contact details below) and your contribution will be removed.

What will happen with the results of the study?

Data such as extracts and notes from the recorded interviews may be published in the PhD thesis and/or used in other academic works such as journal or conference paper. Digital data will be encrypted and, along with any notebooks, stored in a locked cabinet in the corresponding researcher's office for a maximum of 3 years.

Researcher contact details:

If you have any questions about the research or would like to know what we find out, please contact:

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For ethics concern, please contact:
University's Research Ethics Committee
researchethics@uwe.ac.uk

Appendix C

Interview for farmers

Name of the Interviewer: _____ Date: _____

Farmer ID:

Farmer's Details:

Age: ☐ 18 - 25 ☐ 25 - 40 ☐ 40 - 50 ☐ 50 - 60 ☐ Over **60**

Gender: ☐ Male ☐ Female

Education: ☐ Primary School ☐ Secondary School ☐ High School
☐ Undergraduate ☐ Others

Produce Details:

Years in farming:

_____

Number of co-workers:

_____

Main crops grown:

_____

Other crops grown:

_____

Transportation:

Estimated distance between farm and selling venue:

☐ Below 10 km ☐ 10 – 30 km ☐ 30 – 50 km ☐ Above 50 km

Means of transportation:

☐ Trailer ☐ Van ☐ Logistic Company ☐ Others

If others, specify: _____

Produce Sale:

Mode of sale:

☐ Conventional ☐ Farmer Market ☐ Farm Shop ☐ Others

If others, specify: _____

Reason for selected mode:

☐ Immediate payment ☐ Less chance of malpractices ☐ Right price

☐ Time saving ☐ Customer Interaction ☐ Others

If others, specify: _____

Average waiting time for sale:

☐ Within 1 day ☐ 1 – 3 days ☐ 3 – 7 days ☐ Others

If others, specify: _____

(Optional) Estimated annual/monthly revenue: _____ Yuan

Questions:

SFSCs: Any forms of re-joining farmers and consumers with minimized number of intermediates, e.g. farmer market, farmer shop, and community supported agriculture.

Have you tried practice similar to any forms of SFSCs? If yes, please briefly describe it.

_____

_____

Five dimensions of Sustainability

Social

Do you receive any support from the local government and/or other organisations?

_____

_____

Evaluate your relationship with other fellow farmers. Do you cooperate frequently or are competing in price?

_____

_____

Do you feel you are helping with the development of rural area? Do you receive any governmental help for this?

_____

_____

Do you have many return customers? Do you feel any personal connection with customers?

_____

_____

Do you enjoy the selling atmosphere? How often do you chat with the customers?

_____

_____

Economic

Do you feel this mode of sale is economically viable?

_____

_____

What's the changing tendency of your revenue?

_____

_____

Do you think selling locally is more beneficial than other mode?

_____

_____

If you can gain about 10% more when changing to anther sale mode, will you be happy to accept the change?

_____

_____

Environmental

Do you use chemical pesticide in the farms? If yes, how often do you use? Do you follow the instruction when using pesticide, or by experience?

_____

_____

Have you heard of biodiversity? How many produces do you plant?

_____

_____

What's your opinion on the effects of SFSCs on the environment? Do you think it is environmentally sustainable or not?

_____

_____

Cultural

Can you evaluate the importance of trust or social connection in your business?

_____

_____

What's your attitude towards sustainable agriculture?

_____

_____

Governance

Are there any authorities involved in your farming and selling process?

_____

_____

If there are some authorities involved, do you feel they are supportive to your activities?

_____

_____

Is there any examination on the quality of your produce before selling?

_____

_____

Sustainable livelihoods framework

Human assets

Number of family members: _____

Highest education in the household:

☐ Primary School ☐ Secondary School ☐ High School ☐ Undergraduate ☐ Others

Do you have other works aside from farming?

☐ Yes ☐ No

If yes, please specify: _____

Do your family members have other works aside from farming?

☐ Yes ☐ No

If yes, please specify: _____

Estimated annual/monthly expenditure: _____ Yuan

Has your family received any form of support from official organizations?

☐ Yes ☐ No

If yes, please specify: _____

Natural assets

How much land do you have for cultivation?

_____

_____

Did your household expand land in the recent 2-3 years?

_____

_____

Financial assets

Has your household received financial support from any organizations?

_____

_____

Physical assets

Do your family have easy access to the road, markets, and other services and facilities?

_____

_____

Has the road/transportation improved in your village in recent 2-3 years?

_____

_____

Has the education condition and facilities been improved in recent 2-3 years?

_____

_____

Social assets

Have your skills in farming activities been improved in recent 2-3 years?

_____

_____

Can you evaluate the importance of women's participation in farming?

_____

_____

In general, are you happy about your life during the recent 2-3 years?

_____

_____

Can you get help from your fellow farmers when needed, for example, if you need extra money because someone in your family is sick?

Appendix D

Questionnaire

Information letter

You are being invited to take part in a research study. Before you decide whether to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully.

This research is focused on investigating the linkages of Short Food Supply Chains (SFSCs) practices with sustainability. In this regard the study aims to understand the buying behaviours and motivations of consumers towards local fresh food shopping activities. The results of the study should help to analyse whether SFSCs benefit local economy and promote sustainability initiatives.

The online questionnaire includes two sections. The first section is designed to assess motivations and intentions towards taking part in SFSC activities from the five dimension of sustainability perspectives (environmental, social, economic, cultural and governance). In the second part, the survey presents some socio-demographic questions describing the participants. This questionnaire should take around 5-10 minutes to complete.

We do not expect there to be any risks, discomfort, or harm in participating in this study. Previous experience has shown that participating in such studies can help you get more insights on your own experience by sharing it with the researcher. We anticipate that this research will have the same effect. In processing your information, we follow the terms and conditions of the (EU) 2016/679 the General Data Protection Regulation (GDPR), the Data Protection Act 2018 (or any successor legislation) and any other legislation directly relating to privacy laws that apply. We will hold your data securely and upload to the H Drive of XA UWE system, both sources will be access restricted to corresponding researchers only, and not make it available to any third party. It

should be noted that this online survey research is totally anonymous. Data from the questionnaires may be published in the PhD thesis and/or used in other academic works.

It is up to you to decide whether to take part in this research study. If you decide to take part you are still free to withdraw at any time and until two weeks after the data collection is over.

If you understand the above information and agree to complete the questionnaire, please tick the yes box below.

☐ I confirm that I understand the information and agree to complete the questionnaire.

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In order to have a good understanding of this survey topic, please allow me to briefly explain what is short food supply chains (SFSCs)?

Supermarkets, as outlets for consumers, is one typical node in the long food supply chain. Usually, this kind of food system is based on a large-scale, industrialized agriculture with an increase use of fertilizers and pesticides. The food quality scandal and local productivity issues raise up in the long and conventional food system. SFSCs, as somehow oppositional to the conventional food system, has emerged to improve the sustainability of the food system and livelihoods of small-scale farmers. Generally, SFSCs refers to any forms of re-joining customers and farmers that can be characterized by short distance or minimized number of intermediates. There are different types of SFSCs such as the face-to-face (farmer market, farmer shop, box schemes), proximate (tourist enterprises), and extended (certification labels). This research however concentrates on the consumers' motivations and attitudes

towards face-to-face SFSCs thus, to help investigate productivity and sustainability of local food system.

1. Please select the SFSCs venue for fresh food that you normally visit or would be interested to visit if given the opportunity (multiple choices).

☐ Farmer Shop ☐ Farmer Market ☐ Roadside sales ☐ Pick-your-own

☐ Others ☐ I am not interested in buying locally

If others, specify: _____

If none, please briefly explain the reason: _____

Please answer the following questions keeping in mind your experiences of buying from the above venues. Please rate your opinion using the five-point Likert-scale. (1: Highly disagree, 2: Disagree, 3: Neutral, 4: Agree, 5: Highly agree, use the values between the two end points to moderate your opinion).

2. Please express your opinion when buying fresh food locally. Please rate your opinion.

	1	2	3	4	5
I think it's convenient to buy fresh food locally.					
I prefer to buy locally cause I can interact with farmers.					
Buying locally makes me feel that I can contribute to farmers' livelihoods.					
I prefer food travel less distance that is good for environment.					
I trust local produced food.					

Sustainability: This section will ask questions about your opinions of buying food from the perspectives of the five dimensions of sustainability (environmental, social, economic, cultural and governance).

Environmental sustainability

3. To what extent does your buying decision is influenced by these environmental factors?

Factor	1	2	3	4	5
I feel contributing to increase in local biodiversity by buying locally.					
I feel in power to influence farmers to use sustainable farming practices.					
I believe locally produced food contains less packaging waste.					
I prefer buying locally because the carbon footprint is low.					

Economic sustainability

4. To what extent does your buying decision is influenced by these economic factors?

Factor	1	2	3	4	5
I prefer buying locally as I believe famers get higher share of the profits.					
I think buying locally contributes to the local economy.					
I prefer buying locally as I can access high-quality food with fair price.					
I prefer buying locally because I think it improves quality of life, for farmers and for society.					

Social sustainability

5. To what extent does your buying decision is influenced by these social factors?

Factor	1	2	3	4	5
I prefer buying locally as it offers me opportunity to have social interaction with farmers.					
I feel my voice has been heared if I buy locally.					

I think buying locally can improve food quality and farmers empowerment simultaneously.					
I feel I contribute to improve the farmer's socio-economic conditions.					

Cultural sustainability

6. To what extent does your buying decision is influenced by these cultural factors?

Factor	1	2	3	4	5
I believe in buying locally as I have a great understanding of locally grown agricultural products.					
I prefer buying locally as I can touch and feel the products and choose the one I like.					
I choose to buy locally because I have greater trust in locally grown products.					
I prefer buying locally as I get a chance to bargain.					

Governance in sustainability

7. To what extent do you agree with the following factors describing the governance effects in SFSCs?

Factor	1	2	3	4	5
I feel confident in buying local food products if there is a certification body reinforcing the product quality.					
Buying locally offers opportunity for customers to participate in food quality requests and check.					
I think farmers consumers interactions could be an alternative to certification bodies in food supply chains.					
I think consomers can help to deal with unsold products by buying them at discounted price.					

Moral economy: Rather than emphasis on rational choices, consumers consider social relationship as a primary characteristic, they'd like to support local economy and development. e.g., local development, fair trade, animal welfare.

8. To what extent does your buying decision is influenced by moral economy when buying locally?

Factor	1	2	3	4	5
I prefer buying locally as it offers fair trade for local farmers.					
I trust in buying locally because I can check the good standards of animal welfare.					
I think buying locally can address environmental concerns.					
I think buying locally can support local farmers and local development.					

Personal relationship and personal trust

9. To what extent do you agree with the following factors describing the personal relationship and trust in SFSCs?

Factor	1	2	3	4	5
I prefer buying locally because it appears more trust worthy due to direct communication with producrers.					
I prefer buying locally as I think its important to develop personal relationship with producers.					
I think buying locally helps to increase social inclusivety.					
I think the personal relationship motivates farmers to produce healthy and safe food.					

SFSCs

10. To what extent do you agree with the following factors describing the influence of SFSCs?

Factor	1	2	3	4	5
I think SFSCs can positively influence social sustainabilty.					
I think SFSCs can positively influence environmental sustainabilty.					
I think SFSCs can positively influence economic sustainabilty.					
I think SFSCs can positively influence cultural sustainabilty.					
I think SFSCs can positively influence governance sustainabilty.					
I think SFSCs can positively influence moral economy.					
I think SFSCs can positively influence Chinese relationship.					

Demographic Information

11. Please select your gender.

☐ Male ☐ Female

12. Please select your age group.

☐ 18 - 24 ☐ 25 - 34 ☐ 35 - 49 ☐ 50 - 64 ☐ 65+

13. Please select your highest education level/qualification.

☐ Primary School ☐ Secondary School ☐ High School

☐ Undergraduate ☐ Postgraduate ☐ None

14. Please specify the size of your household _____ people (including yourself).

15. Please select the type of the settlement you live in.

☐ Rural ☐ Urban ☐ Mixed-urban

16. Please estimate your shopping frequency for fresh food (per week).

☐ Less than 1 ☐ 2 - 3 ☐ 3 - 5 ☐ More than 5

17. Please select your most frequently used form of buying locally?

☐ Farmer Shop ☐ Farmer Market ☐ Roadside sales

☐ Pick your own ☐ Others

If others, specify: _____

18. What is your usual means of transportation for shopping at the above selected venue.

☐ Walk ☐ Cycle ☐ Car ☐ Public transportation ☐ Others

If others, specify: _____

19. Please estimate the travel time from your house to the above selected venue.

☐ Less than 5 mins ☐ 6 – 15 mins ☐ 16 – 30 mins ☐ Longer than 30 mins