The Influence of Consumer Preferences on FMCG Supply Chain Decision-making from an Omnichannel Perspective

Zhang Qing

88 Daxue Rd Ouhai Wenzhou 32506 China ; zhangqin@kean.edu

Abstract: At present, the FMCG market accounts for more than half of global business, and consumers can obtain purchasing information anytime and anywhere from omnichannel. However, a critical obstacle that remains unsolved is how to combine FMCG purchases under the omnichannel with a more agile supply chain. In this paper, the focus is on the influence of consumer preferences on the FMCG supply chain from the omnichannel perspective, aiming to provide FMCG enterprises with a unique perspective from the consumer port and enhance their competitiveness in this industry. Therefore, based on the data collected from 250 respondents, consumers' preferences and behaviors were investigated, and the factors that impact consumer preferences were tested and validated through SPSS, to find out the essential factors that influence enterprise supply chain decisions. In addition, the strategic adjustment and optimization measures of the FMCG supply chain based on consumer preferences will be formulated. The survey demonstrates that most people are satisfied with social networks' purchase channels. Meanwhile, a personalized purchase with added value at the pre-sale and after-sales end is more desired. However, it is worth noting for FMCG supply chain decision-makers take measures to reduce the purchase risk caused by social networks.

Keyword: FMCG Supply chain; Social Networks; Consumer preference; Optimization

1 Introduction

1.1 Background of the Study

One of the most significant characteristics of the supply chain is the rational allocation of resources; that is, enough quantities of goods can be produced and placed in the right target market during an adequate time period (Končar et al., 2020). For most companies, a company's supply chain capabilities are closely related to its core corporate competitiveness (Janvier-James, 2012). Especially for the Fast Moving Consumer Good (FMCG) industry, which plays a very significant role in the global economy and is closely related to people's supplements and

consumption in daily life. According to globalEDGE (2022), the FMCG industry enjoys a strong development momentum, accounting for two-thirds of the world's economic and trade volume.

FMCG are also commonly known as Consumer Package Goods (CPG), which refers to products that consumers regularly consume (Gupta, 2018). Considering the characteristics of fast production turnover, short life cycles, low profits, large quantities, and fungible resources of FMCG as people's daily necessities, there are increasingly growing requirements for the FMCG industry to have a comprehensive logistic infrastructure system and a responsive supply chain. Moreover, an efficient and flexible supply chain enables those products to reach end customers faster and more economically (Stevenson & Spring, 2007).

Meanwhile, the increasing demand of consumers and the rapid development of the Internet have become more and more demanding on the contemporary supply chain. With the rapid development of economic globalization and information technology, consumers' consumption patterns and habits have changed significantly (Yu et al., 2020). Consumers' expectation for products and their delivery is constantly rising, for instance, the desire to obtain more cost-effective products in relatively convenient purchase channels with quicker delivery period. In addition, consumers' demand also tends to become more personalized. What's more, the FMCG market faces multiple challenges with the rapid popularization and application of the Internet. Especially from an omnichannel perspective, which is considered a complex network consisting of many entities and some interactions between them (Mirzabeikia & Saghirib, 2020). It has been proved by practice that from the initial physical stores to the multi-channel combined with offline stores, and then to the omnichannel environment, consumers are provided with more information and purchase choice space. Although omnichannel retail has achieved significant advantages in all aspects, it has increased operational complexity for managers and supply chain systems (Chen & Zhou, 2021).

Therefore, in such an era of continuous popularization of Internet platforms and changes in people's shopping habits and demands, the supply chain of FMCG is facing great changes. To better adapt to change, endeavors ought to pay extraordinary consideration to the optimization of the supply chain framework (Hubner et al. 2016). Especially, progressed point-of-sale, the Web of Things, user-generated substance on social media, and computerized advances such as cloud computing empower companies to gather expansive sums of information (Boone et al., 2019), through which we are able to progress the understanding of client behavior, make strides request determining, and superior perform supply chain administration.

In spite of the fact that numerous researchers have made a few ponders on the impact of buyer inclinations on supply chain decision-making and proposed a few models and optimization methodologies, there is still a lack of academic literature on the

link between supply chain perspective and consumer choice behavior (Bask et al., 2013).

Therefore, this paper aims to study the influence of consumer preferences on the FMCG supply chain from the omnichannel perspective, and provide some special perspectives for enterprises in the FMCG industry that occupy a huge market share and have strong competition, gain unique competitiveness by taking advantage of the supply chain at the consumer side so as to further safeguard and promote the development process of the FMCG industry.

1.2 Purpose of the Study

In this paper, a large amount of data will be collected and analyzed in an omnichannel context to improve the understanding of consumer behavior, so as to find out the factors that influence enterprise supply chain decisions. In addition, the optimization of the FMCG supply chain will also be explored. To fulfill the purpose of the study, the following research objectives should be facilitated:

a) Explore consumer preferences and behaviors from the omnichannel perspective, so as to analyze the factors affecting FMCG industry supply chain decisions.
b) Formulate strategic adjustment and optimization measures of the FMCG supply chain based on consumer preferences and behaviors

1.3 Significance of the Study

This paper can provide beneficial enlightenment for the FMCG market supply chain (including but not limited to FMCG) to make supply chain decisions from the perspective of consumer preference, and optimization solutions will also be proposed, so as to increase the competitiveness of enterprises. Secondly, for consumers, an enterprise's knowledge of consumer preferences and behaviors can offer assistance for them to provide higher-quality and higher-level supply chain services to meet the expanding requests of shoppers. Finally, by quantifying the relationship between customer preferences and supply chain decisions to present factors and results in a more distinct way, this paper can moreover make up for the in current academic research on the influence of consumer preferences on FMCG supply chain decisions from the omni-channel perspective.

1.4 Theoretical Framework

1.4.1 Theory of Reasoned Action(TRA) and Theory of Planned Behavior (TPB)(Rausch & Kopplin, 2021).

The Theory of Reasoned Action(TRA) and Theory of Planned Behavior aims to explore the predecessors of such behavioral intentions eagerly by proposing

intention-to-behavior connections (Rausch & Kopplin, 2021). TRA is simulated by altitude and subjective norms then forms behavioral intention, and finally produces specific behaviors. To begin with, due to the social weight of critical others, a favorable attitude toward a behavior might not able to be interpreted into activity (Webb & Sheeran, 2006). But, the subjective norm can measure the social influence on behavior (Shah & Mohamed, 2011). Assumably, the two factors of attitude and subjective norm can influence the behavior by means of advancing the formation of a mind or deliberate. Though it's challenging to clarify some unconscious behavior under TRA, the TPB solves the problem, which is the extension of TRA, and takes perceived behavioral control(e.g., compared to X, someone would regard doing Yis easier) into consideration. With the increased attention on TBP, there is a consensus that some constructs (e.g. efficiency, emotional reaction, environmental constraints) play an essential role in anticipating and changing the behavior of consumers. The use of this model can be beneficial to identify and explain the factors that affect some behaviors, and it is also a good tool to analyze the factors that affect consumer preferences (Simons-Morton & Lodyga, 2021).

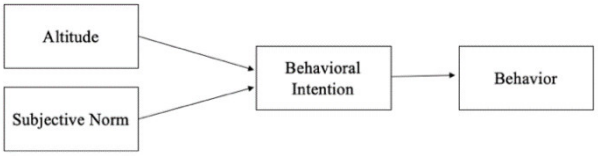


Figure 1 Theory of Reasoned Action (TRA)

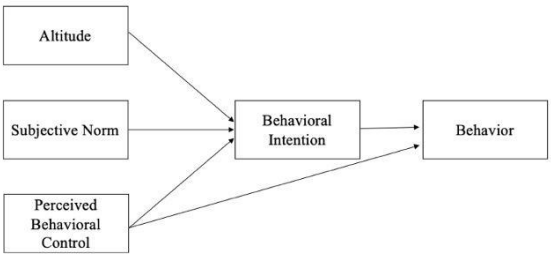


Figure 2 Theory of Planned Behavior (TPB)

1.4.2 Consumer Behavior in Omni-Channel Supply Chain Model (CBOCSC) (Yan et al., 2019)

The Consumer Behavior in Omni-Channel Supply Chain Model (CBOCSC) can help to determine the importance of various factors affecting consumer behavior in the omni-channel supply chain, and these factors can also be conducive to the decision-making of the FMCG industry Supply Chain. In Yan's research (Yan et al., 2019), The CBOCSC model proposed the subjective behavior pattern of using the social network and the degree of subjective social demands of diverse resources have a positive impact on consumer channels. Meanwhile, consumers' perceived

degree of shopping convenience, value-added services, information quality, perceived risk of the social network, and percieved personalization all have significant positive effects. In this study, the above factors will be combined with FMCG product characteristics to conduct a questionnaire survey to determine the relationship and significance of each factor.

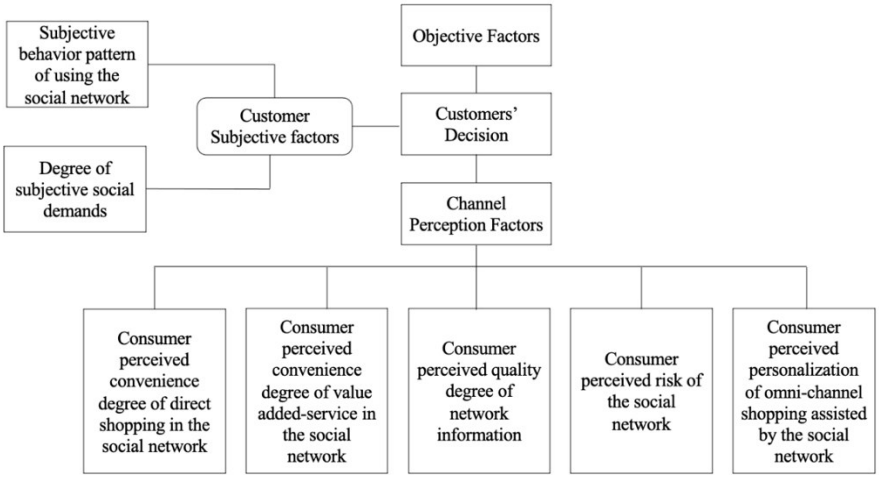


Figure 3 Technology Acceptance Model (TAM)

1.5 Conceptual Framework

Based on the review of the literature, the conceptual model is presented in Figure 4.

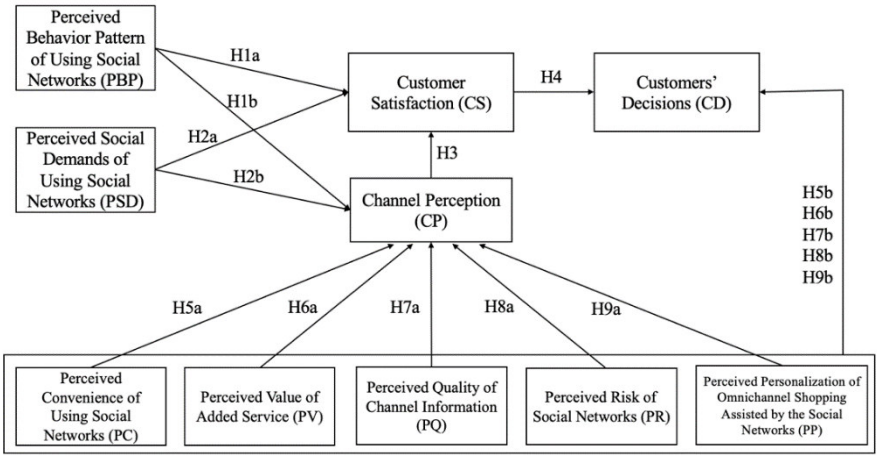


Figure 4

1.6 Hypothesis Development

H1a: Perceived behavior pattern of using social media (PBP) is positively associated with customer satisfaction (CS).

H1b: Perceived behavior pattern of using social media (PBP) is positively associated with channel perception (CP).

H2a: Perceived social demands of using social networks (PSD) are positively associated with customer satisfaction (CS).

H2b: Perceived social demands of using social networks (PSD) are positively associated with channel perception (CP).

H3: Channel perception (CP) is positively associated with customer satisfaction (CS).

H4: Customer satisfaction (CS) is positively associated with customer decisions (CD).

H5a: Perceived convenience of using social networks (PC) is positively associated with channel perception (CP).

H5b: Perceived convenience of using social networks (PC) is positively associated with customer decisions (CD).

H6a: Perceived value of added service (PV) is positively associated with channel perception (CP).

H6b: Perceived value of added service (PV) is positively associated with customer decisions (CD).

H7a: Perceived quality of channel information (PQ) is positively associated with channel perception (CP).

H7b: Perceived quality of channel information (PQ)is positively associated with customer decisions (CD).

H8a: Perceived risk of social networks (PR) is positively associated with channel perception (CP).

H8b: Perceived risk of social networks (PR) is positively associated with customer decisions (CD).

H9a: Perceived personalization of omnichannel shopping assisted by the social network (PP) is positively associated with channel perception (CP).

H9b: Perceived personalization of omnichannel shopping assisted by the social network (PP) is positively associated with customer decisions (CD).

2 Literature Review

2.1 FMCG Supply Chain Decision-making from Omnichannel

The emergence of the multichannel, the interaction of both physical and online retailing, provides a solid foundation for the development of a retailing omnichannel (Frasquet et al., 2017). Nevertheless, despite the fact that multiple channels coexist, neither customers nor retailers are able to direct how they are integrated (Beck & Rygl, 2015). In contrast, omnichannel offers consumers a consistent and seamless overview across various channels, along with taking brand esteem into the consideration, independent of the channel selection, so as to amplify consumers' purchase experience (Mirzabeiki & Saghiri, 2020). In addition, by offering a complete alignment of various channels and touchpoints, omnichannel really provides a high level of integration by allowing customers to easily switch between channels within the same transaction process (Hamouda, 2019). And just in the last decades, the majority of consumers have already started their shopping across many channels thanks to the Internet's explosive expansion (Zhang et al., 2010).

Moreover, omnichannel is a good development opportunity for enterprises that want to gain competitiveness through the supply chain. If the enterprise makes good use of it, it can not only help close the relationship between the target group and the company but also promote its business development (Sousa et al., 2021). According to the research, the omnichannel, particularly social networks, enables faster and more consistent communication and information transfer between the enterprise and its suppliers and customers, and then it can also achieve the same effect on the consumer side (Tungande et al., 2020).

However, due to the agile nature of their products, the FMCG retail industry has one of the most difficult and complex supply chains, such as fast turnover rate, short life cycles, low profits, large quantities, and fungible resources, is essential to meet customer’s demand through flexibility (Tungande et al., 2020). Meanwhile, the key to prevailing is no more either clicks or bricks, not just one or the other, even further containing every possible chance of getting to the final customer (Djofack et al.,

2021). In addition, FMCG is featured as end-consumer-centric, customer behavior has modifid due to the evolution of technologies such as the Internet and their expectations have become more complex (Thaichon et al., 2022). Therefore, contemporary enterprises, especially those in the FMCG industry, need to adapt and maximize the use of omnichannel, embed it into the supply chain, which could collect a wide range of information from different sources, and predict future trends, to help enterprises make wiser decisions (Salam & Khan, 2018).

2.2 Theoretical Framework and Hypothesis Development

2.2.1 Theory of Reasoned Action(TRA) and Theory of Planned Behavior (TPB)

The Theory of Reasoned Action (TRA) is a theory that explains why someone chooses to act in a particular way and is seen to be the best indicator of whether their behavior will be realistic (LaCaille, 2020). According to the research, altitudes and subjective norms demonstrate a positive relationship with a person's behavioral intention and actual action (Procter et al., 2019). Later, the appearance of perceived behavior control is taken into account by the Theory of Planned Behavior (TPB). Besides this, TPB is considered more accurate and informative than TRA (Ahmed & Ward, 2016). As a common rule, the more founded the person's decision to engage in the conduct in question should be, the more favorable the frame of mind and subjective standard, and the more notable the seen control (Bosnjak et al., 2020).

2.2.2 Consumer Behavior in Omni-Channel Supply Chain Model (CBOCSC)

Consumer behavior in the context of an omnichannel supply chain primarily refers to how consumers integrate data from various complicated channels, stores, and commodities into their decision-making processes (Yan et al., 2019). Combined with the characteristics of the FMCG industry, the Consumer Behavior in Omni-Channel Supply Chain Model (CBOCSC) can contribute to assessing the significance of various elements influencing consumer behavior under the omnichannel supply chain, the CBOCSS in this paper takes the factors of the perceived behavior pattern and perceived social demands, convenience, the value of added service, quality of channel information, perceived risks, perceived personalization of social networks into consideration, then further ascertain the significance of each aspect.

2.2.3 Perceived behavior pattern of using social networks

Broadly speaking, social networks (also known as social media, or SNSs) are websites and programs that let users create and share content with networks (Pittman & Reich, 2016). Meanwhile, many e-commerce sites today make heavy

use of social networks to facilitate user contributions, social connections, and the online buying and selling of goods (Kwahk & Kim, 2016), which will foster consumers' use of social networks. According to TPA, a consumer's perceived behavior pattern or attitude toward using those social networks is related to the degree to of a person judges actions as being favorable or negative (Peña-García et al., 2020). If consumers' perception of the purchase channel is favorable, it is then anticipated that the consumer's intention and satisfaction to purchase through social networks will rise (Yeung & Morris, 2001). Thus, the first hypothesis is to investigate whether customers' attitudes regarding social networks have a substantial impact on their satisfaction and channel perception, as presented in the following:

H1a: Perceived behavior pattern of using social networks is positively associated with customer satisfaction.

H1b: Perceived behavior pattern of using social networks is positively associated with channel perception.

2.2.4 Perceived social demands

Vygotsky's theory contends that social interaction is essential to development (Akpan & Kennedy, 2020). Moreover, based on Maslow's pyramid-shape hierarchy of human demand, there is one level related to a person's social needs, close bonds, and relativeness (Ghatak & Singh, 2019) and interpersonal connection is a fundamental desire. At the same time, social networks modernized and facilitated channels for people to interact and socialize even when they make purchases, and to some extent, they can help users relieve loneliness and provide a platform for interpersonal communication (Pittman & Reich, 2016). For instance, more than 70% of people who use social media talk about and support advertising businesses (Currás-Pérez et al., 2013). According to earlier studies, social interaction linkages may have a considerable impact on the decision-making mechanisms of consumers (Ng, 2013), at the same time, social ties have been linked to favorable customer visitation intentions (Kwahk & Kim, 2016). Thus, the second hypothesis is to investigate whether customers' subjective demands regarding social networks have a substantial impact on their satisfaction and channel perception, as presented in the following:

H2a: Perceived social demands are positively associated with customer satisfaction.

H2b: Perceived social demands are positively associated with channel perception.

2.2.5 Channel perception

Consumer characteristics and social demographies, combined with their purchase experience all have an impact on consumer channel perception (Xu & Jackson, 2019). Besides, enterprises now show their concern about customers' intended

channels of purchase in an omnichannel retail environment in addition to the products they are willing to purchase (Mela & Neslin, 2008), which is essential for their business. In general, customers' fundamental preferences for channels and the extent to which inertia influences their selections vary (Neslin & Shankar, 2009). Moreover, the ultimate purchase choice is recognized to be influenced by the consumer's purchase intention (Peña-García et al., 2020b), furthermore, the correlation between purchasing intent and perceived value is typically positive (Chiu et al., 2012). Thus, the third hypothesis is to investigate whether customers' channel perception has a substantial impact on their satisfaction, as presented in the following:

H3: Channel perception is positively associated with customer satisfaction.

2.2.6 Customer Satisfaction

Customer satisfaction is the sense of happiness or dissatisfaction that occurs from comparing the effectiveness of items with their intended effectiveness (Putro & Nurmahdi, 2020). Variables such as quality, convenience, and risk all can give consumers satisfaction on a level corresponding to the satisfaction of their consumption needs (Nawangsari et al., 2020). What's more, a positive attitude acts in the formation of a customer-satisfaction, which also reinforce consumers' purchase decision and repurchase intention in the future (Tandon et al., 2017). Thus, the fourth hypothesis is to investigate whether customers' satisfaction has a substantial impact on their decision:

H4: Customer satisfaction is positively associated with customer decisions.

2.2.7 Perceived convenience of using social networks

The convenience of the channel can bring savings to consumers from the dimensions of time, money, and experience, so as to promote the generation of consumers' enthusiasm for one or more particular channels (Xu & Jackson, 2019). In research from Berry et al., consumer perception of service convenience decreases when time expenses connected with a service increase (2002). There are various dimensions that can be used to measure social network convenience, such as the ease of access, search, possession, transaction, etc (Jiang et al., 2013).

The higher convenience makes it simpler for customers to use a certain channel to seek and eventually buy a product, which improves their perception of this channel(Ma, 2017). Thus, the fifth hypothesis is to investigate whether customers' perceived convenience of social networks has an impact on their channel perception and customer decisions, as presented in the following:

H5a: Perceived convenience of using social networks is positively associated with channel perception.

H5b: Perceived convenience of using social networks is positively associated with customer decisions.

2.2.8 Perceived value of added service

Many theories related to CRM now emphasize the significance of buyer-seller connections beyond just making sales and are built upon customer happiness and trust-building (Agnihotri et al., 2017). Successful differentiation are tracked more efficiently across the pre-sales, sales, and after-sales process thanks to social networks (Roblek et al., 2013). Such a value-added service is an addition to a current purchase that raises the value of every connection with a client, present or potential (Andzulis et al., 2012). Thus, the sixth hypothesis is to investigate whether customers' perceived value of social networks in pre-sale and after-sale processes has an impact on their channel perception and customer decisions, as presented in the following:

H6a: Perceived value of added service is positively associated with channel perception.

H6b: Perceived value of added service is positively associated with customer decisions.

2.2.9 Perceived quality of channel information

People today must cope with the abundance of information they have access to without knowing the information quality (Fu et al., 2020). Thus, the dilemma that the majority of people then encounter is determining which information is more reliable (Hilligoss & Rieh, 2008). Nevertheless, Purchase intentions are influenced by perceived channel information (Pearson et al., 2012), and the greater the quality of the information used to make decisions, the better those decisions will turn out, according to decision theory (Gallemore & Labro, 2015). In addition, the effectiveness of omnichannel integration is projected to matter more than multichannel. As mentioned before, "omnichannel" refers to channel integration to the fullest possible degree (Hamouda, 2019). Thus, the seventh hypothesis is to investigate whether customers' perceived risk of social networks has an impact on their channel perception and customer decisions, as presented in the following:

H7a: Perceived quality of channel information is positively associated with channel perception.

H7b: Perceived quality of channel information is positively associated with customer decisions.

2.2.10 Perceived risk of social networks

Perceived risk of social networks here specifically refers to the information privacy of consumers. Under the distinctive features of the e-commerce environment, such as incomplete information and the absence of face-to-face connection, consumers tend to perceive increased risk when they conduct an omnichannel purchase (Bhatnagar et al., 2000). Furthermore, online payment increases the consumer's perceived risk of disclosing personal information (Kim,

2020). Customers typically reveal as little information as possible to avoid undesirable effects, and they prefer circumstances where they feel they have a lot of control over their personal data (Wetzlinger et al., 2017). Scientists have established that while shopping on the internet, higher levels of perceived risk may have a detrimental impact on consumers' intent to purchase through social networks. (Kim, 2020). Thus, the eighth hypothesis is to investigate whether customers' perceived risk of social networks has an impact on their channel perception and customer decisions, as presented in the following:

H8a: Perceived risk of social networks is negatively associated with channel perception.

H8b: Perceived risk of social networks is negatively associated with customer decisions.

2.2.11 Perceived personalization of omnichannel shopping assisted by the social networks

Individuals rely on technological tools and applications more and more for interaction and collaboration in the Age of the internet; an individual's perception of overload may rise due to various technologies and apps (P. Yin et al., 2018). Consumers frequently find themselves unable to do a thorough analysis of all of their options before making a buying decision (Song et al., 2021), while personalization, which is capable of recognizing a variety of consumer wishes, preferences, and cultural traits as well as elements intended to reinforce consumers' purchasing intentions (Gana & Koce, 2016), can deliver customized messages based on users' specific tastes (Li, 2016). As a result, building decision support models that benefit users accurately, conveniently, and quickly identify appropriate products is more favorable (Schuckert et al., 2015). Especially at present, retailers can offer tailored services due to digital technologies (Wetzlinger et al., 2017). The recommendation system is one of the most typical ones; by swiftly choosing products that suit users, such systems can significantly minimize the amount of time people spend perusing vast volumes of information (Yin et al., 2020). What's more, based on the consumers' data analysis, individuals have a greater tendency to buy those recommended products (Liao et al., 2021). Thus, the ninth hypothesis is to investigate whether customers' perceived personalization of omnichannel shopping assisted by social networks has an impact on their channel perception and customer decisions, as presented in the following:

H9a: Perceived personalization of omnichannel shopping assisted by social networks is positively associated with channel perception.

H9b: Perceived personalization of omnichannel shopping assisted by social networks is positively associated with customer decisions.

3 Research Method

3.1 Data Collection and Sample Characteristics

In order to investigate the influence of consumer preferences on FMCG supply chain Decision-making from an omnichannel perspective, an online survey was created. Participants are Chinese web users under the age of 48 with a range of monthly earnings, occupations, and ages. At the same time, the participant demographics are shown in percentage form in Table 1. There were 251 participants, including 38 males and 213 females. Moreover, their ages tend to cluster between 18-22. 91.2% of them are university degrees.

Table 1. Demographics of respondents

Demographics	Frequency %
Gender	
Male	15.1
Female	84.9
Age	
≤17	0.4
18-22	88.8
23-27	7.2
28-32	1.6
33-37	0.8
38-42	0.0
42-47	1.2
≥48	0
Occupation	
Students	91.2
Unemployed	2.4
Part-time	1.6
Full-time	4.8
Monthly Income	
Less than 1,500 RMB	20.7
1,500-3,000 RMB	44.6
3,001-4,500 RMB	23.9
4,501-6,000 RMB	6.4
6,001-7,500 RMB	2
More than 7,500	2.4
Have you ever had shopping through social networks	
Yes	99.2
No	0.8
Frequency of buying products or services through the social networks	
Never	1.2
Sometimes	28.3
Usually	46.6
Always	23.9
How satisfied are your social networks shopping experiences	
Very satisfied	12.7
Satisfied	80.9
Dissatisfied	6
Very dissatisfied	0.4

3.2 Measures and Reliability Tests

The measurement approach used in this research makes reference to earlier research. The constructs include Perceived behavior pattern of using social

networks (PBP), Perceived social demands of using social networks (PSD), Perceived convenience of using social networks (PC), Perceived value of added service (PV), Perceived quality of channel information (PQ), Perceived risk of social networks (PR), Perceived personalization of omnichannel shopping assisted by the social networks (PP), Channel Perception (CP), Customer satisfaction (CS), Customer decision (CD), originated with Yan et al. (2019). All the characteristics were evaluated using a seven-point Likert scale, ranging from 1 (Strongly disagree) to 7 (Strongly agree). A pilot test was conducted with 30 people to collect responses in order to pretest the reliability of the measurements. All measurement items were preserved for the official reliability tests because the results of the pilot test showed no reliability difficulties with them.

In many areas like social, behavioral, and educational sciences, reliability is frequently assessed using Cronbach's Alpha coefficient (Ravinder & Saraswathi, 2020). This coefficient, which ranges from 0 to 1, is used to assess the reliability of variables on various scales. Cronbach's alpha has a score between zero and one, with larger scores indicating that the items are more reliable at measuring something, and with a minimum desired effect size of 0.7, Cronbach's alpha reaches an adequate reliability coefficient (Bujang et al., 2018). Within two weeks, all of the valid questionnaires for this study were gathered. The Cronbach's alpha value for each variable is shown in Table 2. All of the values were more than or equal to 0.7, indicating that all of the variables' reliability is acceptable.

Table 2. Cronbach's Alpha (α) of Each Variable

Table 2. Cronbach's Alpha (α) of Each Variable

Variables	No. of Items	α
Perceived behavior pattern of using social networks (PBP)	5	0.799
Perceived social demands of using social networks (PSD)	5	0.810
Perceived convenience of using social networks (PC)	5	0.880
Perceived value of added service (PV)	5	0.870
Perceived quality of channel information (PQ)	5	0.898
Perceived risk of social networks (PR)	5	0.809
Perceived personalization of omnichannel shopping assisted by the social networks (PP)	5	0.852
Channel Perception (CP)	5	0.866
Customer satisfaction (CS)	5	0.879
Customer decision (CD)	5	0.900

3.3 Correlation Test

The r coefficient, often known as the correlation coefficient, measures the correlations between different variables. The correlation r number, which ranges from -1 to +1, can be either positive or negative to indicate a positive or negative correlation relationship. If the r value is changed from -1 to 0, especially in particular situations, the relationships between two variables are negative. In contrast, it shows that the two variables are positively associated if the r value is between 0 and +1. The correlation between two variables is stronger the closer the r value is to |1|.

Table 3. Correlation analysis between the variables

Variable	PBP	PSD	PC	PV	PQ	PR	PP	CP	CS	CD
PBP	1									
PSD	0.488**	1								
PC	0.586**	0.374**	1							
PV	0.582**	0.425**	0.656**	1						
PQ	0.534**	0.336**	0.723**	0.745**	1					
PR	0.209**	0.363**	0.035	0.148**	0.008	1				
PP	0.430**	0.466**	0.364**	0.462**	0.371**	0.374**	1			
CP	0.524**	0.500**	0.413**	0.459**	0.352**	0.411**	0.605**	1		
CS	0.561**	0.525**	0.405**	0.522**	0.420**	0.435**	0.619**	0.801**	1	
CD	0.603**	0.397**	0.440**	0.563**	0.501**	0.315**	0.526**	0.650**	0.758**	1

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3 displays the findings of an investigation of correlations between various factors.

The absolute magnitude of the observed correlation coefficient (two variables), which varied from 0.90 to 1.00, will receive a strong correlation according to Schober's (2018) remark of the standard method for interpreting a correlation coefficient. A significant correlation exists between the two variables if the r value is between 0.7 and 0.89. Two variables have a moderate correlation when their r values are between 0.4 and 0.69. When the value of |r| falls between 0.1-0.39 or 0.00-0.10, it indicates a weak or insignificant connection, respectively. All of the factors for the data gathered below exhibit at least a moderate association with one another.

4 Results

4.1 Evaluation of Measurement Results

The statistical method of determining the relationship between independent and dependent variables is known as regression analysis. In the research of Hayes and

Rockwood, mediation is a regression-based analysis (2017).In this study, model 4 and model 6 are used, including the linear regression of the independent variable X and dependent variable Y, regression analysis of the independent variable X, the mediating variable M1 and M2, and the dependent variable Y.

On the basis of the hypothesis model and the established conceptual framework, perceived behavior patterns of using social media (PBP), perceived social demands of using social networks (PSD), channel perception (CP), perceived convenience of using social networks (PC), the perceived value of added service (PV), perceived quality (PQ), perceived risk (PR), perceived personalization of omnichannel shopping assisted by the social networks (PP) are set as the independent variables and customer decisions (CD), both customer satisfaction (CS) and channel perception (CP) will influence customer's purchase decision under the omnichannel environment.

4.2 Hypothesis Analysis

Table 4 displayed the outcomes of the structural model analysis. From the analysis, we can conclude that the perceived behavior pattern of using social media is positively associated with customer satisfaction. H1a is accepted since $\beta = 0.561$, $p < 0.01$. For H1b, $\beta = 0.524$, $p < 0.01$, hence H1b is supported, and the perceived behavior pattern of using social media will largely influence channel perception. In H2a, since $\beta = 0.524$, $p < 0.01$, H2a is accepted, and perceived social demands of using social networks are positively related to customer satisfaction. While for H2b, which is accepted and perceived social demands of using social networks are positively associated with channel perception, because $\beta = 0.500$, $p < 0.01$. Channel perception ($\beta = 0.801$, $p < 0.01$) had a powerful influence on customer satisfaction, thus accepting H3. In addition, customer satisfaction ($\beta = 0.758$, $p < 0.01$) is positively associated with customer decision, so accepting H4. H5a is accepted since $\beta = 0.413$, $p < 0.01$, thus perceived convenience of using social networks is positively related to channel perception. While for H5b, which is accepted, and perceived convenience of using social networks is positively associated with customer decision, because $\beta = 0.440$, $p < 0.01$. The perceived value of added service ($\beta = 0.459$, $p < 0.01$) is positively associated with channel perception, thus supporting H6a. For H6b, since $\beta = 0.563$, $p < 0.01$, H6b is accepted, and the perceived value of added service is positively associated with customer decision. Perceived quality of channel information ($\beta = 0.352$, $p< 0.01$) is positively related to channel perception, then supporting H7a. For H7b, $\beta = 0.501$, $p< 0.01$, so H7b is accepted, and the perceived quality of channel information is positively associated with customer decision. Perceived risk of social networks ($\beta = 0.411$, $p< 0.01$) is positively associated with channel perception, thus accepting H8a. For H8b, $\beta = 0.315$, $p< 0.01$, so H8b is accepted, and the perceived risk of social networks if positively associated with the customer decision. Perceived personalization of omnichannel shopping assisted by social networks ($\beta = 0.605$, $p< 0.01$) is positively

associated with channel perception, so H9a is supported. Since $\beta = 0.526$, $p < 0.01$, H9b is accepted, and perceived personalization of omnichannel shopping assisted by the social network is positively associated with customer decision.

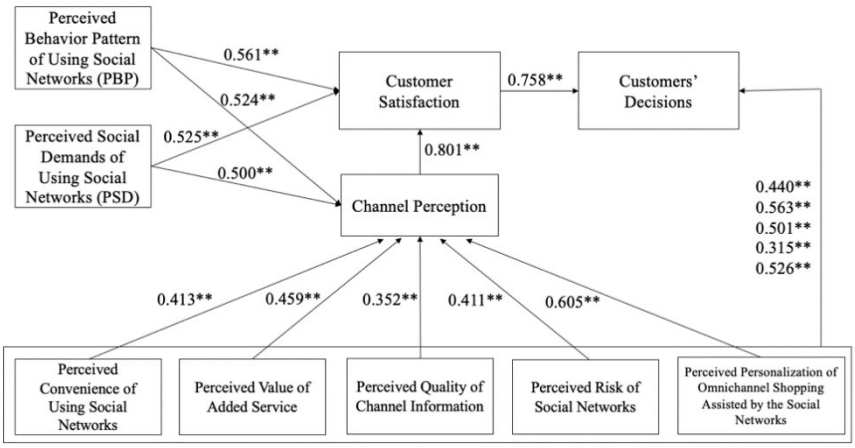
Table 4. Hypothesis Analysis

Hypotheses	Path	Coefficient	*t* value	*p*-value
H1a	PBP→CS	0.561	10.698	0.000**
H1b	PBP→CP	0.524	9.708	0.000**
H2a	PSD→CS	0.525	9.738	0.000**
H2b	PSD→CP	0.500	9.109	0.000**
H3	CP→CS	0.801	21.000	0.000**
H4	CS→CD	0.758	18.324	0.000**
H5a	PC→CP	0.413	7.163	0.000**
H5b	PC→CD	0.440	7.730	0.000**
H6a	PV→CP	0.459	8.159	0.000**
H6b	PV→CD	0.563	10.754	0.000**
H7a	PQ→CP	0.352	5.932	0.000**
H7b	PQ→CD	0.501	9.131	0.000**
H8a	PR→CP	0.411	7.114	0.000**
H8b	PR→CD	0.315	5.228	0.000**
H9a	PP→CP	0.605	11.996	0.000**
H9b	PP→CD	0.526	9.754	0.000**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 5 Hypothesized model with results



**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Non-significant routes are illustrated in dotted lines above.

4.3 Mediation Analysis

Table 5 indicates the result of the mediation analysis of CP and CS, taking them as the mediation items within variables of PBP, PSD, PC, PV, PQ, PR, PP, and CD. We use SPSS 26 and Hayes Process Macro to calculate the total and indirect effects. The total effect via CP and CS was significant since $p < 0.01$, and the indirect effect via CP and CS was significant as well because $p < 0.01$ demonstrating that CP and CS played a mediation part within PBP, PSD, PC, PV, PQ, PR, PP, and customer decision of using the social networks channel to conduct research.

Table 5. Mediation analysis

Path	Effect	Coefficient	SE	*t* value	*p*-value	LLCI	ULCI
PBP → CS → CD	Total	0.6992	0.0586	11.9316	0.0000**	0.5838	0.8146
PBP → CP → CS → CD	Total	0.6992	0.0586	11.9316	0.0000**	0.5838	0.8146
PSD → CS → CD	Total	0.3806	0.0558	6.8174	0.0000**	0.2707	0.4906
PSD→ CP → CS → CD	Total	0.3806	0.0558	6.8174	0.0000**	0.2707	0.4906
PC→ CP → CS → CD	Total	0.5080	0.0657	7.7300	0.0000**	0.3786	0.6374
PV→ CP → CS → CD	Total	0.6158	0.0573	10.7544	0.0000**	0.5031	0.7286
PQ → CP → CS → CD	Total	0.5833	0.0639	9.1315	0.0000**	0.4575	0.7092
PR → CP → CS → CD	Total	0.2708	0.0518	5.2283	0.0000**	0.1688	0.3728
PP → CP → CS → CD	Total	0.5070	0.0520	9.7538	0.0000**	0.4046	0.6094
Indirect effect	**Effect**	**Coefficient**	**Boot SE**	**Boot LLCI**		**Boot ULCL**	
PBP → CS → CD	Indirect	0.3981	0.0565	0.2930		0.5157	
PBP → CP → CS → CD	Indirect	0.2383	0.0484	0.1480		0.3351	
PSD → CS → CD	Indirect	0.3824	0.0475	0.2910		0.4761	
PSD→ CP → CS → CD	Indirect	0.2295	0.0423	0.1498		0.3154	
PC→ CP → CS → CD	Indirect	0.2298	0.0483	0.1406		0.3311	
PV→ CP → CS → CD	Indirect	0.2016	0.0408	0.1261		0.2862	
PQ → CP → CS → CD	Indirect	0.1762	0.0382	0.1051		0.2524	
PR → CP → CS → CD	Indirect	0.1773	0.0349	0.1137		0.2493	
PP → CP → CS → CD	Indirect	0.2486	0.0457	0.1607		0.3401	

Table 6 demonstrates the hypothesis testing results on the basis of data analysis.

Table 6. Summary of Hypothesis

Hypothesis	Results
H1-a: Perceived behavior pattern of using social media (PBP) is positively associated with customer satisfaction (CS)	Supported
H1-b: Perceived behavior pattern of using social media (PBP) is positively associated with channel perception (CP)	Supported
H2-a: Perceived social demands of using social networks (PSD) are positively associated with customer satisfaction (CS)	Supported
H2-b: Perceived social demands of using social networks (PSD) are positively associated with channel perception (CP)	Supported
H3: Channel perception (CP) is positively associated with customer satisfaction (CS)	Supported
H4: Customer satisfaction (CS) is positively associated with customer decisions (CD)	Supported
H5-a: Perceived convenience of using social networks (PC) is positively associated with channel perception (CP)	Supported
H5-b: Perceived convenience of using social networks (PC) is positively associated with customer decisions (CD)	Supported
H6-a: Perceived value of added service (PV) is positively associated with channel perception (CP)	Supported
H6-b: Perceived value of added service (PV) is positively associated with customer decisions (CD)	Supported
H7-a: Perceived quality of channel information (PQ) is positively associated with channel perception (CP)	Supported
H7-b: Perceived quality of channel information (PQ)is positively associated with customer decisions (CD)	Supported
H8-a: Perceived risk of social networks (PR) is positively associated with channel perception (CP)	Supported
H8-b: Perceived risk of social networks (PR) is positively associated with customer decisions (CD).	Supported
H9-a: Perceived personalization of omnichannel shopping assisted by the social network (PP) is positively associated with channel perception (CP).	Supported
H9-b: Perceived personalization of omnichannel shopping assisted by the social network (PP) is positively associated with customer decisions (CD).	Supported

Conclusions

The outcome of this study demonstrates that all the hypotheses were supported. This paper revealed that the seven variables (PBP, PSD, PC, PV, PQ, PR, PP) positively influenced the customer's decision (Yan et al., 2019), and both customer satisfaction and channel perception mediate between those variables and the customers' decision (Rausch & Kopplin, 2021), which are in agreement with earlier findings. Moreover, this study indicates that supply chain practitioners or managers in the FMCG industry can better understand consumers' choices and tendencies of purchase channels under the omnichannel background from the perspective of consumer preference, so as to help enterprises establish and optimize the customer-centered supply chain system.

This study discusses the relationship between omnichannel supply chains and consumer channel decisions based on consumers' subjective channel perceptions and social needs for social networks. Firstly, according to the survey results, the channels are influenced by consumers' personal preferences, and consumers' subjective perception of channels varies from person to person. Moreover,

consumers have certain social needs on social networks, (Ghatak & Singh, 2019; Pittman & Reich, 2016; Ng, 2013; Kwahk & Kim, 2016), and the reviews on product usage or service sent by users on social networks can provide some reference to users who want to buy the same product, which is helpful and beneficial for other buying processes (Ventre & Kolbe, 2020).

Secondly, according to the study, consumers' perceived convenience of using social networks, the perceived value of added service, the perceived quality of channel information, the perceived risk of social networks, and the perceived personalization of omnichannel shopping assisted by the social networks have significant effects on customer decision in omnichannel supply chains (Ma, 2017; Agnihotri et al., 2017; Pearson et al., 2012; Bhatnagar et al., 2000; P. Yin et al., 2018). At the same time, consumers believe that shopping through social networks provides convenience and additional services during the pre-sales and post-sales process that add value to the overall buying experience (Roblek et al., 2013). Purchase through social networks allows for a certain amount of online socialization to take place in the shopping experience, which is in line with their expectations. However, it is worth noting that consumers believe that the current social network purchase channel has some risk issues and that consumers expect their personal rights, information and payments to be protected. In addition, the personalization of social networks and the provision of quality and comprehensive information can increase customer satisfaction with the channel.

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