A dynamic capability perspective on the influencing factors of supply chain resilience in Chinese small and medium-sized green textile enterprises

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ABSTRACT – REZUMAT

A dynamic capability perspective on the influencing factors of supply chain resilience in Chinese small and medium-sized green textile enterprises

With the increasingly intensified market competition, Chinese small and medium-sized green textile enterprises (SMGTEs) are now facing more supply chain challenges, such as sharp demand fluctuations, rising costs and even supply chain disruptions. As one of the most important abilities to deal with uncertainty and risk, supply chain resilience is of great significance for the survival and development of Chinese SMGTEs. Therefore, this study first constructed a theoretical framework of the influencing factors of supply chain resilience from a dynamic capability perspective for Chinese SMGTEs based on in-depth interviews. The measurement model was then designed, followed by a questionnaire survey and factor analysis. This study also used statistical models to empirically verify the effect of dynamic capability factors on supply chain resilience for Chinese SMGTEs. The research results will provide practical guidance for Chinese SMGTEs to sustainably improve their supply chain resilience and market competitiveness.

Keywords: *dynamic capability, supply chain resilience, Chinese enterprises, small and medium-sized enterprises, green textile industry*

O perspectivă dinamică asupra factorilor care influențează reziliența lanțului de aprovizionare în întreprinderile textile ecologice mici și mijlocii din China

Odată cu intensificarea concurenței pe piață, întreprinderile textile ecologice mici și mijlocii (SMGTE) din China se confruntă în prezent cu mai multe provocări legate de lanțul de aprovizionare, cum ar fi fluctuațiile puternice ale cererii, creșterea costurilor și chiar întreruperi ale lanțului de aprovizionare. Fiind una dintre cele mai importante abilități de a face față incertitudinii și riscului, reziliența lanțului de aprovizionare are o mare importanță pentru supraviețuirea și dezvoltarea SMGTE-urilor din China. Prin urmare, acest studiu a construit mai întâi un cadru teoretic al factorilor care influențează reziliența lanțului de aprovizionare din perspectiva capacității dinamice pentru SMGTE-urile din China, pe baza unor interviuri aprofundate. Apoi a fost proiectat un model de măsurare, urmat de un chestionar și o analiză factorială. Acest studiu a utilizat, de asemenea, modele statistice pentru a verifica empiric efectul factorilor de capacitate dinamică asupra rezilienței lanțului de aprovizionare pentru SMGTE-urile din China. Rezultatele cercetării vor oferi îndrumări practice pentru SMGTE-urile din China în vederea îmbunătățirii durabile a rezilienței lanțului de aprovizionare și a competitivității pe piață.

Cuvinte cheie*: capacitate dinamică, reziliența lanțului de aprovizionare, întreprinderi chineze, întreprinderi mici și mijlocii, industria textilă ecologică*

INTRODUCTION

The slowdown of economic growth has continued to be a cause for concern about the supply chain resilience of the green textile industry. The domestic trend of consumption downgrade in textile products is obvious. The shrinking demand of traditional Western markets, as well as frequent international trade frictions, has further aggravated the supply chain risk of the green textile industry. Besides, the highly homogeneous products have triggered fierce price competition, leading to reduced profit margins and innovation activities in the supply chain of the green textile industry. The inflated prices of raw materials have also threatened the survival of green textile enterprises, and a large bankruptcy boom has appeared recently. These shocks all negatively affect the stability and response speed of the supply chain in the green textile industry.

Supply chain resilience is directly related to the survival and development of green textile enterprises, especially of small and medium-sized green textile enterprises (SMGTEs). For example, HY Textile Company was a typical Chinese SMGTE with a poor supply chain resilience that produced women's clothing and maintained high standards of materials. Due to strict requirements for materials, the suppliers of HY Textile had strong bargaining power on purchasing prices. At the end of 2024, HY Textile received several large orders from its regular clients in Europe. Soon afterwards, the suppliers of HY Textile suddenly raised prices to take advantage of an unexpected increase in market demand. In order to avoid losing

clients and paying a penalty, HY Textile continued to execute these orders and changed suppliers urgently. Soon afterwards, the entire production process was interrupted due to poor-quality materials, and the company went bankrupt. Unlike HY Textile, DK Textile Company stabilised its material prices by signing long-term contracts with four key suppliers in advance one year ago. Additionally, DK Textile shared its production schedules with its suppliers, allowing suppliers to understand its production progress in real time and to deliver materials on time. Moreover, DK Textile achieved profit sharing with its key suppliers by returning a fixed portion of the cost savings from material purchases to its suppliers. As a far-sighted SMGTE, DK Textile successfully survived in recent bankruptcy wave with a resilient supply chain.

In the Chinese green textile industry, SMGTEs account for a large proportion of the market and often suffer more severe competition and survival pressure. Compared with large green textile enterprises, supply chain disruptions, delivery delays, and rising costs are more common in SMGTEs [1]. Besides, the highly diversified product mix and rapid technological progress make the supply chain of SMGTEs more dynamic and complex. Due to limited access to resources, SMGTEs are more vulnerable when dealing with supply chain fluctuations. Therefore, it is meaningful to explore the ways to improve the supply chain resilience of Chinese SMGTEs. Investigating the influencing factors of supply chain resilience will benefit the risk identification of the supply chain for Chinese SMGTEs as well as the formulation of smart strategies for high-quality supply chain management.

LITERATURE REVIEW

Supply chain resilience

Supply chain resilience is widely recognised as an ability of an enterprise, and the main disputes about the concept of supply chain resilience occur due to the different emphases on the attributes of resilience. Christopher and Peck [2] emphasised the recovery attribute of supply chain resilience and defined supply chain resilience as the ability to restore to its original condition or to a more ideal condition after being disrupted. This concept was then modified, and supply chain resilience was claimed to be the ability to execute an action plan and achieve expected performance [3]. Different from the first viewpoint, Klibi and Martel [4] focused more on the avoidance attribute of supply chain resilience and defined supply chain resilience as the ability to avoid disruptions and to quickly recover from unfavourable events. Fiksel [5] emphasised the resistance attribute when conceptualising supply chain resilience and proposed that supply chain resilience is the ability to maintain the structure and function of the supply chain when there is an outside interference. Rice and Sheffi [6] soon put forward a similar definition that supply chain resilience is the ability to absorb disruption risk and positively affect supply chain performance. The rest scholars pointed out that the cost of recovery should be considered in the concept, and therefore supply chain resilience can be defined as the ability to reduce loss and to recover with acceptable cost after unfavourable supply chain events [7]. Referring to previous literature, this paper defines supply chain resilience as the ability to effectively withstand disruptions and to recover rapidly after disruptions at a relatively low cost.

The influencing factors of supply chain resilience

Most of the existing literatures determine the influencing factors of supply chain resilience from a qualitative point of view, and only focuses on a few influencing factors of supply chain resilience and the ordering of these factors. The specific research conclusions are shown in table 1. Current research results have a lot of overlapping elements, and research conclusions are scattered. The specific effects of the influencing factors of supply chain resilience are not quantified in most articles. Besides, most of the studies are for listed companies, and there is a lack of studies about the influencing factors of supply chain resilience for small and medium-sized enterprises or for the green textile industry.

As for the dimensions of the influencing factors of supply chain resilience, scholars have different research results. Hohenstein et al. [14] classified the influencing factors of supply chain resilience into active and passive groups. Chowdhury and Quaddus [20] claimed that the influencing factors of supply chain resilience have three dimensions: proactive capability, reactive capability and the quality of supply chain design, and constructed a framework of the influencing factors of supply chain resilience accordingly. Lu et al. [21] used CiteSpace to visualise the core research issue of supply chain resilience and proposed that the influencing factors of supply chain resilience should be categorised into three dimensions: enterprise factors, supply chain network factors and macro environment factors. However, there is a lack of relevant research towards small and medium-sized enterprises or the green textile industry.

Comments

The existing research on the influencing factors of supply chain resilience is limited to the analysis of a single or a few factors and therefore lacks a systematic framework. As a result, it is hard to comprehensively understand the influencing factors of supply chain resilience. Besides, there is a lack of sufficient empirical research evidence, especially research samples of small and medium-sized enterprises and green textile enterprises, leaving the reliability of existing research conclusions questioned.

In addition, current studies focus more on static influencing factors, such as macro environment, market demand and raw material supply, instead of dynamic capability to deal with supply chain disruption risk. Dynamic capability refers to the potential of an enterprise to quickly make adjustments to resource

Table 1

THE INFLUENCING FACTORS OF SUPPLY CHAIN RESILIENCE

Main viewpoints	Scholars
Risk management culture, supply chain collaboration, agility, and supply chain design affect supply chain resilience.	Christopher and Peck [2]
The consistency and integration of logistics can improve supply chain resilience.	Ponomarov and Holcomb [8]
The flexibility of procurement and order fulfilment, manufacturing capacity, efficiency, visibility, adaptability, anticipation, recovery, decentralisation, collaboration, organisation structure, market position, safety, and financial strength can affect supply chain resilience.	Pettit et al. [9]
Supply chain collaboration, supply chain design, and supply chain agility have an important impact on supply chain resilience.	Peck et al. [10]
Risk management and knowledge management can improve the flexibility, response time, transparency and collaboration of the supply chain, which has a positive effect on supply chain resilience.	Juttner and Maklan [11]
Integration capability, close communication and cooperation have positive effects on supply chain resilience.	Wieland and Wallenburg [12]
Flexibility, visibility and information sharing can affect eight supply chain resilience elements.	Pereira et al. [13]
Collaboration, inventory management, pre-defined decision plan, redundancy, visibility, agility and flexibility are proposed to be the influencing factors of supply chain resilience.	Hohenstein et al. [14]
Supply chain re-engineering, emergency strategy, redundancy, efficiency, collaboration, information sharing, agility, visibility, reaction speed, risk management culture, leadership and risk management team are proposed to affect supply chain resilience.	Kamalahmadi and Parast [15]
Supply chain visibility, reserve capacity, supplier dispersion, cooperation, adaptability, flexibility and the level of fluctuation are identified as the influencing factors of supply chain resilience.	Osaro et al. [16]
The application of big data analysis tools in the planning, coordination, and control stages of supply chain management plays a key role in improving supply chain resilience.	Mandal [17]
Risk management culture, coordination, risk and benefit sharing, financial strength, robustness, collaboration, agility, supply chain design, spare inventory, supplier concentration, adaptability, trust, information sharing, information integration, information preparation, information recovery, and information response are important influencing factors of supply chain resilience.	Naimi et al. [18]
The cognitive gap and social gap between retailers and suppliers affect supply chain resilience.	Li [19]

allocation and strategic planning in order to adapt to a changing environment. In fact, dynamic capability is essential to improve supply chain resilience. For example, when the supply chain is at risk of disruption, enterprises need to quickly adjust procurement strategies, manufacturing plans and logistics arrangements to ensure continuous operation. In order to complete these adjustments, enterprises should have strong information collection and processing capability, decision-making capability and execution capability, which all fall into the category of dynamic capability.

Therefore, this paper will investigate the influencing factors of supply chain resilience of Chinese SMGTEs from a dynamic capability perspective and will provide more specific theoretical guidance and practical suggestions for Chinese SMGTEs to improve supply chain resilience. Through strengthening dynamic capability factors, Chinese SMGTEs can better understand the coping strategy and recovery mechanism when facing supply chain disruption, so as to help Chinese SMGTEs deal with supply chain resilience concerns better in the future.

RESEARCH METHODS

This paper will follow a normative scale development process to explore the dynamic capacity factors affecting the supply chain resilience of Chinese SMGTEs and then adopt regression models to examine the relationship between these dynamic capacity factors and supply chain resilience. The research process is composed of four steps, which are illustrated in table 2.

The first step is to use an in-depth interview and coding process to investigate the dynamic capacity factors affecting the supply chain resilience of Chinese SMGTEs, as well as the measurement model of these dynamic capacity factors. Existing literature and interview materials complement each other, ensuring the adequacy of the measurement model of dynamic capacity factors. The participants of the in-depth interview are supply chain managers of SMGTEs, related government officials and industry experts selected from Guangdong, Henan, Sichuan and Liaoning of China, which are representative provinces from the Eastern region, Central region, Western region and Northeastern region of China, respectively.

The second step is to conduct a questionnaire survey and perform exploratory factor analysis to modify the measurement items of the dynamic capacity factors affecting the supply chain resilience of Chinese SMGTEs. The structure of the measurement model, as well as specific measurement items developed by

Table 2

RESEARCH PROCESS AND METHODS				
Steps	**Research purposes**	**Research methods**	**Participants/ Respondents**	**Number of participants/ respondents**
Step 1	Identify dynamic capacity factors, and develop an initial measurement model and questionnaire	Literature review; In-depth interview	The supply chain managers of SMGTEs, related government officials and industry experts from four representative provinces of China	26 interviewees
Step 2	Complete exploratory factor analysis	Questionnaire survey	The supply chain managers of SMGTEs from four representative provinces of China	250 questionnaires were distributed, and 226 valid questionnaires were collected.
Step 3	Complete confirmatory factor analysis	Questionnaire survey	The supply chain managers of SMGTEs from four representative provinces of China	250 questionnaires were distributed, and 211 valid questionnaires were collected.
Step 4	Empirically test the effect of dynamic capability factors on supply chain resilience	Questionnaire survey; Regression model	The supply chain managers of SMGTEs from all over China	300 questionnaires were distributed, and 279 valid questionnaires were collected.

qualitative research methods (i.e., in-depth interview and coding process) in the first step, still needs to be checked statistically. The factors with eigenvalues greater than 1.0 will be extracted to see if the structure is consistent with the one developed in the first step. The measurement items with factor loadings lower than 0.5 will be deleted to ensure the measurement items are statistically reasonable. The respondents of the questionnaire survey are supply chain managers of SMGTEs from four representative provinces of China.

The third step is to conduct a questionnaire survey again and perform confirmatory factor analysis to further verify the measurement items from the second step. The respondents are still the supply chain managers of SMGTEs from four representative provinces of China.

The last step is to construct a conceptual framework illustrating the expected relationships between dynamic capacity factors and the supply chain resilience of Chinese SMGTEs and conduct a further questionnaire survey with the respondents from all over China. The data collected from this survey is then used to empirically test research hypotheses.

THE MEASUREMENT MODEL OF DYNAMIC CAPACITY FACTORS

Data Collection

Referring to the research of Chen et al. [22], this study adopted semi-structured in-depth interviews to collect data from the supply chain managers of SMGTEs, related government officials and industry experts from four representative provinces of China. An interview outline containing 13 questions was drafted based on existing literature before the interview. The draft was then submitted to industry experts and supply chain managers of Chinese SMGTEs for review and was modified according to the feedback. The final version of the interview outline contains 10 questions and is shown in table 3.

Government officials and industry experts were invited to avoid cognitive limitations of supply chain managers, allowing researchers to explore dynamic capability factors from different perspectives. In order to ensure the quality of interview materials, the 26 participants of this study have at least 5 years of relevant work experience in Chinese SMGTEs and are between 36 to 57 years old. Each interview lasted about 30 minutes.

Coding process

This paper identified dynamic capability factors affecting the supply chain resilience of Chinese SMGTEs by following a normative coding process in grounded theory. This paper dug deeply into text data through three steps: open coding, axial coding and selective coding. In order to ensure the scientificity and rationality of the coding results, two researchers performed the coding process at the same time. When there was any inconsistency in terms of coding results, a third researcher joined the discussion and made the final decision.

Open Coding

Word-by-word analysis method was adopted to extract key phrases from the original text materials. These key phrases were then integrated into 107 initial concepts according to the similarity of meaning. The initial concepts are then divided into 16 initial categories by following the logical consistency principle. For example, “it’s hard to borrow money from banks in a bad economic environment” is conceptualised as a “financing channel”, which is then categorised into “financial capability”. The examples of open coding results are shown in table 4.

Axial coding

Based on the results of open coding, the potential logical relationships among 16 initial categories were

Table 3

INTERVIEW OUTLINE	
Number	**Questions**
1	What problems do you think exist in terms of the supply chain resilience of Chinese SMGTEs?
2	What features should the supply chain with ideal resilience have in Chinese SMGTEs?
3	What dynamic capability factors do you think can affect the supply chain resilience of Chinese SMGTEs?
4	What are the differences between large green textile enterprises and SMGTEs in terms of the dynamic capability factors affecting supply chain resilience?
5	What are the differences between green textile enterprises and the enterprises from other industries in terms of the dynamic capability factors affecting supply chain resilience?
6	What are the differences among different types of SMGTEs in terms of their contribution to supply chain resilience?
7	Please describe the actions you are taking to improve the supply chain resilience of SMGTEs.
8	What would you do if the supply chain were suddenly disrupted?
9	What dynamic capability factors do you think SMGTEs should invest in more to improve their supply chain resilience?
10	If you have the opportunity to receive guidance on supply chain resilience management, what would you most like to receive guidance on?

Table 4

THE EXAMPLES OF OPEN CODING RESULTS		
Key original phrases	**Concepts**	**Initial categories**
"The more suppliers to choose from, the lower the possibility of supply chain disruption"	The number of suppliers	Supplier management capability
"Some suppliers are dishonest and sometimes can't deliver goods on time"	The reputation of the supplier	
"It would be better if the channels of raw material could be more dispersed"	Supplier concentration	
…	…	
"It's hard to borrow money from banks in a bad economic environment"	Financing channel	Financial capability
"Although the goods are shipped, the money is slow to come back"	The collection of accounts receivable	
…	…	
"If the manufacturing process can be automated, the cost will be lower in the long run"	Manufacturing automation	Informatization capability
"The combination of digital technology and management reduces the waste of resources"	The digitisation of the operation	
…	…	
"More types of products, more orders"	Product variety	Structural capability
"Outdated equipment restricts productivity, and we can't take more orders"	Manufacturing process	
"Suppliers are far away, and raw materials are always slow to arrive at our company"	Space layout	
…	…	
"Sometimes partners don't share information with us"	The breadth of information shared	Information sharing capability
"The raw materials were out of stock in the supply chain at the beginning of this month, and we knew this until the middle of this month"	Timely information sharing	
"Everyone was nervous with negative news and started to buy raw materials in advance, and then it was proved to be false news"	The accuracy of the information shared	
…	…	
"The supplier said he would deliver products on time, but I couldn't trust him"	The level of trust	Trust capability
"Suppliers don't share similar business values with us, and they are unreliable"	Business cultural integration	
…	…	

Table 4 (continuation)

"It would be better if upstream and downstream companies make plans together"	Joint planning	Coordination capability
"If partners can work with us to solve problems, things will be easier"	Joint problem-solving	
"He was not the person who could make decisions after spending a lot of time with him"	Effective communication	
"We need a win-win cooperation and take risks together"	Risk sharing	
"Not acceptable if all the benefits go to partners"	Benefits distribution	
…	…	
"We have learned all of these from zero"	Knowledge acquisition	Learning capability
"Be good at summarising lessons and don't always fall in the same place"	Knowledge internalization	
…	…	
"Top management is old and conservative, and never accepts cooperation with competitors"	Component innovation	Innovation capability
"They were so busy with new business, and optimisation plans were rejected"	Activity optimization	
…	…	
"Poor judgment of customer needs, often overstocking"	Demand forecasting	Forecasting capability
"Technology upgrades too fast, and old products find it hard to survive"	The prediction of the development direction	
"We never expect raw materials to be out of stock so quickly"	Raw material forecasting	
…	…	
"Political atmosphere is so strong that decisions are slow"	The speed of decision-making	Agility
"It's too late to react"	Flexibility	
…	…	
"You need to have a keen sense of risk"	Risk identification	Risk awareness
"Employees have no idea about risk management"	Risk management culture	
…	…	
"When something goes wrong, team members come from many departments"	Risk management team	Risk management capability
"No one is good at emergency management. Who can make the plan?"	The development of an emergency plan	
"A plan that works today can't be executed tomorrow"	The execution of the emergency plan	
…	…	
"It's important to have an overall strategy, or every department will do its own thing"	Systematic planning	Strategic planning capability
"The plan was done at the beginning of the year, and there has been no adjustment till now"	Plan adjustment	
…	…	
"The transportation staff are not professional enough, and the percentage of damage is not acceptable.	Product transportation	Logistics management capability
"Now we have real-time positioning and can see where the cars are, and we can solve problems quickly"	The modernisation of logistics facilities	
…	…	
"The ordered chips have been sold to a competitor"	The control of key raw materials	Inventory management capability
"We don't have much inventory, so we can't take an emergency order"	Finished goods management	
…	…	

further investigated, and the initial categories were then summarised and classified into 5 main categories. For example, supplier management capability, financial capability, informatisation capability and structural capability are categorised into the main category of supply chain resource management capability. The axial coding results are illustrated in table 5.

Selective coding

Selective coding refers to the process of systematically linking other categories around the core category and verifying the relationship among them. The

Table 5

AXIAL CODING RESULTS		
Main categories	**Initial categories**	**Connotation**
Supply chain resource management capability	Supplier management capability	Supplier management capability refers to the control over the number of suppliers, supplier reputation, and supplier concentration in the supply chain.
	Financial capability	Financial capability is the capability to ensure the stability of cash flow through financing activities and the timely collection of accounts receivable, as well as the capability to maintain acceptable financial indicators.
	Informatization capability	Informatisation capability refers to the capability to achieve the automation of the manufacturing process and the digitalisation of the operation process.
	Structural capability	Structural capability is the capability to construct a complex supply chain structure by improving product variety, upgrading the manufacturing process, and rationalising spatial layout.
Supply chain collaboration capability	Information sharing capability	Information sharing capability refers to the capability to share accurate information widely and timely manner among supply chain members.
	Trust capability	Trust capability refers to the capability to establish mutual trust relationships and achieve cultural integration with supply chain members.
	Coordination capability	Collaboration capability refers to the capability to jointly plan and coordinate with other supply chain members, communicate effectively, share risks and reasonably distribute benefits.
Supply chain growth capability	Learning capability	Learning capability refers to the capability to continuously acquire and internalise new knowledge.
	Innovation capability	Innovation capability refers to the capability to innovatively modify chain components and optimise chain activities.
	Forecasting capability	Forecasting capability refers to the capability to analyse and predict client needs, future development directions and raw material supply.
Supply chain risk control capability	Agility	Agility refers to the capability to make rapid and efficient adjustments according to external changes.
	Risk awareness	Risk awareness refers to the capability to identify risk and maintain an excellent risk management culture.
	Risk management capability	Risk management capability refers to the capability to build a risk management team, formulate and implement emergency plans.
Supply chain operation capability	Strategic planning capability	Strategic planning capability refers to the capability to formulate overall strategic plans and problem-solving methods to achieve goals.
	Logistics management capability	Logistics management capability refers to the capability to improve product transportation and the modernisation level of logistics facilities.
	Inventory management capability	Inventory management capability refers to the capability to obtain manufacturing resources and reasonably control inventory levels.

core category of this study is dynamic capability factors affecting the supply chain resilience of Chinese SMGTEs. Based on the core category and dynamic capability theory, the dynamic capability model of Chinese SMGTEs can be developed and is illustrated in figure 1.

The dynamic capability of Chinese SMGTEs is composed of five factors: supply chain resource management capability, supply chain collaboration capability, supply chain growth capability, supply chain risk control capability and supply chain operation capability. The detailed explanation of each factor is illustrated in table 6.

The elements of each dynamic capability are associated with each other and work together to construct a specific dynamic capability. These five dynamic capability factors combine to influence the supply chain resilience of Chinese SMGTEs, and there is an inherent hierarchical structure between these five dynamic capability factors and supply chain resilience. Based on coding results and dynamic capability theory, these five dynamic capability factors are at the capability layer, and supply chain resilience is at the goal layer. The capability layer effectively supports the resilience function of the supply chain in Chinese SMGTEs.

THE SCALE DEVELOPMENT FOR DYNAMIC CAPACITY

Questionnaire design

Based on coding results, an initial scale including 28 measurement items was developed. In order to ensure that the measurement items are consistent with research concepts, content validity was tested

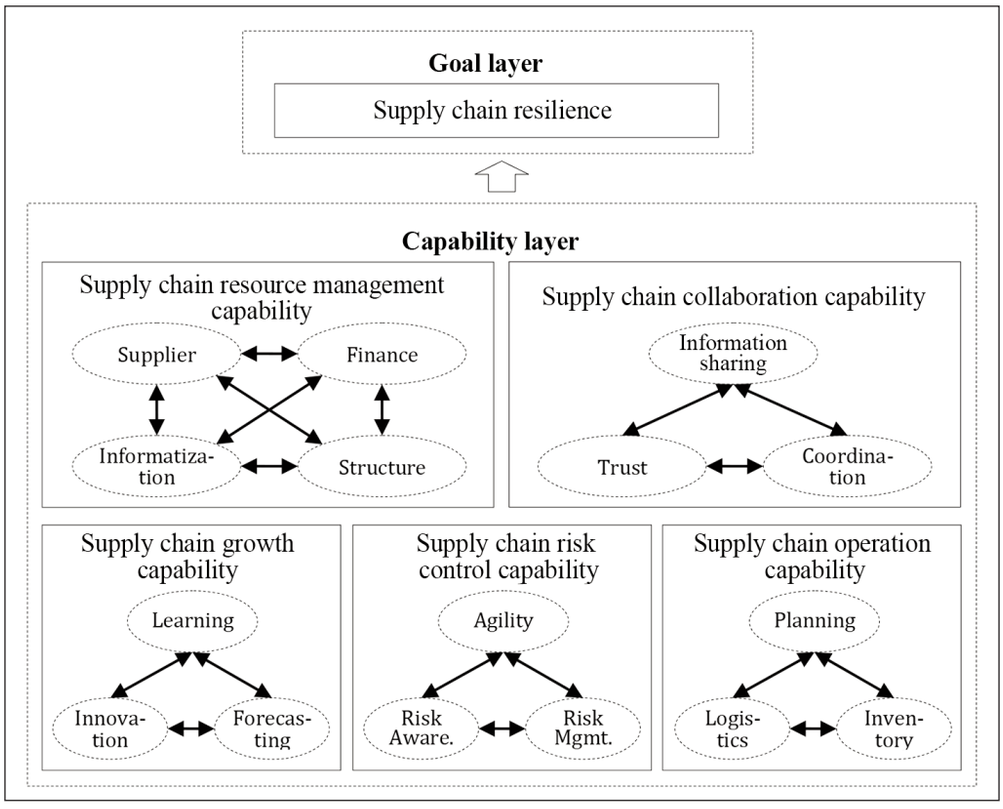

Fig. 1. The dynamic capability model of Chinese SMGTEs

Table 6

EXPLANATION OF DYNAMIC CAPABILITY FACTORS

Dynamic capability factors	Explanation
Supply chain resource management capability	The capability of an SMGTE to reasonably integrate its supply chain resources to obtain sustainable competitiveness
Supply chain collaboration capability	The capability of an SMGTE to jointly plan and execute supply chain plans with the enterprises at other chain nodes to share resources and benefits, to maximise the efficiency of the supply chain
Supply chain growth capability	The capability of an SMGTE to constantly grow by expanding the supply chain
Supply chain risk control capability	The capability of an SMGTE to identify, evaluate, monitor and control supply chain risk that may have a negative impact on business operations, and to ensure the stability, security and sustainability of the manufacturing process by formulating corresponding response strategies and taking measures
Supply chain operation capability	The capability to manage goods and service flows among suppliers, manufacturers, distributors and customers to meet customer needs and optimise operational efficiency.

through expert judgment. Five experts were first invited to evaluate whether measurement items matched the dynamic capability factors affecting supply chain resilience, and 21 measurement items were retained after revision. Subsequently, 10 supply chain managers of Chinese SMGTEs were invited to provide feedback on the readability of the questionnaire, and 19 measurement items were finally determined.

The questionnaire has two sections. The first section is a survey about the basic information of Chinese SMGTEs, including questions such as age, business size and the location of the enterprises. The second section is a survey of the dynamic capacity factors that affect supply chain resilience, including 19 measurement items, and the 7-point Likert scale was adopted to measure each item. The scale consists of below points: 1-strongly disagree; 2-disagree; 3-slightly disagree; 4-neutral; 5 slightly agree; 6-agree; 7-strongly agree.

Survey respondents

The respondents of this survey are 500 supply chain managers of SMGTEs from four representative provinces of China. The questionnaires were distributed twice, and 250 questionnaires were distributed each time. In the first stage, 226 valid questionnaires

were collected for exploratory factor analysis. In the second stage, 211 valid questionnaires were collected for confirmatory factor analysis. The basic characteristics of SMGTEs are shown in table 7.

Table 7

THE BASIC CHARACTERISTICS OF SMGTES FOR FACTOR ANALYSIS

Items	Options	Frequency	Percentage (%)
Age	0–3 years	122	27.92
	3–10 years	266	60.87
	More than 10 years	49	11.21
Business Size	0–50 people	156	35.70
	51–150 people	202	46.22
	151–300 people	47	10.76
	301–500 people	26	5.95
	More than 500 people	6	1.37
Location	Eastern region	134	30.66
	Central region	117	26.77
	Western region	97	22.20
	Northeastern region	89	20.37

Exploratory factor analysis

This paper used SPSS 26.0 to conduct exploratory factor analysis for 19 measurement items, and the type of rotation was orthogonal rotation. In the first round of exploratory factor analysis, 5 factors with eigenvalues greater than 1.0 were extracted. Two items with factor loadings lower than 0.5 (i.e., "our enterprise makes full use of digital technology to support operational processes" and "our enterprise timely adjusts strategic plan according to external changes") were deleted. In the second round, 5 factors with eigenvalues greater than 1.0 were extracted, and the item "our enterprise is good at obtaining key raw materials" with a factor loading lower than 0.5 was deleted.

In the third round, the KMO value is 0.741, and Bartlett's test of sphericity is significant, indicating that the dataset is suitable for exploratory factor analysis. Five factors with eigenvalues greater than 1.0 were extracted, and the cumulative variance explained was 71.156%. The factor loadings of each item ranged from 0.788 to 0.855, indicating that the factor structure was ideal. Cronbach's Alpha values of each factor ranged from 0.727 to 0.852, all of which are greater than 0.7, indicating high reliability of the measurement model and good stability of the scale. According to coding results, these 5 factors are named as supply chain resource management

Table 8

EXPLORATORY FACTOR ANALYSIS RESULTS

Factor	Component				
	F1	F2	F3	F4	F5
A1 Our enterprise has many high-quality suppliers.	0.788				
A2 Our enterprise has good cash flow.	0.820				
A3 Our enterprise has a fully automated manufacturing process.	0.841				
A4 The structure of our supply chain is complex.	0.855				
B1 Our enterprise has a good level of information sharing.		0.833			
B2 Our enterprise fully trusts our supply chain partners.		0.845			
B3 Our enterprise can cooperate well with other enterprises in the supply chain.		0.846			
C1 Our enterprise is good at learning new knowledge of the supply chain.			0.820		
C2 Our enterprise is good at innovating supply chain activities.			0.841		
C3 Our enterprise can predict future supply and demand well.			0.832		
D1 Our enterprise can quickly adjust supply chain activities according to external changes.				0.817	
D2 Our enterprise has a good awareness of supply chain risk.				0.836	
D3 Our enterprise is able to manage supply chain risk well.				0.842	
E1 Our enterprise is good at making a strategic plan for the supply chain.					0.797
E2 Our enterprise is good at transportation logistics management.					0.802
E3 Our enterprise has good control of the level of finished products.					0.789
Cronbach's Alpha	0.852	0.808	0.813	0.804	0.727
Eigenvalue (Non-rotated)	3.197	2.756	2.435	1.827	1.170
Variance Explained (%)	17.565	13.893	13.780	13.470	12.448
Cumulative Variance Explained (%)	17.565	31.458	45.239	58.709	71.156

Table 9

CONFIRMATORY FACTOR ANALYSIS RESULTS				
Latent variables	**Items**	**Standardised factor loading**	**AVE**	**CR**
Supply chain resource management capability	A1	0.784	0.530	0.818
	A2	0.734		
	A3	0.672		
	A4	0.719		
Supply chain collaboration capability	B1	0.782	0.634	0.838
	B2	0.731		
	B3	0.869		
Supply chain growth capability	C1	0.832	0.727	0.888
	C2	0.898		
	C3	0.825		
Supply chain risk control capability	D1	0.678	0.561	0.792
	D2	0.712		
	D3	0.847		
Supply chain operation capability	E1	0.722	0.579	0.804
	E2	0.821		
	E3	0.735		

Table 10

DISCRIMINANT VALIDITY RESULTS					
Dimension	**1**	**2**	**3**	**4**	**5**
1 Supply chain resource management capability	0.728				
2 Supply chain collaboration capability	0.721	0.796			
3 Supply chain growth capability	0.645	0.611	0.852		
4 Supply chain risk control capability	0.669	0.614	0.574	0.749	
5 Supply chain operation capability	0.671	0.624	0.598	0.694	0.761

Note: The diagonal values are the square root of AVE values.

capability, supply chain collaboration capability, supply chain growth capability, supply chain risk control capability and supply chain operation capability, which are measured by 16 items. The details of exploratory factor analysis results are illustrated in table 8.

Confirmatory factor analysis

AMOS 24.0 was used for subsequent confirmatory factor analysis. According to the results, $\chi/2df = 1.265$, TLI = 0.981, CFI = 0.985, and RMSEA = 0.036, representing a good fit of the measurement model. The results of confirmatory factor analysis are shown in table 9. Except for 2 items, the standardised factor loadings are all higher than 0.7. The standardised factor loadings of the rest 2 items are still higher than 0.6, and all items are significant at 1% level. The composite reliability (CR) values of all five dimensions are greater than 0.7, and all average variance extracted (AVE) values are greater than 0.5.

Discriminant validity is tested by comparing the square root of AVE values with the correlation coefficients among variables. As shown in table 10, the square root of AVE values for each dimension is higher than the correlation coefficients, indicating that all dimensions have ideal discriminant validity.

EMPIRICAL ANALYSIS

Research Hypotheses

Strong supply chain resource management capability means enterprises can establish long-term relationships with qualified suppliers to guarantee the uninterrupted supply of raw materials when market fluctuations or emergency events occur [23], reducing supply chain disruption risk and improving supply chain resilience. Besides, good supply chain resource management capability generates sufficient financial reserves to deal with market and technological changes [24] and therefore enhances supply chain resilience in the face of uncertainty. In addition, well-developed expertise in supply chain resource management allows SMGTEs to optimise the usefulness of data resources and supply chain efficiency, leading to timely detection and solutions to supply chain risk and therefore increasing supply chain resilience [25]. Reasonable supply chain resource management capability also benefits the continuity and stability of the supply chain when there are

demand changes or supply chain disruptions by allowing enterprises to take advantage of the network layout and make necessary adjustments fast [26]. Based on the above analysis, the following research hypothesis can be developed.

Hypothesis 1: Supply chain resource management capability has a positive effect on supply chain resilience in Chinese SMGTEs.

The enterprises with good supply chain collaboration capability are able to track key information such as market trends and customer preferences closely by actively sharing information with other members in the supply chain, reducing the level of information asymmetry and allowing enterprises to adjust strategies quickly [27]. This helps enterprises to avoid potential disruption risk in the supply chain and therefore improve supply chain resilience. Strong supply chain collaboration capability also contributes to creating an atmosphere of trust, which increases the willingness of supply chain members to share resources and to jointly deal with supply risk [28]. A good atmosphere of trust reduces the possibility of the occurrence of opportunistic behaviours, thereby improving risk resistance and supply chain resilience. The positive effect of supply chain collaboration capability on supply chain resilience can also be explained by process integration between enterprises and their supply chain partners. The process integration reduces resource waste and optimises resource allocation among supply chain members [29], and therefore improves supply chain resilience. Based on these analyses, the following hypothesis can be developed.

Hypothesis 2: Supply chain collaboration capability has a positive effect on supply chain resilience in Chinese SMGTEs.

Reasonable supply chain growth capability means enterprises can continuously acquire and absorb new knowledge to innovate manufacturing technologies and operation methods with the purpose of adapting to market changes and consumer preferences [30]. Through learning, enterprises can adjust supply chain strategies promptly and enhance the flexibility of the supply chain, and therefore improve supply chain resilience. Strong supply chain growth capability also helps enterprises understand market dynamics and grasp future industry trends [31], allowing enterprises to make more accurate manufacturing plans and inventory decisions, thereby enhancing supply chain resilience. Based on these analyses, the hypothesis is developed accordingly.

Hypothesis 3: Supply chain growth capability has a positive effect on supply chain resilience in Chinese SMGTEs.

Well-developed supply chain risk control capability allows enterprises to adapt to market changes and emergency events by making necessary adjustments to manufacturing and logistics plans quickly [32], contributing to the stability of the supply chain. The enterprises with better supply chain risk control capability are also able to identify risk earlier so that corresponding measures can be taken to prevent adverse events. They are also more willing to invest in building a complex risk management system, which further reduces reaction time and the cost of recovery and therefore improves supply chain resilience [33]. Besides, strong supply chain risk control capability makes it possible for the enterprises to seize new opportunities because it helps enterprises save time and energy, so that enterprises have extra resources to expand their supply chains [34]. Therefore, the following hypothesis can be developed.

Hypothesis 4: Supply chain risk control capability has a positive effect on supply chain resilience in Chinese SMGTEs.

By developing supply chain operation capability, enterprises are able to identify key profit drivers and optimise resource allocation [35], increasing the possibility of the supply chain to maintain normal work in a complex environment. It also allows the enterprises to prepare and make adjustments in advance towards expected market changes according to the strategic plan [36], thereby reducing the negative effect brought by adverse events in the supply chain. Strong supply chain operation capability also guarantees the timely delivery of products and flexible coordination in transportation networks when supply chain disruptions occur, thereby improving supply chain resilience [37]. The enterprises with good supply chain operation capability can achieve better control over inventory when market conditions change [38]. Maintaining inventory cost at a low level in a depressed market and achieving a rapid supply restoration to seize new opportunities are both important to reduce loss and to keep supply chain resilience at a reasonable level. Based on these analyses, a hypothesis is listed as follows.

Hypothesis 5: Supply chain operation capability has a positive effect on supply chain resilience in Chinese SMGTEs.

Variables

The dependent variable of this paper is the supply chain resilience of Chinese SMGTEs. Referring to the measurement method of Pettit et al. [9], supply chain resilience is measured by supply chain disruption frequency, recovery time and recovery cost. All items are measured using a 7-point Likert scale, with 1 to 7 indicating strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree and strongly agree, respectively.

The independent variables of this paper are supply chain resource management capability, supply chain collaboration capability, supply chain growth capability, supply chain risk control capability and supply chain operation capability. The measurement method of these 5 independent variables depends on the scale developed earlier in this paper. In addition, the age, the business size and the region of the enterprises are selected as control variables [39].

Survey respondents

This empirical analysis surveyed 300 supply chain managers of Chinese SMGTEs all over China. Most

Table 11

THE BASIC CHARACTERISTICS OF SMGTES FOR EMPIRICAL ANALYSIS

Items	Options	Frequency	Percentage (%)
Age	0–3 years	71	25.45
	3–10 years	184	65.95
	More than 10 years	24	8.60
Business Size	0–50 people	85	30.47
	51–150 people	141	50.54
	151–300 people	43	15.41
	301–500 people	7	2.51
	More than 500 people	3	1.08
Location	Eastern region	125	44.80
	Non-eastern regions	154	55.20

of these supply chain managers work in the SMGTEs with clear supply chain networks and which are the cores of networks. After deleting invalid questionnaires, there are 279 questionnaires left. The basic characteristics of the enterprises are shown in table 11.

Empirical results

Reliability and validity test

According to reliability test results, Cronbach's Alpha values of supply chain resource management capability, supply chain collaboration capability, supply chain growth capability, supply chain risk control capability, supply chain operation capability and supply chain resilience are 0.815, 0.823, 0.853, 0.772, 0.789 and 0.775, respectively, which are all greater than 0.7.

The results of confirmatory factor analysis show that the standardised factor loadings of each item range from 0.656 to 0.894. The CR values of supply chain resource management capability, supply chain collaboration capability, supply chain growth capability, supply chain risk control capability, supply chain operation capability and supply chain resilience are 0.816, 0.830, 0.855, 0.783, 0.790 and 0.778, respectively, which are all greater than 0.7. AVE values of each factor are 0.527, 0.621, 0.663, 0.548, 0.557 and 0.539, respectively, all of which are greater than 0.5. The square root of the AVE values of each factor is greater than the correlation coefficients, indicating that the scale has excellent discriminant validity.

In addition, common method bias may occur due to the fact that the independent variables and the dependent variable are measured in the same survey. In order to test the severity of common method bias, the principal component analysis method was adopted. It is found that the first common factor explains 14.012% of total variance, which is less than 40%. Therefore, the degree of common method bias in this paper can be considered as not significant.

Descriptive statistics

This paper uses Stata 15.0 to conduct descriptive analysis and correlation analysis, as well as follow regression analysis, and the results are shown in table 12. It can be seen that the correlation coefficients among variables are all less than 0.7. Besides, the variance inflation factors (VIF) of all regression models are less than 5, which are reported in table 13.

Therefore, there is no multicollinearity problem in this study. According to correlation analysis results, supply chain resource management capability, supply chain collaboration capability, supply chain growth capability, supply chain risk control capability and supply chain operation capability are significantly positively associated with supply chain resilience, and subsequent regression analysis can be conducted.

Regression results

The regression analysis results are shown in table 13. Columns 1 to 5 illustrate the regression results of the effects of each dynamic capability factor on the supply chain resilience of Chinese SMGTEs, and

Table 12

DESCRIPTIVE STATISTICS AND CORRELATION ANALYSIS

Variable	1	2	3	4	5	6	7	8	9
1. Resilience	1								
2. Resource	0.555***	1							
3. Cooperation	0.582***	0.512***	1						
4. Growth	0.534***	0.503***	0.460***	1					
5. Control	0.586***	0.469***	0.416***	0.454***	1				
6. Operation	0.541***	0.416***	0.419***	0.414***	0.462***	1			
7. Age	0.572***	0.455***	0.508***	0.436***	0.568***	0.494***	1		
8. Scale	0.624***	0.515***	0.609***	0.547***	0.562***	0.460***	0.611***	1	
8. Region	0.434***	0.266***	0.430***	0.284***	0.449***	0.322***	0.438***	0.460***	1
mean	4.363	4.066	4.205	4.393	4.778	4.835	1.832	1.932	0.552
sd	0.672	0.993	1.003	0.842	0.919	1.078	0.560	0.808	0.498

Note: ***, **, and * indicate significance levels of 1%, 5%, and 10%, respectively.

Table 13

REGRESSION RESULTS						
Factor	**(1)**		**(2)**		**(3)**	
	Resilience	**VIF**	**Resilience**	**VIF**	**Resilience**	**VIF**
_cons	2.583***		2.627***		2.460***	
	(14.74)		(14.98)		(11.13)	
Age	0.251***	1.75	0.271***	1.73	0.279***	1.72
	(2.94)		(3.08)		(3.29)	
Scale	0.245***	1.93	0.242***	2.04	0.244***	2.01
	(4.97)		(5.11)		(4.92)	
Region	0.182***	1.33	0.127**	1.38	0.176***	1.33
	(3.11)		(2.06)		(2.88)	
Resource	0.184***	1.42				
	(4.48)					
Cooperation			0.167***	1.72		
			(3.97)			
Growth					0.187***	1.46
					(3.87)	
N	279		279		279	
R^2	0.513		0.497		0.498	
Adj. R^2	0.506		0.490		0.491	
Factor	**(4)**		**(5)**		**(6)**	
	Resilience	**VIF**	**Resilience**	**VIF**	**Resilience**	**VIF**
_cons	2.463***		2.551***		1.579***	
	(10.97)		(13.98)		(5.50)	
Age	0.228***	1.85	0.226**	1.82	0.103	1.99
	(2.64)		(2.53)		(1.28)	
Scale	0.269***	1.86	0.282***	1.79	0.115**	2.36
	(5.73)		(6.30)		(2.15)	
Region	0.117*	1.39	0.153**	1.34	0.087	1.45
	(1.84)		(2.55)		(1.60)	
Resource					0.094***	1.70
					(2.84)	
Cooperation					0.110***	1.89
					(2.99)	
Growth					0.090***	1.65
					(2.70)	
Control	0.188***	1.73			0.126***	1.87
	(3.75)				(2.63)	
Operation			0.159***	1.41	0.101***	1.52
			(4.56)		(2.90)	
N	279		279		279	
R^2	0.499		0.507		0.584	
Adj. R^2	0.492		0.500		0.572	

Note: ***, **, and * indicate significance levels of 1%, 5%, and 10%, respectively. The values in parentheses are t-values.

Column 6 illustrates the regression result of the effect of all dynamic capability factors on the supply chain resilience of Chinese SMGTEs. According to the results, supply chain resource management capability, supply chain collaboration capability, supply chain growth capability, supply chain risk control capability and supply chain operation capability have significant positive effects on supply chain resilience, and these effects are still significant in Column 6. Therefore, these five dimensions of dynamic capability can all improve supply chain resilience in Chinese SMGTEs, and all hypotheses are supported.

Robustness test

This paper adopted two methods for robustness checks. Firstly, the Bootstrap method was used to test the robustness of previous research conclusions. The number of Bootstrap times is set to be 1,000,

Table 14

BOOTSTRAP RESULTS							
Type of regression	**Explanatory variables**	**Observed coef.**	**BootSE**	**Bootstrapping**			
				95% CI (BC)		**95% CI (P)**	
				Upper	**Lower**	**Upper**	**Lower**
Single factor	Resource	0.184	0.043	0.109	0.281	0.107	0.279
	Cooperation	0.167	0.042	0.093	0.257	0.089	0.255
	Growth	0.187	0.049	0.094	0.283	0.101	0.290
	Control	0.188	0.052	0.089	0.288	0.091	0.289
	Operation	0.159	0.035	0.091	0.228	0.090	0.228
Multi-factor	Resource	0.094	0.034	0.031	0.168	0.029	0.165
	Cooperation	0.110	0.039	0.039	0.190	0.039	0.190
	Growth	0.090	0.035	0.029	0.160	0.026	0.159
	Control	0.126	0.048	0.030	0.218	0.036	0.226
	Operation	0.101	0.035	0.034	0.172	0.031	0.169

Note: BC indicates bias-corrected confidence interval and P indicates percentile confidence interval.

and the confidence interval is 95%. The test results are shown in table 14. The bias-corrected confidence intervals of all variables do not contain 0, indicating that the research conclusions are still valid.

In addition, 90% of the samples were randomly selected for regression analysis in order to further check robustness, and the research results are consistent with previous ones. The detailed results are shown in table 15. The robustness test results indicate that the positive effects of supply chain resource management capability, supply chain collaboration capability, supply chain growth capability, supply chain risk control capability and supply chain operation capability on supply chain resilience in Chinese SMGTEs are robust.

Table 15

REGRESSION RESULTS FOR 90% OF RANDOM SAMPLES						
Factor	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	Resilience	**Resilience**	**Resilience**	**Resilience**	**Resilience**	**Resilience**
_cons	2.532***	2.588***	2.434***	2.389***	2.515***	1.387***
	(14.16)	(14.58)	(10.63)	(9.88)	(13.69)	(5.60)
Age	0.252***	0.285***	0.293***	0.229**	0.230**	0.090
	(2.73)	(2.99)	(3.19)	(2.44)	(2.35)	(1.02)
Scale	0.221***	0.219***	0.223***	0.242***	0.263***	0.081
	(4.31)	(4.45)	(4.31)	(4.96)	(5.62)	(1.55)
Region	0.208***	0.132*	0.193***	0.128*	0.156**	0.095
	(3.33)	(1.96)	(2.94)	(1.89)	(2.38)	(1.63)
Resource	0.202***					0.101***
	(4.71)					(2.91)
Cooperation		0.179***				0.127***
		(4.26)				(3.55)
Growth			0.193***			0.091***
			(3.90)			(2.74)
Control				0.210***		0.147***
				(3.78)		(2.81)
Operation					0.171***	0.114***
					(4.85)	(3.19)
N	251	251	251	251	251	251
R^2	0.511	0.491	0.491	0.494	0.504	0.597
Adj. R^2	0.503	0.483	0.482	0.486	0.496	0.584

Note: ***, **, and * indicate significance levels of 1%, 5%, and 10%, respectively. The values in parentheses are t-values.

CONCLUSIONS AND SUGGESTIONS

Conclusions

This paper investigates the influencing factors of supply chain resilience in Chinese SMGTEs from a dynamic capability perspective. Through in-depth interviews and factor analysis, five key dynamic capability factors were determined to be able to affect supply chain resilience in Chinese SMGTEs, including supply chain resource management capability, supply chain collaboration capability, supply chain growth capability, supply chain risk control capability and supply chain operation capability. The measurement model constituted by 16 measurement items (i.e., supplier management capability, financial capability, informatization capability, structural capability, information sharing capability, trust capability, coordination capability, learning capability, innovation capability, forecasting capability, agility, risk awareness, risk management capability, strategic planning capability, logistics management capability and inventory management capability) was also developed based on coding results. It is a complex process to improve supply chain resilience in Chinese SMGTEs, and five dynamic capability factors can combine to achieve this goal. Besides, the effects of these five dynamic capability factors on supply chain resilience in Chinese SMGTEs were empirically examined, and regression results indicate the significant positive effect of all five dynamic capability factors on supply chain resilience in Chinese SMGTEs.

Managerial implications

This paper explores the ways for Chinese SMGTEs to enhance supply chain resilience in a highly volatile and competitive market with data support from interviews, questionnaire survey and empirical examination. The research results of this paper can be used by Chinese SMGTEs in three ways.

Firstly, this paper provides guidance on the ways to enhance supply chain resilience through dynamic capability for business managers in Chinese SMGTEs. Due to the increasing complexity of the green textile industry, the disruption risk of the supply chain faced by Chinese SMGTEs has risen rapidly, and supply chain resilience has become an effective weapon for Chinese SMGTEs to gain competitive advantages. Chinese SMGTEs can follow the dynamic capability framework developed in this paper to gain sustainable resilience of the supply chain.

The specific actions that can be taken are listed as follows:

- Chinese SMGTEs can improve supply chain resource management capability by optimising supplier management, strengthening liquidity management, accelerating information construction and upgrading supply chain layout.
- Chinese SMGTEs should focus on facilitating information sharing, process connection and technology integration to ensure close cooperation among supply chain members and to amplify synergistic effect in supply chain resilience.
- Chinese SMGTEs should pay attention to the growth capacity of the supply chain. Active exploration of new technologies stimulates innovation and makes continuous supply chain upgrades possible.
- Chinese SMGTEs can consider establishing a risk control system for the supply chain to identify supply chain risk and take action quickly.
- Chinese SMGTEs can improve supply operation capability by improving strategic planning skills. It is also necessary for Chinese SMGTEs to modify scheduling systems to reduce logistics costs and improve efficiency, and to consider optimising warehouse layout to improve inventory turnover.

Secondly, the research results of this paper provide insights into optimal resource allocation for Chinese SMGTEs. Research results show that there are five different dynamic capability factors that can improve the supply chain resilience of Chinese SMGTEs. According to regression results, the effect of supply chain risk control capability is greater than other factors, followed by supply chain collaboration capability, supply chain operation capability, supply chain resource management capability and supply chain growth capability. In case of limited resources, Chinese SMGTEs can reasonably allocate resources to maximise the effect of the dynamic capability combo on supply chain resilience.

Thirdly, the research results of this paper encourage Chinese SMGTEs to pay more attention to the relationship among supply chain members. In past practice, Chinese SMGTEs often did not realise the importance of relationship management. However, supply chain resilience is usually restricted by the features of the relationship. Therefore, Chinese SMGTEs must choose supply chain partners with similar cultural backgrounds and values. Meanwhile, the ability of Chinese SMGTEs to absorb knowledge is particularly important in the process of cooperation.

Limitations and further research

This paper combines qualitative and quantitative research methods to explore the structure of dynamic capability and its effect on the supply chain resilience of Chinese SMGTEs. Although some meaningful results have been generated, there are still some limitations that deserve further investigation in the future.

Firstly, there is a limitation in the research object. Due to the scarcity of industry-oriented research on the supply chain resilience of small and medium-sized enterprises, this paper takes SMGTEs in China as the research object. Therefore, research results and managerial implications are both relevant to Chinese SMGTEs. It is necessary to conduct further exploration to verify if the research results of this paper can be applied to large green textile enterprises or to traditional textile enterprises. Besides, Chinese SMGTEs are typical labour-intensive enterprises with certain capital and technological features. It is possible to apply current research results to an enterprise in the industry with similar features, such as furniture,

toy and food processing industries. The next step is to explore the shaping of supply chain resilience through dynamic capabilities in these industries.

Secondly, the research sample deserves further exploration. At the qualitative research stage, this paper selects only 26 supply chain managers of SMGTEs, related government officials and industry experts from four representative provinces of China as interviewees. Although these interviewees have excellent knowledge about the supply chain of Chinese SMGTEs, the information obtained is still limited. It is expected to invite more participants to join the interview in future research. At the quantitative research stage, most respondents of the questionnaire survey come from economically developed cities, leading to the fact that the data collected will inevitably have certain regional features and may limit further application of research results. This problem may be solved by expanding respondents to more regions and increasing the sample size in future research.

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