

RESEARCH ARTICLE

User-driven supply chain business model innovation: The role of dynamic capabilities

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Abstract

This research explores how focal tea companies facilitate supply chain business model innovation (SCBMI) to meet consumer demands and achieve sustainable development. By applying a case study method and dynamic capability theory, we find that: (1) the end-user innovation-driven is the precondition for tea SCBMI; (2) the user-driven innovation leads to the change of the supply chain focal company dynamic capabilities and the tea supply chain network structure, and thus promote the tea SCBMI; (3) SCBMI will, in turn, enhance the focal company's dynamic capabilities and promote the change of tea supply chain network structure in order to meet the consumers' changing demands. Our research suggests that the supply chain should pay attention to the construction of dynamic capabilities and proactively manage supply chain network structure. Ultimately, the entire supply chain business model will continuously adapt to the external changes and achieve sustainable development in the long term.

KEYWORDS

business model innovation, dynamic capability, supply chain business model, tea supply chain, user-driven innovation

1 | INTRODUCTION

Companies are operating in a constantly changing environment (Christopher & Holweg, 2011). To cope with the external dynamics, every company in the supply chain needs to continually change its business models on value creation, value delivery, and value capture (Teece, 2010; Trkman et al., 2015). The call for dynamic capabilities to respond to these changes requires new business models, which not only refer to high-tech industries but also traditional sectors such as the tea sector.

China is the world's largest tea-growing country with more than 3000 years of tea drinking cultural history.¹ Along with the "Belt and Road Initiative (BRI)" proposed by the Chinese government in 2013, the tea industry has met fantastic opportunities to develop further (Li, 2018). In 2017, the total area of tea gardens in 18 tea-producing provinces (regions) nationwide was 45.887 million mu,² accounting for about 50% of the total area of world tea gardens. The output of tea reached 2.55 million tons, an increase of 6% over the previous

year, accounting for 33.3% of the world's tea production.³ Tea exports in China account for about 20% of the world's total tea trade.⁴ China has become a crucial focus in the global tea market. However, China still faces many challenges, such as the farmers' low profitability, hard to meet international regulations, and facing different cross-border cultures in tea exporting (Xue et al., 2018).

Many tea firms are willing to change the current business model and achieve sustainable competitive advantages (Bocken et al., 2014; Lin & Xiong, 2016; Zhang & Zhao, 2018). The external environmental factors, including macroeconomic issues, market conditions, fluctuations in end-user demand, negatively affect tea supply and demand (Christopher & Holweg, 2011; Pereira et al., 2014; Tanco et al., 2015; Trkman & McCormack, 2009). Adopting a suitable and successful business model helps firms better meet internal and external uncertainties (Trkman & McCormack, 2009; Christopher & Holweg, 2011; Pereira et al., 2014; Tanco et al., 2015). Research further suggests that supply chain business model innovation (SCBMI) is needed to adapt

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to such changes rather than based on individual companies (Trkman et al., 2015).

Most of the research on the driving factors of the evolution of the supply chain business model revolves around technology, price, etc. (Bocken et al., 2013). With the increasing degree of market openness, diversification and individualized consumer demands urgently require the supply chain to find new ways to respond quickly to such needs (Guo & Liu, 2016). However, most supply chains cannot adapt quickly to changing markets and environments (Christopher & Holweg, 2011). Therefore, the supply chain business model should continually develop dynamic capabilities to respond to rapidly changing environments and consumer needs (Teece et al., 1997). Dynamic capabilities have been defined by Trkman et al. (2015, p.589) as “the ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments and to achieve new and innovative forms of competitive advantages.”

In general, business models have been explored from individual companies' perspective (Stubbs, 2019). There is a lack of research on supply chain business models (Trkman et al., 2015), not to mention the evolution of the SCBML. The existing tea literature focuses on tea production and quality (Han et al., 2017), international trade (Du, 2018), drivers of corporate social responsibility of tea supply chain (Mzembe et al., 2016) and eco-control procedures (Gunaratne & Lee, 2020). Few research has been conducted on the tea sector's supply chain business model. China in particular, to explore their dynamic capabilities to meet changing customer demands. Thus in this research, we aim to fill this gap and to answer the following research question:

How tea supply chain business model innovate in order to meet changing customer demands?

In order to answer the research question, we applied a case study method and dynamic capability theory to conduct this research. We find that the end-user innovation-driven is the precondition for the tea SCBML; user-driven innovation leads to the change of the dynamic capability and supply chain structure and promotes the tea SCBML; dynamic capability, supply chain structure and supply chain business model co-influence each other. Our research extends the business model discussion from a company level to the supply chain level and from statistic to dynamic perspective.

The rest of the paper is organized as follows: Section 2 provides a review on the relevant literature; Section 3 presents the detailed case study research design; Section 4 provides the detailed case analysis; Section 5 carries out the discussion, and finally Section 6 concludes with contributions and limitations.

2 | LITERATURE REVIEW

This section provides a literature review on the supply chain business model; then we review user-driven innovation and dynamic capabilities and link them to SCBML; finally, we propose an initial theoretical framework to facilitate our data collection and analysis.

2.1 | Supply chain business model

A business model reflects that an organization creates, delivers, and captures values in concert with transaction partners (Teece, 2010; Zott & Amit, 2010). Choosing a right business model helps a firm manage resources to deliver best values to its customers (Teece, 2010), in terms of organizational content, structure, and governance of transactions (Zott et al., 2011).

Researching the supply chain business model is still in a preliminary stage. In reflection of lacking clarity of this concept, Benson-Rea et al. (2013) believe that multiple business models coexist in the supply chain. Huemer (2012) points out that different supply chains use different business models, while Trkman et al. (2015) indicates that a supply chain should use one business model. Combining with the results of the above scholars and the connotation of supply chain, this paper reference Tsanos et al.'s (2014) point of view, such that the supply chain business model is the entire supply chain of each enterprise business model to meet the end user's demand and the supply chain as a whole on how to integrate resources to meet these needs and generate profits.

The business model is a system of multiple components such as value proposition, products and services, and value networks (Hwang & Christensen, 2008). The business model's focus is a value proposition allowing stakeholders to create values in consideration of external and internal needs, for example, environment, social, customers, shareholders, and suppliers (Bocken et al., 2013; Donaldson & Preston, 1995). We follow Trkman et al. (2015) to select and focus on six elements of the supply chain business model (see Table 1)—process, end customer, partner, employee, product and environment. The interaction of factors enables each node in a supply chain to enhance flexibility and sustainability by adapting internal processes, providing products, improving employee skills, and appropriately linking them to external activities of partners and customers (Kamal & Irani, 2014; Wiengarten & Longoni, 2015).

2.2 | User-driven and supply chain business model innovation

The innovation of supply chain business model has a significant impact on supply chain operations (Yang et al., 2018). Consumer demand is a key source of innovation, and user-driven innovation posits that innovation is driven by users' needs, ideas, and opinions. It is the result of close collaboration with users (Baldassarre et al., 2017; Baldwin & von Hippel, 2011). User-driven innovation identifies business opportunities and develops new concepts by involving different groups of customers and potential users (Baldwin & von Hippel, 2011). Lehtonen and Tuominen (2011, p. 227) define user-driven innovation as “starting with user needs or enticing users to become drivers in the evolution of business models.” Similarly, Sheth et al. (2000) argue that in markets where user needs and demand are increasingly diversified, supply must be rapidly adjusted to meet demand, that is, implementation of customer demand-driven supply

management. The evolution of user-driven innovation in the supply chain business model is gradual and has the guidance of potential users to ensure that new business models are viable, saving time and resources in the SCBMI (Blank, 2020; Brown & Katz, 2011). In general, companies in the supply chain can identify key user needs and behaviors by gaining access to key market information through in-depth communication with users (Liang et al., 2017).

TABLE 1 Six elements of supply chain business model

Elements	Contents
Processes	It clarifies who should do what, what time to do, how to do it (Sun, 2015). Process management pays attention to customer needs, the convergence of activities, the supply chain coordination, and overall output to achieve overall smoothness, control, and optimization.
End customers	Refers to the supply chain end customer who purchases or uses the products or services. Companies in the supply chain need to constantly understand the needs of end customers to provide customers with the corresponding products or services (Jeffers, 2010; Trkman, 2010).
Partners	Refers to inter-organizational management and business partners. Dynamic partnerships can reconfigure assets and other capabilities to respond to changes in the external environment (Pavlou & El Sawy, 2011).
Employees	Supply chain employees are the employees of the supply chain companies. Employees play an important role in improving organizational performance, modernize operations management practices, and enhancing collaboration among stakeholders (Jabbour et al., 2013).
Products	Developing and launching new products is critical to maintaining a competitive advantage of the supply chain. The supply chain should provide a wide range of products to meet customers' changing needs and track and trace customer experiences to design, locate, and update products based on end-user feedback (Musa et al., 2014).
Environment	The environment covers a wide range of factors such as politics, economy, and technology, which significantly affect the supply chain's overall operation nature (Melnik et al., 2013). The supply chain environment is not just the focal company's environment but the supply chain as a whole.

Source: Trkman et al. (2015).

2.3 | Dynamic capabilities and SCBMI

Adopting a specified business model is associated with market competition (Velu, 2017), including creating customer value and improving delivery of the value (Fligstein, 1996; Geroski, 1998; Humphreys, 2010). Firms need to consider the change of business models in adaption to market change (DaSilva & Trkman, 2014).

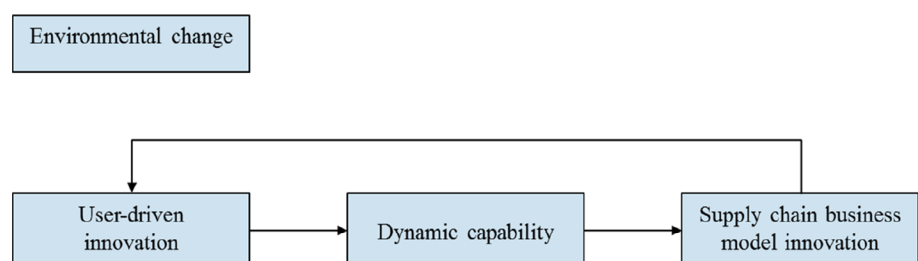
Players in different tiers of a supply chain should closely collaborate with their business partners, including knowledge sharing (Gong et al., 2018), to increase the business model's willingness (Casadesus-Masanell & Ricart, 2011). The dynamic capabilities of firms refer to managing resources in each node across a supply chain in adaption to the changing business environment (Teece, 2014; Wilden et al., 2013).

Dynamic capabilities are unique, heterogeneous, and of value, scarcity, complexity, and difficulty in substitution, subjective initiative (Teece et al., 1997) as a source of competitive advantage (Eisenhardt & Martin, 2000) to offer differentiated services and products to customers (Teece, 2007, 2014; Vanpoucke et al., 2014). Synergies between business model elements are a crucial foundation to build up dynamic capability by offering the ability to perceive, capture, and shape opportunities and reconfigure the elements of business models (Teece, 2012; Zhang et al., 2020), which match or trigger market changes (Eisenhardt & Martin, 2000).

2.4 | Analysis framework

To conclude, there is limited research on supply chain business model, not to mention from an evolution perspective and with a multiple-tier focus (Gong et al., 2018; Trkman et al., 2015). The dynamic capability has been explored (Zhang et al., 2020). However, the mechanisms of how it has been integrated into SCBMI is still unclear, which worth further research. The changes in the market environment and user demand are the main external factors driving the evolution of the supply chain business model, and the dynamic capability is the primary internal factor for the supply chain companies (each node enterprises) to effectively respond to the changes in user demand (driven) supply chain business model. In order to construct the theoretical model of user-driven innovation, dynamic capabilities, and SCBMI, this paper, based on findings by Teece (2012), divides the SCBMI process into three stages: identifying users' demand and environmental change, perceiving opportunities and threats; apply dynamic capabilities to

FIGURE 1 User-driven supply chain business model innovation framework [Colour figure can be viewed at wileyonlinelibrary.com]





mobilize resources to seize opportunities; and constantly updating organizations and evolving the six elements of supply chain business model, as shown in Figure 1.

3 | METHODOLOGY

We apply a case study method for this research: (1) this method is suitable for exploring an under-researched topic (Eisenhardt, 1989; Miles & Huberman, 1994). (2) The method is to explore a causal relationship of constructs in a complicated situation (Yin, 2008). With regard to SCBMI, it is required a deep analyze the interaction between upstream and downstream enterprises in the supply chain. Thus a case study method is appropriate in such context.

3.1 | Case selection

This paper selects the Hunan Tea Group as the focal company and its tea supplier bases in Guzhang county and Shimen county in Hunan Province, China. First, Hunan Province is an important tea production region in China, and the tea production amount ranks second in the country. Second, tea is a major economic crop in Hunan, one of the pillar industries of Hunan's rural economy, and the second-largest export-oriented agricultural product in Hunan. Third, both Guzhang and Shimen counties are the core tea-producing areas in the tea supply chain of Hunan Province. Finally, the case company has gone through a series of supply chain business model changes that fit our theoretical selection criteria.

TABLE 2 Details of data sources

Data sources	Supply chain actors	Job title of interviewees	Time	Location
Interviews	Focal Company	Deputy General Manager of Hunan Tea Group Co., Ltd.	09/2017	Changsha, Hunan
	Subsidiary 1	General manager	12/2017	Guzhang county, Hunan
	Subsidiary 2	General manager	12/2017	Guzhang county, Hunan
	Subsidiary 3	General manager	12/2017	Shimen county, Hunan
	Subsidiary 1	General manager	08/2018	Guzhang county, Hunan
	Cooperative 1	Director	12/2017	Guzhang county, Hunan
	Cooperative 2	Director	12/2017	Guzhang county, Hunan
	Cooperative 3	Director	12/2017	Guzhang county, Hunan
	Cooperative 4	Director	12/2017	Guzhang county, Hunan
	Cooperative 5	Director	12/2017	Shimen county, Hunan
	Cooperative 6	Director	12/2017	Shimen county, Hunan
	Cooperative 7	Director	12/2017	Shimen county, Hunan
	Cooperative 6	Director	04/2018	Shimen county, Hunan
	Cooperative 6	Director	12/2018	Shimen county, Hunan
	Cooperative 2	Director	12/2018	Guzhang county, Hunan
	Association	President of the tea association	12/2017	Guzhang county, Hunan
	Government	Director of the tea bureau	12/2017	Guzhang county, Hunan
	Tea farmer	Tea farmers 1	12/2017	Guzhang county, Hunan
		Tea farmers 2	12/2017	Guzhang county, Hunan
		Tea farmers 3	12/2017	Shimen county, Hunan
Archives	<ul style="list-style-type: none"> Hunan Statistical Yearbook Yangheshan Tea Cooperatives Charter Shimen Tianhua Luoping Organic Tea Conversion Record of Farming Activities Changde Shimen Zhongping Tea Professional Cooperative Organization Structure Information Pancao Tea Farmers Professional Cooperatives 2013–2018 Tea Industry Development Plan Review on the development of Panzhou tea farmers' professional cooperatives Hunan Tea Group Co., Ltd. Introduction Manual, News Interview Record 			
	Field observations	Tea gardens	4	
		Tea factories	3	
		Tea cooperatives	5	
		Tea companies	3	
		Tea association	1	

3.2 | Data collection

Eisenhardt and Graebner (2007) suggest that interviews are a highly efficient way to gather rich, empirical data, especially when the phenomenon of interest is highly episodic and infrequent, tacitly stored in interviewees' minds. From September 2017 to December 2018, the research team conducted field investigations in Hunan Province, and collected data using two semi-structured interviews and secondary archival materials. The interviews are mainly targeted at, Hunan Tea Group Co., Ltd., tea leaf company, cooperatives and tea farmers, and the government sector (tea bureau). We stopped the interviews when the theoretical saturation was reached (Eisenhardt, 1989). That is, further interviews did not provide new information for understanding the research questions. In total, 20 interviews were conducted. Most interviews lasted about one hour, although some lasted more than two hours. All interviews were recorded and transcribed. Further contacts were made by phone calls or WeChat when we have any queries in the data analysis stage.

Besides the formal interviews, some informal interviews/conversations are made during our field visits to tea gardens, tea factories, tea companies, and cooperatives. The data is stored in the database along with any digital information provided by the respondents. Photos are also taken where they are allowed, and we use them as reminders of live experiences and provide different data sources. Archival data is also widely collected, including company websites, news reports and company internal documents. These multiple data sources are used as a means of data triangulation (Eisenhardt, 1989). Table 2 lists the interview details, seven core pieces of secondary data and 16 times of field observations.

3.3 | Data analysis

This paper follows the qualitative data analysis method to process the collected data. The audio data obtained by the research team was converted into text data within 24 hours. The archive materials obtained from companies, cooperatives, etc., were classified according to the sources.

Next, based on the research framework of Figure 1, this paper encodes and analyzes the qualitative data accordingly. Coding was done via an iterative process with both the interview transcripts and secondary data by co-authors independently, and notes were compared. Agreements were reached for all the constructs and relationships after many rounds of discussions.

Pratt (2009) argues that qualitative research may establish new theories or elaborate existing theories. We researched these two aspects: we have a prior framework based on literature (as in Figure 1), which according to user-driven innovation, dynamic capabilities, and SCBML. We also followed the new patterns merged from the data, such as supply chain structure, a new and important construct that emerged from our data analysis, which has been referred to as the shape and form of the supply network (Christopher & Holweg, 2011). The whole data analysis process is iterative, coming back and forth between data and literature.

Constructs were labeled according to the literature. For example, user-driven innovations are coded based on Lehtonen and Tuominen's (2011, p. 227) user requirements, such as tea demand, tea quality, etc.; dynamic capabilities are based on Teece (2012)'s the division of dynamic capability processes, for example, perceiving opportunities, mobilizing resources to seize opportunities and transform by constantly updating the organization and related business models; SCBML is based on the six-element dimension of the supply chain business model of Trkman et al. (2015).

To further ensure the reliability and validity of the case analysis structure, we refer to Yin's (2008) four tests on construction

TABLE 3 Research strategies for ensuring reliability and validity

Inspection	Tactics	Strategy usage phase	Specific practice
Construct validity	Triangular verification	Data collection	In-depth interviews, archival materials, site visits to tea gardens, tea companies, etc.
	Evidence chain	Data collection	Get the interview information, extract the related concepts from literature, construct the theory preliminarily, collect the data again for verification and correction, and form the theoretical model.
Internal validity	To present an explanation, follow literature review	Data analysis	Propositions are proposed through interpretation and data iteration.
	Analysis of potential other explanations	Data analysis	Discuss among the researchers whether the propositions are reasonable.
External validity	Theoretical guidance case study	Research design	Review of relevant theories to guide data collection.
Reliability	Specific research plan	Research design	The researcher put forward the research plan and follows the consistent interview protocol.
	Repeated data analysis	Data analysis	Analyzed by different researchers independently and agree among the constructs.
	Multiple data evidence presentation	Data analysis	Triangulation data from different sources.

Source: Yin (2008).

**TABLE 4** The stages of tea supply chain business model

Process	End customer	Partner	Employee	Product	Environment
S0 Hunan tea group purchase from local tea farmers and middle man. Management costs and storage costs are high.	The end customer is the domestic tea consumer, the consumption tendency is affected by the price.	Tea farmers produce individually; upstream supply channel instability.	Tea farmers lack knowledge, technical access channels, and technical level is difficult to improve, difficult to implement specialized labor division.	The product type is single; the output is low, the quality needs to be improved.	The upstream tea production specialization degree is insufficient; the downstream market competition is fierce.
S1 Forming the subsidiary mode of Hunan Tea Group to enhance supply chain management ability and overall response efficiency.	Solve the problem of increasing customer demand due to market expansion.	Tea farmers, subsidiaries have stable sales channels, and Hunan Tea Group establish a strong mutual benefit relationship.	The flow of technical personnel increases the convenience of obtaining local tea farmers' production knowledge and improves tea farmers' production enthusiasm and production technology.	To produce low-end products mainly; expand tea travel, tea and other additional products.	The local government encourages a focal company to merge, restructure and invigorate local enterprises. Hunan Tea Group has continuously increased investment in the industry, holding shares in more than a dozen tea companies.
S2 Hunan tea group manage subsidiary; subsidiary manage cooperatives; and cooperative manage tea farmers.	To meet the end of the customer to improve the quality of tea demand.	Hunan Tea Group provides series of services for upstream partners of the supply chain through the industrialization management mode of "subsidiary Company + Cooperative of Hunan Tea Group."	Tea farmers and cooperatives, subsidiaries of technical staff, managers in more close contact. Information communication to be more convenient and efficient.	Product standards are controlled, and product quality is improved.	National and local governments call for establishing agricultural cooperatives, which play an increasingly important role in the tea supply chain.
S3 It has profoundly changed the thinking consciousness and planting of tea farmers, reduced the use of pesticides and fertilizers, and strengthened the sampling and inspection of agricultural residues in cooperatives and subsidiaries.	Focus on tea quality and trade fairness, willing to spend more money on certified products, and transfer extra money to tea farmers through third-party organizations.	The lowest price protects tea farmers. Hunan Tea Group and third Party organizations provide certification services and technical guidance for tea farmers.	Tea farmers need to focus more on sustainability demands from end consumers, buyers, and importers.	The quality of products has been improved, and the quantity of tea products has increased greatly through international organic tea standards and fair trade organization access standards.	More emphasis on fairness and sustainability; the original supply chain needs to implement a series of fair trade principles.

validity, internal validity, external validity, and reliability as in Table 3.

4 | CASE ANALYSIS

This section provides the stages of the supply chain business model and the detailed evolution mechanisms.

4.1 | Stages of supply chain business model

4.1.1 | Stage 0 (1988–2005)

Since the 1990s, China's agricultural products supply shortage situation ended, agricultural products market shifted from the sellers' market to buyers' market. In the tea supply chain's traditional business model, integration of both upstream and downstream of the tea

supply chain is low, players in the supply chain could not build cooperative relationships and share market information. In addition, the upstream tea production is not diversified. Most of the tea farmers in decentralized operation lack technical support and market information channels, and have low-risk resistance (Huang, 2011), so they can only be limited to the backward production mode and trading mode (Zeng et al., 2018), which increases the operation cost and management cost in the operations process of the tea supply chain (Sun, 2018).

4.1.2 | Stage 1 (starting from 2005)

Around 2005, the expansion of overseas markets led to an increase in the number of end customers and a tea shortage. The focal company in the supply chain, Hunan Tea Group, cannot bear the order volume of 40–50 million US dollars of export value by itself. It is imperative to expand the upstream supply channel. Hunan Tea Group has incorporated a series of subsidiaries including Guzhang Organic Tea Co., Ltd. into the supply chain, and the subsidiaries have bridged the communication between the group and the tea farmers, thus reducing the management pressure of the head office and enhancing supply chain management capabilities and overall response efficiency.

4.1.3 | Stage 2 (starting from 2010)

With the continuous improvement of Chinese residents' living standards, the awareness of tea quality has improved without pollution and damages of pesticide (Guan, 2012). Hunan Tea Group and its subsidiaries in the tea supply chain have started to set up or participate in tea cooperatives. The establishment of cooperatives makes it convenient for subsidiaries to connect and manage tea farmers. The management of cooperatives by subsidiaries can solve production problems encountered by tea farmers, prevent and control possible quality problems, and further improve the quality of tea products entering the market, which is conducive to improving tea quality supervision. The tea farmers become more organized on training and development under the cooperative tea format.

4.1.4 | Stage 3 (2011–present)

Since the 21st century, countries in Europe and the United States have continuously increased their tea imports requirements. The export destination countries have increased the sampling inspection of China's tea pesticide residues and other indicators. At the same time, consumer awareness of the concept of sustainability has increased, and demand for sustainable products has increased significantly. Therefore, Hunan Tea Group has established a traceability system for high-quality export tea garden bases and attempted to meet fair trade organization certification requirements. Tea certified by the

Fair Trade Organization will be preferentially purchased by consumers, but the small tea farmers in the upstream of the tea supply chain will receive rebates paid by final consumers. Fair trade rebates can be used to develop business, purchase agricultural machinery and equipment to improve production and quality, or sustainable development projects to benefit producers' families and communities, such as building schools, health stations, roads, and supporting poverty college students, etc.

Our case demonstrates the changes of six elements of the supply chain business model. We can compare the four stages in Table 4:

Based on the above analysis, we find that the four stages of the supply chain business model can be summarized into three types of supply chain business models (as in Table 5). Supply chain structure is the new construct that emerged from our data analysis; we find that along with the changes of supply chain partners, the supply chain network changes correspondingly. Stage 0 of the business model is more traditional, so named traditional supply chain business model; In the 1 and 2 stages, based on the existing supply chain, focal company extends their value activities at both ends to the upstream suppliers, manufacturers, downstream channel operators and customers of the supply chain, to obtain the advantages of leading cost and differentiation. Therefore, they are named as extended supply chain business models (Zhao & Mao, 2017). Stage 3 is driven by the need for sustainability from end customers (especially foreign customers) and is therefore named a sustainable demand-driven supply chain business model. Table 5 provides the details on the evolution of the SCBMI stages.

4.2 | The evolution mechanism of SCBMI based on user-driven innovation, and dynamic capability

Table 6 provides the specific SCBMI mechanism. The results are consistent with Teece et al. (1997, p. 517), which is companies' ability to integrate, build, and reconfigure internal and external capabilities to respond to rapidly customer demands in a changing environment. The tea supply chain focal company is aware of and captures external environmental changes at different stages of development, timely and proactively integrates internal and external resources, reconstructs resources to adjust dynamic capabilities, and promotes the tea supply chain business model's innovation. To a certain extent, it denies Winter's view (2003, p. 991) that dynamic capabilities are "born, not acquired" and question whether they exist in practice.

SO, as a traditional business model, in a relatively static environment, the tea company cannot perceive turbulent environmental changes, and is only a random market transaction between the upstream and downstream of the tea supply chain, the relationship between members is loose, and the tea products lack innovation. It is only a natural tea product and has a single variety. As end-users increase their demand for tea consumption, Hunan Tea Group is aware of changes in the external environment. The tea company that annexes the tea producing area is a subsidiary, and through the subsidiaries, it contacts many tea farmers (tea farms) to increase the tea

**TABLE 5** Types of tea supply chain business models

Stage	Supply Chain business model		Characteristic	Evolution reason	Evolution mode
S0	Traditional supply chain business model		A long and complex supply chain with various dispersed supply chain partners.	—	—
S1	Supply chain extended business model	Focal company + Subsidiary Mode	Increase the value of the supply chain by incorporating the subsidiary into the supply chain.	With the booming tea export business, Hunan Tea Group cannot afford huge orders and expand upstream supply channels.	The leading enterprises in the supply chain set up subsidiary companies in each region of the province to increase the supply chain's value by bringing the subsidiary companies into the supply chain to extend their value activities.
S2		Focal company + Subsidiary + Cooperative Mode	Extend their value activities by adding value to the supply chain by incorporating cooperatives into the supply chain.	Tea market demand; increase in the number of tea farmers, training, quality control inconvenient; the state called for the establishment of professional rural cooperatives.	Supply chain integration through cooperation with cooperatives and bring them into the supply chain.
S3	Sustainable demand-driven supply chain business model		The evolution of the supply chain business model takes consumer demand as the starting point.	Consumers pay more attention to the fairness of trade and sustainability issues.	Apply for Fair Trade Organization certification, improve product quality, protect the environment, and tea farmers' rights and interests.

production. Hunan Tea Group gained a stable position in the downstream wholesale market.

On the one hand, the subsidiary has established its own tea base; on the other hand, it has carried out technical guidance and training for tea farmers (tea farms), and developed a new variety of tea to a certain extent, but low-end tea products still dominate this stage. Simultaneously, relying on the tourism resources of Guzhang, tea tourism projects with tea picking experience, tea meal and tea drink as the theme are developed, which promotes the tea supply chain business model from traditional S0 to extended S1. The relationship between the upstream tea farmers (field) and the downstream wholesale market has changed from loose to medium tight. To a certain extent, it has improved Hunan Tea Group's dynamic capacity and optimized the entire tea supply chain business model.

With the changes in the external market, end users are constantly demanding tea quality, and again Hunan Tea Group seized the changes in consumer demand and actively integrated resources. First of all, Hunan Tea Group is led by the subsidiary to form a cooperative or participate in tea cooperatives; secondly, the company hires tea experts to provide regular trainings to subsidiaries, cooperatives and tea farmers, and teaches tea garden management and tea product processing technologies; Subsidiary guidance (providing technology and knowledge) manages cooperatives, and cooperatives are responsible for training and supervising tea farmers (fields); downstream wholesale markets have their own stable sales

channels. At the same time, the company reconstructed the assets. For example, further refine tea varieties (black tea, green tea, black tea, yellow tea, etc.) and develop multi-tea business projects; further change the product quality supervision system, set up plant protection staff inside the cooperative, specialize in monitoring tea quality; develop new marketing channels, establish a new supply channel (overseas market). Driven by the end-user, and with the development of the dynamic capacity of Hunan Tea Group, it promotes the business model of tea supply chain from the S1 extended business model to the S2 extended business model, the relationship between the tea group, upstream subsidiaries, cooperatives, tea farmers and downstream wholesale markets has become closer and the entire business model of the tea supply chain has been optimized.

Finally, due to the increasing demand from overseas end consumers for fair trade certified products, many overseas buyers prefer sustainable orientated products such as "fair trade organisation certified" (Dimarcello et al., 2014). Hunan Tea Group is aware of the new needs of end-users and actively and proactively integrates resources. First, Hunan Tea Group actively seeks cooperation with fair trade organizations; secondly, Hunan Tea Group reconstructed the assets, it established product traceability systems for high-quality export tea garden bases; once again, it systematically trains cooperatives and tea farmers by the standards and requirements of fair trade organizations; some cooperatives join the fair trade organization after passing the green certification, and obtain fair trade rebates to support the public

TABLE 6 Tea supply chain business model innovation based on user-driven innovation and dynamic capabilities

	Dynamic capability				Tea supply chain business model
	User-driven innovation	Environment perception	Resource integration	Resource reconstruction	
S0	—	—	Hunan Tea Group conducts market transactions with upstream tea farmers (farms) and downstream wholesale markets. Loose relationship.	A common, single tea product (green tea and other teas)	Traditional business model
S1	End consumer tea consumption demand increases “The consumer base is continuously growing with more people drinking different types of teas.” “Tea exporting business start from 0 to 40-50 million dollars.”	Perceived an increase in tea demand	Hunan Tea Group establishes subsidiary company or holding shared in regional tea companies and contacts tea growers. There are relatively stable sales channels in the downstream wholesale market. The relationship is changed from loose to medium tight.	Adjusted the structure of tea products, mainly middle and low-end tea products, such as black wool tea; Establishment of Tea Production Base; Developed Tea Travel Project (Tea Collection Experience, Tea Dinner, and Tea Drinking)	Supply chain extended business model I: Hunan Tea Group + Subsidiary Problems have arisen (with the increase in the number of tea growers, the company's training pressure on tea growers is high and inadequate; the supervision of tea growers is not up to date)
S2	End consumers have higher requirements for tea quality “Consumers are looking for quality teas at this stage, and some even would like to purchase organic teas”	Perceived the improvement of tea demand quality	Hunan Tea Group appoints subsidiary to take the lead in establishing cooperatives or cooperating with cooperatives. Hunan Tea Group hires tea experts to regularly teach cooperatives and tea farmers. The subsidiary guides (provides technology and knowledge) and manages the cooperatives. The cooperatives are then responsible for training and supervising tea farmers (farms). The downstream wholesale market has stable sales channels. The relationship changed from medium tight to tight	Further refine tea varieties, multi-tea management (Dark tea, Green tea, Black tea, Yellow tea, etc.); Setting up quality assurance staff inside the cooperative, especially responsible for monitoring the quality of tea; Establishment of New Sales Channels (Overseas Markets).	Supply chain extended business model II: Hunan Tea Group + Subsidiary + Cooperative
S3	End consumers have sustainability requirements “Foreign consumers have large demands on Fair Trade labelled teas. They put more requirements on us regarding environmental protection, working conditions etc.”	Perceived demand for Fair Trade Certified Tea	Cooperation between Hunan Tea Group and Fair Trade Organization; by the standards and requirements of Fair Trade Organization, Hunan Tea Group organizes cooperatives and tea farmers for training; Fair Trade Organization is responsible for fair trade certification of cooperatives; there are stable sales channels in downstream wholesale markets (such as overseas markets). Transformed into a close relationship	Establishing the base of high-quality export tea garden and traceability system; After passing green certification, some cooperatives join Fair Trade Organization; Access to Fair Trade rebates, to support the construction of schools, medical and health stations, bridges and roads, poverty-stricken college students and other sustainable development projects.	Sustainable demand-driven supply chain business model

goods. Finally, the Fair Trade Organization is responsible for the fair trade certification of the cooperative's tea products.

Fair trade certification offers important prospects to improve the livelihoods of small-scale farmers. These forms of certified production could provide economic and social benefits when farm income is the main source of household income (Qiao et al., 2016). Promote the tea supply chain business model from the S2 extended business model to the S3 sustainable demand driven business model, the relationship between the tea group and upstream subsidiaries, cooperatives, tea farmers (field), downstream wholesale markets and fair trade organizations become a close mutual benefit and win-win situation, which can promote the business model of the entire tea supply chain to be more sustainable.

5 | DISCUSSION

Our findings indicate that the tea supply chain needs to redesign and rethink its business model because of the change of final customer demands (Lau et al., 2010). The supply chain focal company needs to have the dynamic capability to satisfy customers' needs, continuously manage resources and make changes on supply chain structure, which lead to changes in the supply chain business models. Thus, we summarized the following points:

5.1 | Supply chain structure, dynamic capabilities, and SCBMI

As Teece (2007) points out, continuous innovation requires more than non-replicable resources, as well as unique dynamic capabilities. Business model innovation requires the cooperation of enterprise dynamic capabilities and resources. It can also affect enterprises' dynamic capabilities and accumulate dynamic capabilities for enterprises (Chen, 2017). In this paper, Hunan Tea Group initially develops dynamic capabilities to adapt to the market changes, gradually improving the collaborative relationship among supply chain members and developing the continuous optimization of supply chain business models. This paper summarizes the changes in the tea supply chain's network structure, as shown in Figure 2.

5.2 | Framework on user-driven innovation, dynamic capability and SCBMI

End-users' demand for tea production has increased, and tea quality and sustainability have increased. The customer demands changes in terms of quantity, quality and sustainability are associated with the evolution of our tea supply chain case example. The supply chain's focal company has used dynamic capabilities to integrate resources,

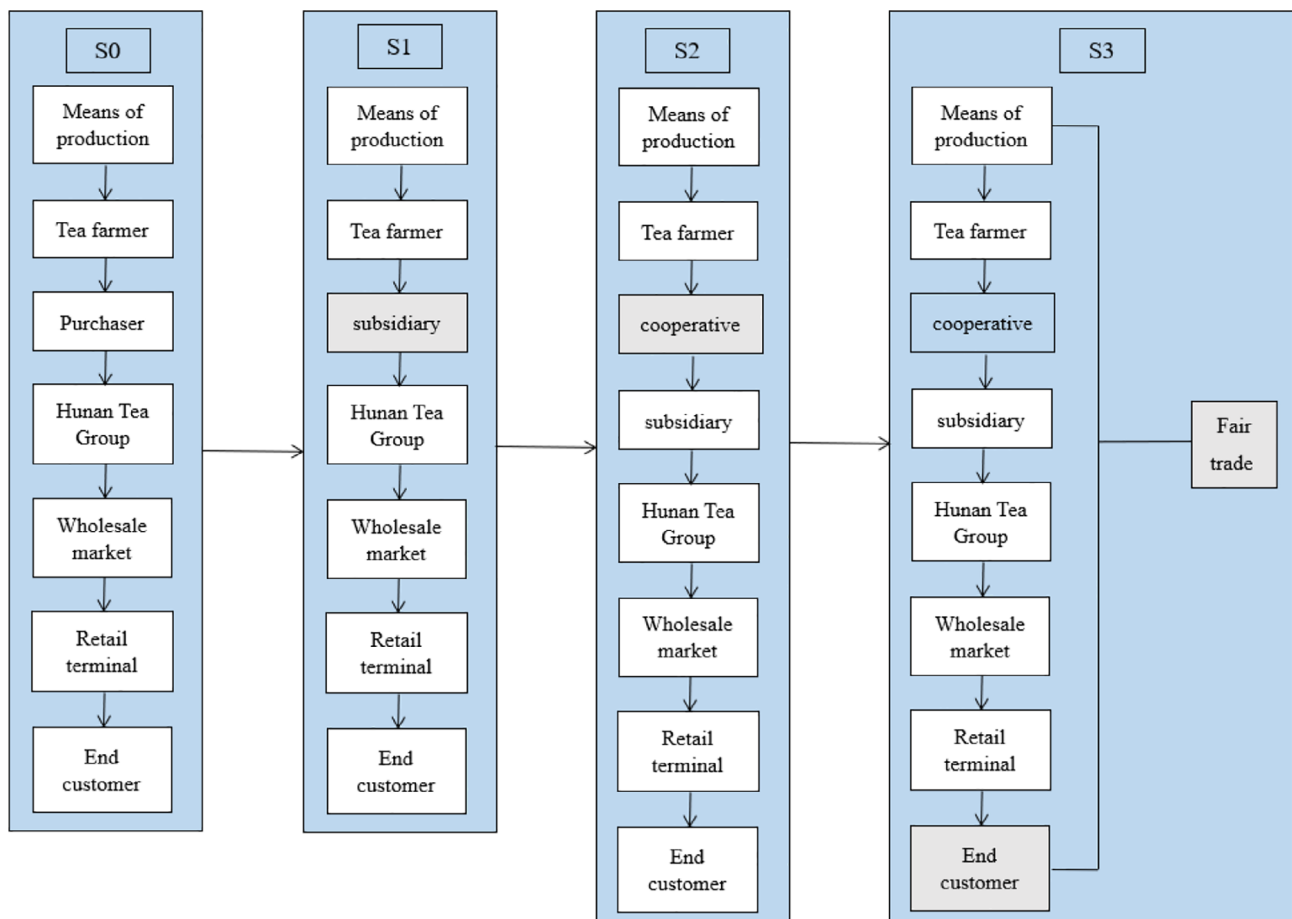
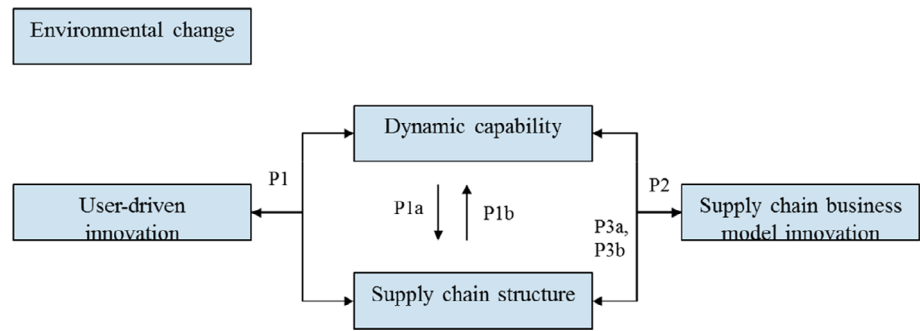


FIGURE 2 Changes in the supply chain network structure [Colour figure can be viewed at wileyonlinelibrary.com]

FIGURE 3 Framework on user-driven innovation, dynamic capability and supply chain business model innovation [Colour figure can be viewed at wileyonlinelibrary.com]



very importantly by introducing new roles of subsidiaries, cooperatives and fair trade based on the previous supply chain business models, and changing the supply chain network structure. The inclusion of new roles in the supply chain has accumulated the original supply chain focal company's dynamic capabilities, enabling the company to develop its dynamic capabilities further to integrate resources better and promote the evolution of its business models. Therefore, this paper proposes the following proposition:

P1. *User-driven innovation leads to changes in the dynamic capabilities of the supply chain focal company via environmental awareness, resource integration, resource reconfiguration and changes in the supply chain network structure.*

P1a. *Changes in the dynamic capabilities of the supply chain focal company (environmental awareness, resource integration, and resource reconfiguration) promote changes in the supply chain network structure.*

P1b. *Supply chain network structure changes further promote the supply chain focal company dynamic capabilities upgrading.*

After introducing subsidiaries and cooperatives based on integrating resources, the focal company of the supply chain adjusted and refined tea varieties through resource reconstruction, improved the quality monitoring of industrial products developed tea tourism projects, etc., and optimized the original business model. Customers (such as high-end consumer markets and overseas markets), value propositions (tea products that meet the quality and sustainability requirements of consumer demand), create more profit (value) than the original business model. It is evidenced by Barreto (2010) that dynamic capabilities help to initiate the evolution of business models. To this end, we propose the following propositions:

P2. *The development of dynamic capabilities and supply chain structure changes promote the SCBBI.*

The profit improvement caused by tea SCBBI has further tightened the utilization and linkage mechanism among the supply chain members, thus promoting the loose to close relationship between the members of the tea supply chain. This also proves Chen (2017)'s point

of view: business model innovation can also affect enterprises' dynamic capabilities and accumulate dynamic capabilities for enterprises. This enhanced dynamic capability can drive changes in the supply chain network structure. In this case, when the tea supply chain business model was changed from S2 to S3, based on the optimized business model S2, Hunan Tea Group further integrated the fair trade organization into the tea supply chain, changing the original supply chain network structure. Through the development of dynamic capabilities, cooperatives are encouraged to organically certify tea, establish a high-quality tea garden export base, join cooperatives to participate in fair trade organizations, and receive rebates to support local construction of schools, health care stations, bridge roads, and support for poor college students. The development project has promoted the tea supply chain business model's overall sustainable development at a higher level. To this end, we propose:

P3a. *SCBBI enhance the original dynamic capabilities of the focal company (environmental awareness, resource integration, and resource reconfiguration), thereby promoting the supply chain network structure change in order to meet changing customer demands.*

P3b. *SCBBI promotes changes in the supply chain network structure, which in turn enhances the focal company's dynamic capabilities to meet changing customer demands.*

Based on the literature, the previous analysis, and the above viewpoints, to better answer the questions raised in this paper, this paper proposes three sets of propositions around the user-driven innovation, dynamic capabilities, and SCBBI relationship. It draws this into a refined framework as in Figure 3.

6 | CONCLUSIONS

Globalization and informatization continue to advance, competition is intensifying, and corporate competition has evolved into a competition among supply chains (Christopher & Holweg, 2011). Supply chains cannot achieve sustainable competitive advantage simply by relying on existing resources and capabilities (Bocken et al., 2014). Building a business model that matches the market environment is



important for the sustainable development of the supply chain (Lin & Xiong, 2016). This paper examines the characteristics and evolution of the multi-stage tea supply chain business model through the case study method and answers the supply chain focus company how to develop dynamic capabilities to cope with the rapidly changing environment and user needs, thereby promoting the SCBML. By answering this key question, several important theoretical contributions and management implications can be drawn.

6.1 | Theoretical contribution

Our research made a few theoretical contributions. Firstly, we extend the business model from a company to a supply chain level. By collecting historical data and interviews, we present the various stages of the evolution of the business model of the tea supply chain and explore the changes of supply chain network structure from a static to a dynamic perspective. Our research contributes to the limited studies on the supply chain business model (Trkman et al., 2015).

Secondly, through the analysis of the four stages and three types of tea supply chain business model, we have contributed to the research of multi-level and multi-stage SCBML. Zott and Amit (2010) believe that the business model is the decisive source of value creation for supply chain nodes such as the enterprise itself, upstream suppliers, partners and downstream customers, and its evolution has become the focus of attention of all nodes in the supply chain (Zott et al., 2011; Zott & Amit, 2010). Different companies in the supply chain use different business models, and the supply chain business model can be seen as the integration of business models from various nodes (Huemer, 2012). Most of the existing researches have studied the business model from a static perspective. Based on the influence of user-driven innovation and dynamic capability development, our research has dynamically summarized the tea supply chain business model's innovation into distinct stages and characteristics.

Finally, we have learned that dynamic capabilities are a valuable theoretical framework extending research on supply chain business models. In the context of sustainable supply chain development, this research has greatly enriched and expanded the application of dynamic capabilities in the evolutionary theory of SCBML. To a certain extent, it has opened up a "black box" of dynamic capabilities to the supply chain business model's innovation. The study can conclude that, driven by end-user innovation, focal companies can change the supply chain network structure by developing three dynamic capabilities: environmental awareness, resource integration, and resource reconfiguration (Teece, 2012). On the one hand, it reflects in the changes in the structure of the supply chain network; on the other hand, it reveals the change in the relationship between the supply chain members, thus promoting SCBML. In turn, SCBML will further affect the accumulation of the focal company's dynamic capabilities and changes in the supply chain network structure. Our research reveals the complex relationships of user-driven innovation, dynamic capabilities, supply chain network structure, and SCBML.

6.2 | Managerial contributions

Our research has important management implications. First, companies need to pay attention to its own business models and its supply chain business model to align the whole chain to meet the final consumers' demands. Second, supply chain focal companies need to implement different strategy formulation stages and identify the characteristics and advantages and disadvantages of different supply chain business model development stages. Third, supply chain focal companies need to understand dynamic capabilities such as environmental awareness, resource integration, and resource reconstruction according to end-user needs. Fourth, focal companies can shape the supply chain structure by orchestrating the supply chain members to obtain the needed resources and capabilities (Gong et al., 2018). The construction of the relationship between the focal company and the upstream and downstream members of the supply chain is emphasized, so that the members of the supply chain are aligned with the focal company goals, and ultimately the continuous optimization or sustainable development of the entire supply chain business model can be achieved.

6.3 | Research limitations and future research directions

Besides our theoretical and practical contributions, our research has the following limitations. First, this paper's research findings are based on an in-depth study of individual case in China. Therefore, there is a lack of comparison of different supply chains and institutional backgrounds. Second, considering the agricultural industry's particularity, this study focuses on the dynamic capabilities of the supply chain focal company when analyzing the tea supply chain business model's evolution. The dynamic capabilities of each node in the entire supply chain are worth studying. The unit of analysis can be changed from the focal company perspective to the whole chain or sector.

Our research also points to some future research directions. First, researchers may use alternative methods, such as large sample surveys, to test the propositions presented in this study. Secondly, in future research, it is attempted to study the dynamic capabilities of different nodes in the entire supply chain and how the degree of coordination and matching between them affects the development of the SCBML.

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ENDNOTES

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- ⁴ The green development of Chinese tea. *Tea World*, 2018 (8): 47–48.

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