

Effects of supply chain collaboration on customer loyalty for household electronic appliances in Vietnam

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Abstract

Purpose – In an era of global competition, firms need to collaborate for long-term benefits. Researchers have investigated the linkages between supply chain collaboration (SCC), customer satisfaction and loyalty. However, little attention has been paid to these linkages in the home electronics sector. This study attempts to investigate the impacts of SCC on firms' competitive advantage, customer satisfaction and customer loyalty in the home electronics sector of Vietnam.

Design/methodology/approach – Besides aggregation of literature review, the authors conducted an experimental study with a sample of 300 customers who bought household electronic appliances in the first six months of 2021 in Hanoi city, Vietnam. In this study, structural equation modelling (SEM) was used to analyse the hypotheses.

Findings – The findings indicate that SCC has a positive impact on competitive advantage, increasing customer satisfaction and loyalty in the home electronics sector. Evidence also revealed that competitive advantage can be enhanced through information sharing, decision synchronisation and incentive alignment.

Originality/value – This study can be applied to foster a more effective collaboration approach amongst supply chain members in the household electronic appliances sector, which, in turn, will increase competitiveness, customer satisfaction and loyalty.

Keywords Supply chain collaboration, Competitive advantage, Customer satisfaction, Customer loyalty, Household electronic appliances

Paper type Research paper

Introduction

In today's fiercely competitive market, SCC is widely considered as one of the leading trends for firms to gain competitive advantage, thereby achieving customer satisfaction and loyalty. Customer satisfaction is important to fulfil the requirements of existing customers and attract new customers, which is a factor dependent on the satisfaction level of existing customers. Positive feedback by word-of-mouth and repeated purchases are the outcomes of customer satisfaction (Fornell, 1992). On the other hand, increasing customer requirements and fierce competition prompt businesses to be responsive to changes to strengthen their positions in the

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market. Therefore, first and foremost, enterprises must gain competitive advantages (Harrison and New, 2002).

One single firm may not possess all the required resources and capabilities to compete on a global scale. Therefore, firms' competitive advantage will depend on access to non-marketable capabilities through collaborations within the supply chain (Salam, 2017). Indeed, instead of bargaining over the lowest possible price to increase margins, SCC allows integrated solutions that focus on a common goal of meeting the end customer's needs (Simatupang and Sridharan, 2008). Such integrated solutions allow the chain members to benefit from the economies of scale (Bowersox, 1990) and enhance operational flexibility to cope with high demand uncertainties (Lee *et al.*, 1997).

Given the importance of the SCC, many researchers across the globe have studied the effects of the SCC on competitive advantage, customer satisfaction and customer loyalty. Some of these studies focus on analysing cooperation as a factor of the supply chain management activities that affects customer perceptions (Prathiba, 2020; Haque and Islam, 2018). Others pay attention to factors affecting the collaborative relationships in the supply chain (Hudnurkar *et al.*, 2014) or the analysis of the benefits and challenges of building an SCC (Sabir and Irfan, 2014). However, research on the relationship between the SCC and customer loyalty is often studied individually or lacks in-depth focus analysis due to the time and effort required for primary data collection, especially in the home electronics sector.

In recent years, the world has witnessed remarkable growth in the home electronics market. According to Statista (2021), the worldwide total revenue of consumer electronics segment is about US\$ 726,806m, with a projected growth rate of 7.20% annually and a forecasted penetration to reach 37.2% in 2025. In Vietnam, with the advantages of a young population and increasing income per capita growth, together with the government's open policies, the home electronics industry is considered a potential market for domestic and foreign suppliers. However, competition is increasing both amongst local-to-local and domestic-to-foreign brands.

Based on the abovementioned research gaps, this paper aimed to formulate a framework and study the relationships amongst the SCC, competitive advantage, customer satisfaction and loyalty. By pooling a set of constitutive factors, based on literature review, the study examined the relationship between the SCC and competitive advantage. In addition, an empirical study was conducted to analyse the impact of competitive advantage on customer satisfaction and loyalty, using a sample of 300 customers who bought home electronic appliances in Hanoi city within the first six months of 2021. This research adds to the theoretical evidence of the relationships amongst the SCC, competitive advantage, customer satisfaction and loyalty via scientifically formulated models. The study results and implications indicate rational strategies and directions for home electronics suppliers; hence, gaining competitive advantage, customer satisfaction and loyalty.

The paper is structured as follows. The next section clarifies the definitions and concepts related to the research by reviewing previous literature. Section 3 provides the research method, the sampling process and the findings. The empirical results and further discussion are presented in Section 4. Finally, Section 5 concludes with remarks and the key contributions of the paper.

Literature review

Supply chain collaboration (SCC)

In the context of increasing global competition, effective supply chain management is the key to competitive advantages (Li *et al.*, 2005). Lambert *et al.* (1998) defined a supply chain as a network of businesses and relationships rather than an independent, one-to-one, business-to-business relationship. Hence, collaboration is considered a "silver bullet" in many areas of supply chain management.

The SCC is defined as a process in which a set of independent but related firms within the supply chain create connections for mutual benefits. It is generally defined as two or more

members of the supply chain working together to create competitive advantage through the three dimensions of the SCC – information sharing, joint decision-making and incentive alignment (Chonticha, 2011). The result is greater profits by satisfying the needs of the end customer that could not be achieved by acting alone (Simatupang and Sridharan, 2002).

Banomyong (2018) claimed that the SCC is achieved when information is shared, trust and openness are presented, coordination and planning are jointly performed and mutual benefit and risk-sharing amongst the supply chain members are in accordance with the common goals and each member’s policies. In other words, collaboration is a mutual objective that is greater than a written contract (Mentzer *et al.*, 2001). Goffin *et al.* (2006) claimed that the SCC formation begins from shallow transactions and ends up with a responsive integrated relationship, i.e. from getting to know each party to exploration, expansion and the final commitment (Claycomb and Frankwick, 2005).

Carter *et al.* (2000) stated that collaboration is largely determined based on trust and commitment, which, in turn, change the efficacy of cost, quality and time. Therefore, participants in this type of reciprocal relationship work together by sharing information, resources, rewards and responsibility towards decision-making and problem-solving (Soosay *et al.*, 2008) to achieve both greater common and individual advantages.

It can be seen that the SCC has been conceptualised in different ways. However, information sharing, joint decision-making and incentive alignment are the common factors. This study proposes to measure the SCC through three major factors: information sharing, decision synchronisation and incentive alignment. Table 1 summarises the main ideas of these driving factors.

In Vietnam, the home electronics market has developed significantly, with a market size of US\$ 13bn in 2019 and is expected to increase at a growth rate of more than 10% annually in

Information sharing	Information sharing is the willingness to make strategic and tactical data available to other supply chain members Information sharing facilitates decision synchronisation by enabling the chain members to take advantage of the relevant, timely and trustful shared information Information sharing is a key to minimise the consequences of issues such as “bullwhip effect”; excessive inventory and long customer lead times	The Global Logistics Research team at Michigan State University (1995) Simatupang and Sridharan (2005), Le (2018) Lee <i>et al.</i> (1997)
Decision synchronisation	Decision synchronisation means the joint decision-making in the planning and execution Synchronised decisions seeks to enhance the efficiency of capital used amongst firms; optimise order quantity, delivery and inventory replenishment; develop new products and satisfy customer’s needs	Simatupang and Sridharan (2005) Simatupang and Sridharan (2005)
Incentive alignment	Decision synchronisation is closely linked with information sharing and has positive impacts on SCC Incentive alignment is the degree to which supply chain members share costs, risks and benefits through clearly defined mechanisms Incentive alignment aims at resolving conflict of interest when personal benefit maximisation reduces the total profitability due to different cost and revenue structures of each chain member Failure to achieve aligned incentives can lead to excess inventory, stock-outs, inadequate sales efforts and poor customer service	Sheu <i>et al.</i> (2006), Simatupang and Sridharan (2005) Simatupang and Sridharan (2005) Simatupang and Sridharan (2005) Simatupang and Sridharan (2002)

Table 1.
Drivers of
collaboration

2025. Household electronic products account for 10% of the total household expenditure in four major cities of Vietnam (Hanoi, Ho Chi Minh, Can Tho and Da Nang), according to the Deloitte Consumer Survey data of February 2020. At the same time, increased household income leads to higher demand for high-end products in the retail market and double the demand in other segments, as reported by the Association of Vietnam Retailers (AVR). On the other hand, the coronavirus disease 2019 (COVID-19) pandemic forced people to stay at home, thereby boosting the emergence of online platforms for daily shopping. In Vietnam, iprice.vn [1] statistics show that online demand for small appliances (e.g. oil-free fryers, ovens, blenders and egg beaters) has increased from 50 to 80% since the pandemic. Changing purchasing behaviour prompts further cooperation in the supply chain to quickly respond to customer demands. Therefore, information sharing amongst chain members is of paramount importance to forecast demand, thereby increasing the responsiveness to sudden changes in demand and higher customer service levels. On the other hand, decision synchronisation helps to optimise capital use amongst members and, especially, encourages product innovation and development. Moreover, chain members specialising in the manufacture of household electronics share the costs, risks and benefits with the distributors by attracting them to commit investments in a long-term, win-win benefit relationship. The above review highlights the main point that information sharing, decision synchronisation and incentive alignment are the three driving factors of the SCC. Based on these, the impact of the SCC on competitive advantage, customer satisfaction and customer loyalty will be taken into consideration in this study.

Competitive advantage

Competitive advantage is the degree to which an organisation can create a position over its competitors (Porter, 1985). Harrison and New (2002) said gaining a competitive advantage is of utmost importance for enterprises, which can be done through effective supply chain management and collaboration (Li *et al.*, 2005).

Koufteros *et al.* (1997) identified five aspects that contribute to competitive advantage: competitive price, premium price, quality value for customers, reliable delivery and product innovation. Zhang (2010) measured competitive advantage through five variables: price/cost, quality, reliable delivery, product innovation and time to market. Vo Thi and Nguyen Thi Mai (2012) found that there are seven dimensions for customer satisfaction, which also indicate the competitive advantage of the firms in terms of reliability, perceived price, relationship quality, assurance, empathy, relationship service and tangibles. Chonticha (2011) stated that an enterprise gains a competitive edge when it provides products at lower or equal prices to those of the competitors; offers products with higher reliability, durability and quality than the competitors; ensures the right product, on time and dependable delivery service to the customers; proposes products with high customisation to meet customer needs and responds well to customer demand for “new” features and has a faster speed of product development and becomes the first company to bring the new product to the market at a greater speed than the industry average. In the home electronics sector, it is recommended that firms could increase their competitive edge through reliability and responsiveness of after-sale services (Murali *et al.*, 2016), distribution (Rigopoulou *et al.*, 2008) and product features and quality (Imelia and Ruswanti, 2017). From extant studies and on a theoretical basis, the authors propose the factors determining the competitive advantage of enterprises in the home electronics sector as price/cost, quality, distribution, product and responsiveness.

Customer satisfaction

Customer satisfaction is defined as the level of contentment or fulfilment that a customer experiences with the use of a product or service (Kotler and Keller, 2009). Customer satisfaction is a purchase orientation after focussing emotion and perception on product

evaluation (Oliver and Swan, 1989), which is influenced by the surrounding physical environment and price perception. Loureiro *et al.* (2014) stated that perceived value and positive disconfirmation are key contributors to satisfaction, enhancing positive switching barriers and inducing loyalty.

In the long term, the SCC members aim to increase customer satisfaction and market share; hence, maximising profits for all chain members (Simatupang and Sridharan, 2005). Francis and Waiganjo (2014) have shown that measurable factors, i.e. organisational leadership, collaboration and responsiveness, in the supply chain can determine customer satisfaction in the retail sector. The degree of satisfaction is subject to the facilities, expectations and needs of fulfilment (Tenreng *et al.*, 2019). According to Thogori and Gathenya (2014), companies need to provide customers with both pre-purchase satisfaction (fair pricing, good quality and fast delivery) and post-purchase satisfaction (warranty policies, repair and maintenance and efficient reverse logistics).

Consumers of home electronic appliances gain satisfaction when the product's quality – such as functionality, durability, design, energy-saving, etc. – meets their demand and makes their life more convenient (Uzir *et al.*, 2020). Research on customer satisfaction in purchase and usage of home electronic appliances pointed out that along with product features and quality; service quality, e.g. installation, usage instructions, repair and maintenance and after-sale service contribute to customer satisfaction (Rigopoulou *et al.*, 2008; Uzir *et al.*, 2020).

Customer loyalty

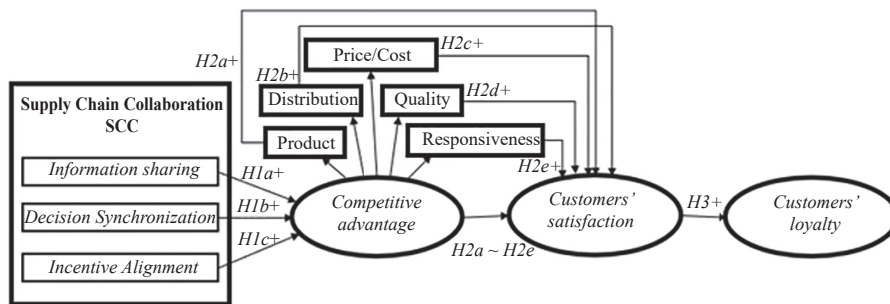
Customer loyalty is measured through the long-term commitment of a buyer to a product, brand and organisation, regardless of new options and marketing efforts to switch them (Oliver, 1999). Some have argued that customer loyalty is a result of customer satisfaction before and after a purchase (Tenreng *et al.*, 2019). If the goods or services do not meet customers' requirements, they can complain and switch to competitors' products. Loureiro *et al.* (2014) stated that a cumulative effect of satisfaction, perceived value and trust largely affects customers' loyalty in the utilitarian service setting. Research in the field of home electronics also indicated that an increase in customer satisfaction affects customers' behavioural intentions (i.e. repurchase intention and word-of-mouth) (Rigopoulou *et al.*, 2008), fostering the relationship between the sellers and the buyers and customer loyalty (Yu *et al.*, 2011).

Studies about the importance of customer loyalty to firms considered that higher customer loyalty means higher revenue and lower costs; hence, an increase in profit. Loyalty customers are six times more likely to repurchase products (Eckert, 2007), think more than twice before switching a brand (Tenreng *et al.*, 2019) and have the intention to recommend or encourage the purchase of a company's goods and/or services to, at least, five other people (Cacioppo, 2000). In addition, the cost of retaining existing customers is less than that of acquiring new ones. Thus, Cacioppo (2000) considered that every 5% increase in customer loyalty leads to a 25–85% increase in the company's profits.

Research model and methodology

Research model

As mentioned, in this study, the SCC is measured by three factors: information sharing, decision synchronisation and incentive alignment. From extant studies and on a theoretical basis, competitive advantage is proposed to be evaluated on five aspects: price, quality, distribution, product and responsiveness. Overall, the conceptual framework adopted in this study comprises four main constructs including the SCC, competitive advantage, customer satisfaction and customer loyalty (see Figure 1). The path between the constructs and the components represents the hypothetical relationship that will be verified using SEM.



Source(s): Proposed by the authors

Figure 1.
A conceptual model
of SCC

Research hypotheses

Based on the conceptual model, cooperation in the supply chain is proposed to foster competitive advantages for enterprises based on information sharing, decision synchronisation and incentive alignment:

- H1a.* Firms with a high degree of information sharing will have a high competitive advantage.
- H1b.* Firms with a high degree of decision synchronisation will have a high competitive advantage.
- H1c.* Firms with a high degree of incentive alignment will have a high competitive advantage.

Firms' competitive advantage, i.e. price, quality, distribution, product and responsiveness, can lead to customer satisfaction:

- H2a.* The higher the price advantage, the higher the customer satisfaction.
- H2b.* The better the quality, the higher the customer satisfaction.
- H2c.* The higher the distribution advantage, the higher the customer satisfaction.
- H2d.* The higher the product features, the higher the customer satisfaction.
- H2e.* The higher the responsiveness, the higher the customer satisfaction.

Customer satisfaction can lead to customer loyalty:

- H3.* Customer satisfaction has a positive effect on customer loyalty.

Methodology

The authors employed qualitative and quantitative methods to conduct the study. During the first stage, a comprehensive literature review of the SCC's impacts on a firm's competitive advantage was carried out and efforts were made to propose hypotheses and a conceptual model for this study. In the second stage, SEM was used for quantitatively evaluating the influence of competitive advantage on customer satisfaction and loyalty. For deploying the SEM method, Cronbach's alpha test of reliability was implemented for assessment of the measurement scale's properties. The primary purpose of this step was to analyse and assess the reliability and internal consistency, which measures the relationship between a set of distinct constructs. According to Nunnally (1978), variables with a corrected item-total correlation above 0.35 and coefficient alpha of factors around 0.65 indicate theoretically

accepted reliability. Besides, exploratory factor analysis (EFA) performed with the principal axis factoring method and Promax rotation for the model of 29 observed variables was used to test the relationship between the variables in all the different groups (factors), thus detecting observed variables that were different from the original factors or variables that were different from each other. We applied the rotation method with Kaiser normalisation, as deployed in the research of [Haque and Islam \(2018\)](#), to evaluate the appropriateness of the use of the EFA method. Reliability and validity measurements were evaluated using the confirmatory factor analysis (CFA). According to [Hair et al. \(2010\)](#) and [Awang \(2012\)](#), the indicators considered suitable for the model included (1) Chi-square fit statistics/degree of freedom (CMIN/df) < 3 is a good fit, (2) Comparative Fit Index (CFI) > 0.9 is a satisfactory fit, (3) Goodness of Fit Index (GFI) > 0.9 is a satisfactory fit, (4) Root Mean Square Error of Approximation (RMSEA) < 0.08 is an acceptable fit, (5) Tucker-Lewis Index (TLI) > 0.9 is a good fit and (6) p -value > 0.05 is an acceptable fit. Finally, we came up with the SEM to analyse the multi-dimensional relationship between the variables in a model as deployed in [Haenlein and Kaplan \(2004\)](#). The SEM approach is based on the partial least squares (PLS-SEM). Indicators showing the correlation between variables comprise p -value, regression weights, standardised regression weights and R^2 value.

Data collection for this study was implemented in Hanoi, the capital and the second-largest city in Vietnam. For deploying an attitudinal statement, the questionnaire was designed following Likert's five-point scale, which was referenced from prior studies and adjusted to be relevant to the study. The questionnaire consisted of 3 main sections with 7 factors addressed by 29 manifest variables measured (see [Table 2](#)). We conducted an in-depth interview with ten managers, employees and customers at supermarkets and electronics superstores in Hanoi about their post-purchase satisfaction levels for household electronic devices, omitting inappropriate scales whilst adding new ones, as well as adjusting the language to ensure coherence and transparency of the questionnaire.

The official survey was conducted in June 2021 using a convenience sampling method. The respondents were consumers who bought household electronic products within the first two-quarters of 2021 in Hanoi city. Target respondents were approached through two channels: an on-site questionnaire and an online questionnaire. Out of the 500 questionnaires received, 346 responses were obtained through an online survey and 154 responses were obtained through face-to-face interviews. After screening, the data set used in this study included 300 valid participants' responses, whose characteristics are presented in [Table 3](#). Data were then processed by the software, including the Statistical Package for the Social Sciences (SPSS 26) and Analysis of Moment Structures (AMOS 24).

It was indicated by the gender ratio that male customers were more likely to be responsible for choosing home electronic devices in Vietnam, accounting for 62.3%. In terms of age, 23- to 35-year-old people were financially independent and/or newly married, i.e. 45.7%. Out of the 300 valid samples, people with a personal income of VND 10 to 20m accounted for 36%, which was 7.3% higher than the group with an average income of VND 5–10m. Regarding household income, the group with VND 20 to 40m accounted for 38.3%. In addition, 39% of the surveyed people occasionally shopped for home electronics, which was 1–3 times in 12 months.

Empirical results and discussions

Reliability analysis results

The concept of reliability determines the consistency in the response results of the survey respondents by repeated administering the same test over a period of time. As mentioned above, coefficient alpha (Cronbach's α) of factors, along with the item-total correlation for each variable, was conducted to evaluate the internal consistency in the reliability of the factors. According to [Hair et al. \(1998\)](#), a Cronbach's α coefficient of 0.7 or higher is acceptable. [Table 4](#) shows the reliability test results of the final Cronbach's α coefficient for each factor:

Symbol	Manifest variables	Source of reference
<i>Factor 1: Price</i>		
GC01	Price commensurate with quality	Chonticha (2011)
GC02	Price equal or lower than other brands	
GC03	Reasonable price, not much higher than other brands	Proposed by authors
GC04	Price commensurate with income	
GC05	Different price levels suitable for various audiences	
GC06	Prices remain stable in the market	
<i>Factor 2: Quality</i>		
CL01	Higher quality than other brands	Chonticha (2011), Prathiba (2020)
CL02	Products with high reliability	
CL03	Products with durability	
CL04	Products of high and outstanding quality	
CL05	Product quality guaranteed, anti-counterfeiting	
<i>Factor 3: Distribution system</i>		
PP01	Products are delivered in the right category, quantity, and time	Chonticha (2011)
PP02	Seller delivers goods as per commitment	
PP03	Proper packaging, undamaged	Proposed by authors
PP04	I can easily buy products from supermarkets, shops in the areas	
PP05	Sales location is convenient, easy to find and circulating	
PP06	Distribution system has similar selling price	
<i>Factor 4: Product</i>		
TN01	Products with outstanding features, different from other brands	Chonticha (2011)
TN02	The product meets my requirements well with "novelty" features	
TN03	The product has many useful features and convenience for me	
<i>Factor 5: Responsiveness</i>		
DU01	I can easily find information via newspapers, social networks, websites	Proposed by authors
DU02	The seller delivers the product quickly	Chonticha (2011)
DU03	I do not have to wait too long for substitutes or new product purchase	Proposed by authors
<i>Customer satisfaction</i>		
HL01	My choice of using brand X products is a wise choice	Dang and Bui (2017)
HL02	I think I made the right decision to use brand X products	
HL03	Overall, I am satisfied with using brand X products	
<i>Customers' loyalty</i>		
TT01	I will continue to use brand X products	Dang and Bui (2017)
Source(s): Self-synthesised by the authors		

Table 2.
Measurement system

As can be seen from the table above, all seven scales have Cronbach's α coefficients greater than 0.7 and 29 observed variables are found to have the total variable correlation coefficient of greater than 0.3. Therefore, the scale has met the testing standards and continues to be used for further analysis.

EFA analysis

The EFA was used to group the observed variables into a more significant set of competitive advantage, customer satisfaction and customer loyalty. The Kaiser-Mayer-Olkin (KMO) and Bartlett's test were used to examine the appropriateness of the factor analysis (see Table 5). The final results obtained are as follows:

Personal profile variables	Respondents details	Number of respondents	Percentage of respondents
Gender	Male	187	62.30%
	Female	113	37.70%
Age	18–22	45	15.00%
	23–35	137	45.70%
	36–45	83	27.70%
	Above 45	35	11.70%
Personal income	Under 5 million VND	38	12.70%
	5–10 million VND	86	28.70%
	10–20 million VND	108	36.00%
	Above 20 million VND	68	22.70%
Household income	Under 10 million VND	25	8.30%
	10–20 million VND	86	28.70%
	20–40 million VND	115	38.30%
	Above 40 million VND	74	24.70%
Shopping frequency of household electronic devices	Rarely (Only once in 12 months)	41	13.70%
	Occasionally (1–3 times in 12 months)	117	39.00%
	Normal (4–6 times in 12 months)	109	36.30%
	Regularly (7–10 times in 12 months)	23	7.70%
	Very often (more than 10 times in 12 months)	10	3.30%

Table 3.
Sample descriptive statistics ($N = 300$)

Source(s): Computed data

Factor	Scale	No. of items	Range	Cronbach's alpha	Variance
Price/Cost	GC	6	1–5	0.852	85.2%
Quality	CL	5	1–5	0.835	83.5%
Distribution	PP	6	1–5	0.876	87.6%
Product	TN	3	1–5	0.787	78.7%
Responsiveness	DU	3	1–5	0.776	77.6%
Customer satisfaction	HL	3	1–5	0.842	84.2%
Customer loyalty	TT	3	1–5	0.839	83.9%

Table 4.
Cronbach's alpha reliability table

Source(s): Computed data

The KMO value is 0.891, greater than 0.5, implying that the factor analysis is appropriate. Bartlett's test sig is 0.000, lower than 0.05, i.e. the observed variables are correlated in the model. The EFA result shows that two variables, namely GC01 and CL04, have latent roots or eigenvalues less than 1, which were necessarily removed to obtain the above results. After eliminating these variables, varimax rotation methods were performed to produce the maximum value of the scale factor (see Table 6).

The table of rotation matrix consists of seven factors corresponding to the number of the observed variables. All the factor loading coefficients are greater than 0.5 and the extraction sums of squared loadings (cumulative %) reached 57.234% (greater than 50%), proving that 57.234% of the data variability was explained by the seven factors. It can be concluded that these observed variables contribute significantly to the model. Hence, the model with the input data set is perfectly suitable for inclusion in the CFA and the SEM analysis.

CFA

The CFA for the entire scale of the model seeks to evaluate and individually test the scale of each component or each independent variable. Good fit variables will then be used to test the linear SEM (see [Figure 2](#)).

The obtained results meet the criteria for testing the model fit. Thus, it can be concluded that the model fits the data. [Table 7](#) shows that the standardised regression weights are all greater than 0.5. Thus, all the observed variables have a high degree of agreement.

As can be seen in [Table 8](#), the composite reliability (CR) values are all greater than 0.7 and the average variance extracted (AVE) is greater than 0.5, which means that all the scales are convergent. The square root of AVE (bold numbers) is larger than the correlations between the latent variables (correlation coefficient is in the lower part of the bold diagonal) and the maximum shared variance (MSV) value is smaller than the AVE; hence, discriminant guaranteed. In AMOS, *** indicates that $p < 0.001$ while * shows that $p < 0.050$.

Kaiser–Meyer–Olkin measure of sampling adequacy		0.891
Bartlett’s test of sphericity	Approx. chi-square	3847.541
	Df	351
	Sig	0.000

Source(s): Computed data

Table 5.
KMO and
Bartlett’s test

Observed variables	1	2	3	Factor 4	5	6	7
PP02	0.811						
PP04	0.768						
PP05	0.753						
PP03	0.744						
PP01	0.657						
PP06	0.650						
GC05		0.803					
GC06		0.742					
GC02		0.723					
GC04		0.661					
GC03		0.616					
HL02			0.868				
HL01			0.819				
HL03			0.662				
CL02				0.765			
CL01				0.741			
CL03				0.708			
CL05				0.562			
TN02					0.767		
TN03					0.729		
TN01					0.722		
DU02						0.802	
DU01						0.695	
DU03						0.676	
HL03							0.791
HL02							0.770
HL01							0.755

Source(s): Computed data

Table 6.
Varimax rotation of
factor loadings of
observed variables in
the model

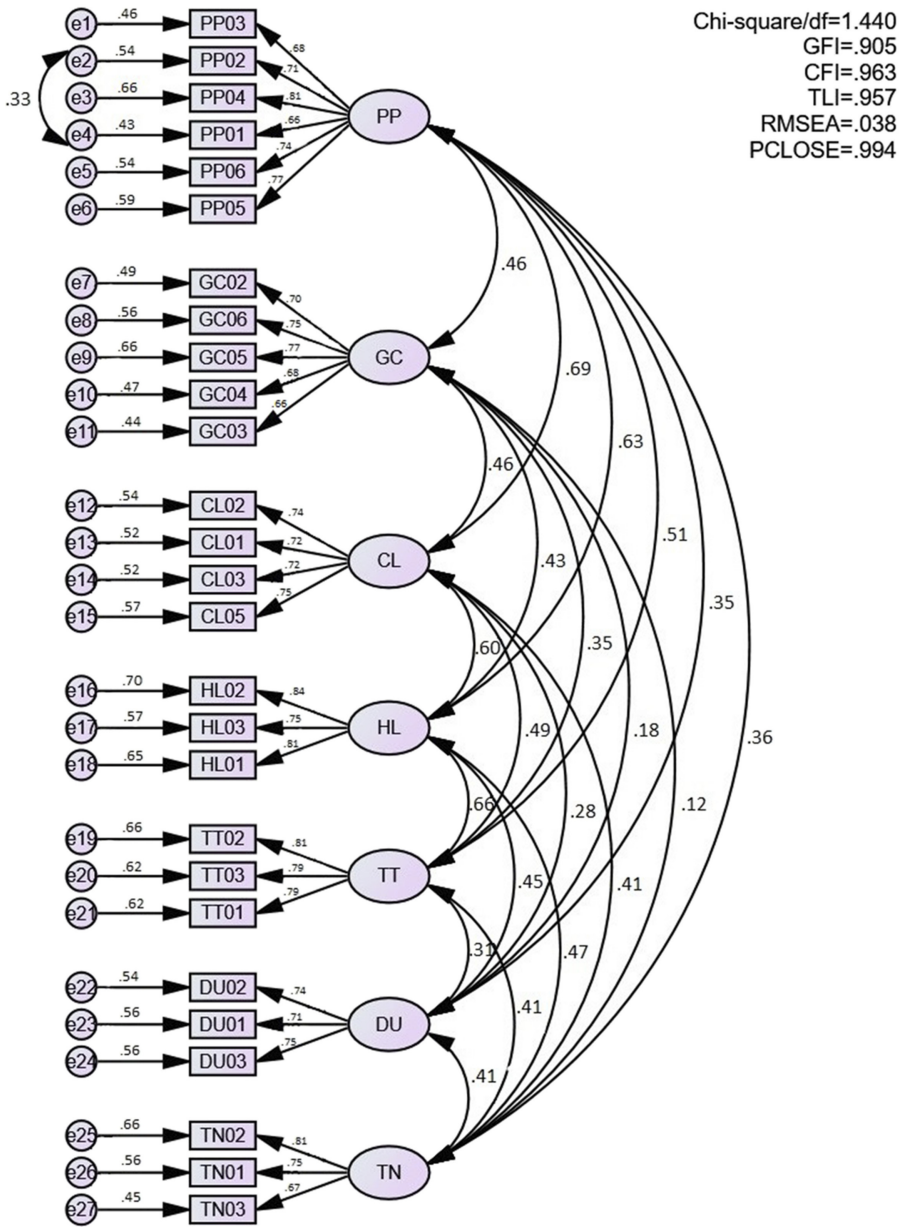


Figure 2.
CFA

Source(s): Computed Data

	Estimate	The effects of SCC on customer loyalty
PP03 ← PP	0.676	
PP02 ← PP	0.711	
PP04 ← PP	0.814	
PP01 ← PP	0.656	
PP06 ← PP	0.736	
PP05 ← PP	0.770	
GC02 ← GC	0.701	
GC06 ← GC	0.748	
GC05 ← GC	0.775	
GC04 ← GC	0.684	
GC03 ← GC	0.664	
CL02 ← CL	0.738	
CL01 ← CL	0.721	
CL03 ← CL	0.719	
CL05 ← CL	0.754	
HL02 ← HL	0.835	
HL03 ← HL	0.754	
HL01 ← HL	0.806	
TT02 ← TT	0.812	
TT03 ← TT	0.789	
TT01 ← TT	0.790	
DU02 ← DU	0.738	
DU01 ← DU	0.707	
DU03 ← DU	0.750	
TN02 ← TN	0.810	
TN01 ← TN	0.750	
TN03 ← TN	0.669	

Source(s): Computed data

Table 7. Standardised regression weights

	CR	AVE	MSV	PP	GC	CL	HL	TT	DU	TN
PP	0.871	0.532	0.479	0.729						
GC	0.839	0.512	0.214	0.455***	0.716					
CL	0.823	0.538	0.479	0.692***	0.462***	0.733				
HL	0.841	0.638	0.436	0.633***	0.425***	0.598***	0.799			
TT	0.839	0.635	0.436	0.511***	0.346***	0.495***	0.660***	0.797		
DU	0.776	0.536	0.206	0.346***	0.180*	0.284***	0.454***	0.311***	0.732	
TN	0.788	0.555	0.221	0.361***	0.120*	0.414***	0.470***	0.407***	0.410***	0.745

Note(s): *** indicates that $p < 0.001$, * indicates that $p < 0.050$
Source(s): Computed data

Table 8. CR, AVE, MSV in CFA

SEM results

Seven variables are included in the SEM framework, namely price/cost (GC), quality (CL), distribution (PP), product (TN), responsiveness (DU), customer satisfaction (HL) and customer loyalty (TT). The criteria of the model fit shows as follows: Chi-square/df = 1.442, GFI = 0.904, CFI = 0.963, TLI = 0.957 and RMSEA = 0.038. All these criteria meet the testing standards and are presented as follows:

Figure 3 shows that the variables are all statistically significant in the model as the p -value of less than 0.05 demonstrates strong evidence against the null hypothesis. Therefore, the initial hypotheses are accepted and the relationships in the model are theoretically valid (see Table 9).

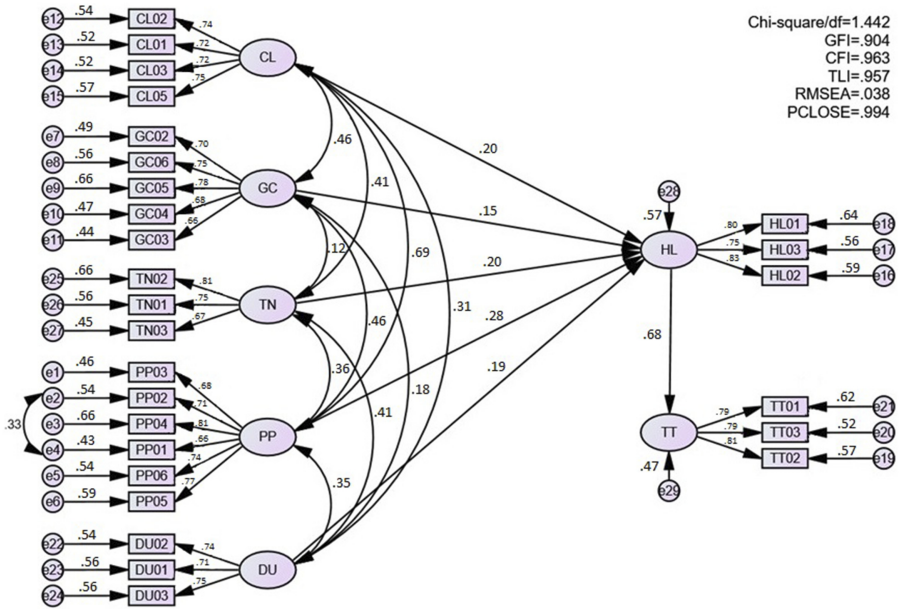


Figure 3.
Results from the SEM
analysis

Source(s): Computed data

Table 9.
Results from SEM
framework test

Hypothesis	Variable relationships	Estimate	SE	CR	P	Label
H2b	HL ← CL	0.221	0.098	2.263	0.024	Acceptable
H2a	HL ← GC	0.164	0.070	2.342	0.019	Acceptable
H2d	HL ← TN	0.207	0.069	2.976	0.003	Acceptable
H2c	HL ← PP	0.390	0.108	3.622	***	Acceptable
H2e	HL ← DU	0.219	0.075	2.907	0.004	Acceptable
H3	TT ← HL	0.652	0.064	10.221	***	Acceptable

Note(s): *** indicates that $p < 0.001$
Source(s): AMOS computed data

The order of standardised regression coefficients shows the sequence of the effects of the independent variables on the dependent variables (see Table 10). The larger the absolute value of the coefficient, the stronger the impact. As a result, all are consistent with the initial hypotheses proposed and the research model is satisfied and suitable for market data.

The coefficient R² value of the dependent variable HL is 0.567. In other words, the independent variables explain 56.7% of the HL's variation. Similarly, the R² value of the dependent variable TT equals 0.469, i.e. the independent variables explain 46.9% of the TT's variation, as shown in Table 11.

Discussions

Through the testing process, the initial hypotheses are accepted to have theoretically valid relationships. Figure 4 presents the testing results. The weights with a positive sign represent factors that have a positive effect on the other variables.

The distribution system has the greatest impact on customer satisfaction with a standardised regression coefficient of 0.308 and a *p*-value of nearly 0.000. In other words, for each unit increase in the efficiency of the distribution system, customer satisfaction will increase by 0.308 units. Quality is the second most influential factor with a standardised regression coefficient of 0.199. Following quality, the product factor increases satisfaction by 0.198 units for each unit increase in product feature. Responsiveness has a smaller impact on satisfaction, i.e. 0.186 units increase in customer satisfaction when the company's responsiveness increases by 1 unit. However, amongst the five factors that made up enterprises' competitive advantage, the price has the least impact on customer satisfaction with a standardised regression coefficient of 0.146. All five components of competitive advantage contribute positively to customer satisfaction in the home electronics sector of Hanoi, Vietnam.

In terms of the relationship between customer satisfaction (HL) and customer loyalty (TT), the results of the research show that satisfaction with the purchase and use of household electronic products has a positive impact on customer loyalty. A 0.567 coefficient R^2 of the dependent variable HL indicates that the model explains 56.7% of the variation of the HL variable. Similarly, R^2 value of the dependent variable TT is 0.469. Thus, the independent variable HL explains 46.9% of the variation of the TT variable. In brief, all the hypotheses of the study are accepted.

Relationship between variables	Estimate
HL ← CL	0.199
HL ← GC	0.146
HL ← TN	0.198
HL ← PP	0.308
HL ← DU	0.186
TT ← HL	0.685

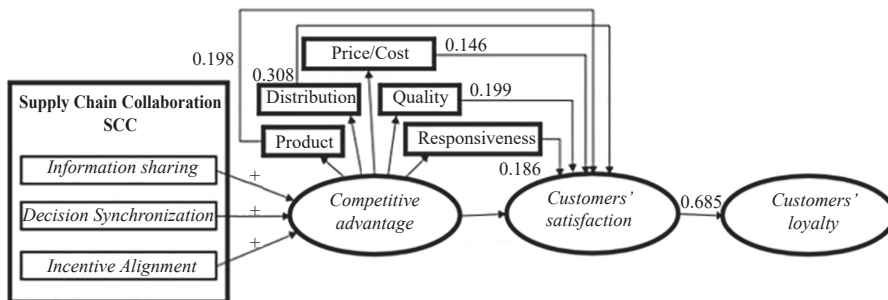
Source(s): AMOS computed data

Table 10. Standardised regression weights

	Estimate
HL	0.567
TT	0.469

Source(s): AMOS computed data

Table 11. Squared multiple correlations



Source(s): Self-synthesised from research

Figure 4. Results of SCC's impact on competitive advantage, customer satisfaction and loyalty in household electronics industry of Hanoi, Vietnam

The conclusions drawn from the study support the findings of the extant studies in various fields, such as the beer industry (Igwe *et al.*, 2016), the retail industry (Prathiba, 2020), the pharmaceutical industry (Haque and Islam, 2018) and so forth. Therefore, the contribution of this topic once again affirms the extant research's results about the positive impacts of SCC on companies' competitive advantage, customer satisfaction and customer loyalty.

With respect to the relationship between the SCC and competitive advantages, the research proposes that information sharing, decision synchronisation and risk-sharing are the three main factors affecting the cooperation efficiency of enterprises.

In terms of the relationship between competitive advantage and customer satisfaction, every well-managed effort to improve price, quality, distribution, product and responsiveness will largely contribute to enhancing the companies' competitive edges in the industry and hence have a positive influence on customer satisfaction and loyalty.

In particular, the study shows that distribution performance plays the most important role in creating customer satisfaction with the highest standardised regression coefficient. However, consumers in Hanoi city do not show high appreciation for factors concerning the ease of purchase (observed variable PP04), sales locations (observed variable PP05) and the uniformity in selling prices across the distribution system (observed variable PP06). As a result, enterprises in the home electronics appliances should carefully consider the abovementioned issues to improve the distribution system performance and increase customer satisfaction. To improve the efficiency of the distribution activities, it is recommended that enterprises specialising in manufacturing and trading of household electronics appliances set up sales points at convenient traffic areas and easy-to-find locations, facilitating the circulation of products to supermarkets and stores. Besides, it is necessary to ensure that the selling prices are uniformly distributed amongst the main distributors.

Conclusion

The study attempts to clarify the relationship between the SCC, competitive advantage, customer satisfaction and customer loyalty in the household electronics appliances sector in Hanoi, Vietnam. Multiple methodologies were applied to evaluate the hypotheses. In the first stage, a conceptual framework was proposed based on a strong literature review, in which the SCC was identified by three factors – information sharing, decision synchronisation and incentive alignment. The vital components of competitive advantage comprised of price/cost, quality, distribution, product and responsiveness. Next, a quantitative method was used to assess the relationships amongst the SCC, competitive advantage, customer satisfaction and loyalty. 500 questionnaires were received and 300 valid samples were consolidated. A Cronbach's alpha test of reliability was conducted, following EFA and CFA to construct a SEM. The results showed that all the proposed hypotheses are theoretically accepted.

As a result, close cooperation amongst the chain members allowed a competitive advantage over other competitors. Collaborative activities of the chain members included information sharing, decision synchronisation and incentive alignment. Besides, five factors of competitive advantage (i.e. price/cost, quality, distribution, product and responsiveness) were determined to have a positive impact on customer satisfaction and loyalty.

Managerial implications

This study provides useful managerial implications for the household electronic appliances sector to reconcile customers' expectations and the SCC. According to the results, distribution

largely contributes to customers' satisfaction; hence, we suggest that businesses focus on designing accessible distribution networks, store locations and facilities. In addition, durability, quality and reliability of the products should be ensured and product features should be improved and developed over time to meet the increasing customer demand. Response time, product availability and reverse logistics should also receive appropriate attention. The price level should be stable and reasonable.

Limitations and future research

In this study, the authors emphasised the household electronics appliance industry; hence, the conclusions regarding the effects of the SCC on competitive advantage, customer satisfaction and customer loyalty do not apply to the other sectors. Although Vietnam's household electronics appliances industry appeared to be an ideal empirical study for the effects of SCC on customers' loyalty, future research geared towards other sectors in the context of Vietnam would be useful for generalising and enriching empirical understanding of these effects. In addition, the sample size in this study was constrained due to limited time and financial resources. Although this sample size is adequate to meet the requirement of the model, additional data should be collected and other factors (e.g. customisation) that are influencing customer satisfaction and loyalty in the household electronics appliances industry of Vietnam should be considered to extend this work. Finally, further study into supply chain risk in this sector is necessary to gain an in-depth insight into the SCC's impacts on customer satisfaction and supply chain resilience.

Note

1. Summary of Vietnam's e-commerce in 2019–2020 – iPrice Group.

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