NORGES HANDELSHØYSKOLE

How Complementor Partners add value to E- tailers?

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Abstract

The emerging technology and concept of web 2.0 impact the value creation model of E-tailers nowadays. The past decade has seen the rapid development of complementors in the e-tailing market. To explore the way how complementor partners add value to E-tailers, I propose a value added model of complementors following an induction research approach based on value creation theories and relevant literature review. The complementors add value to E-tailers through four value driver factors, namely trust, loyalty, efficiency and innovation. My study also provides an elaborate explanation for the model mechanism and develops a set of propositions which reveal the relations between variables. Furthermore, a case study of two Chinese E-tailers, JD.com and Suning.com, is used to verify and modify the value added model. The result turns out that most of the propositions are verified in these two E-tailers.

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1. Introduction

E-commerce has experienced two reformations in the last century. The first one between the 60's and 70's is called paperless contract or transaction based on appearance of Electronic Data Interchange (EDI) technology. The second generation of e-commerce in the early 90's is stimulated by Information and Communication Technology (ICT). In the early 21st century, the emergence of blogs as a sign changes online user behavior. In 2005, the concept of "Web 2.0" officially defined the second generation of website. After that, the rising of Twitter and Facebook indicates the new social network generation of websites. In this process, although there is no technology revolution of E-tailer itself, its value creation model is influenced and changed by the new concept of web 2.0 and social network.

In recent years, there has been an increasing amount of literature on new business model or new value network (Wirtz et al., 2010; Amit and Zott, 2012; Iden and Methlie, 2012). These studies demonstrate various value creation models for the e-commerce market. They always pay attention on the contributions from the major players in vertical value chain, such as suppliers and customers, or they mainly focus on the competition rather than cooperation between each player in the game. However, web 2.0 changes the game of value creation in e-tailing market and lets another player, complementor, begin to play an important role. The concept of complementor is from co-operation and value net idea of Nalebuff and Brandenburger (1996). The complementors of E-tailers refer to the third party players between consumers and E-tailers. They provide complementary services or products to both parties. For example, the traditional complementors include express companies and banks. With the development of IT and web technology, new complementors are increasingly emerging in the market, such as search engines, forums, blogs, social media, online payment, various functional shopping guide websites and so forth.

Cooperation between E-tailers and complementors affects value creation to the

E-tailers. It is interesting and important to explore how complementors add value to E-tailers. Firstly, many technology or business model innovations arise from complementors. Working with complementors is necessary for E-tailers to seize the opportunity of business innovation. Secondly, complementors are necessary tools for multinational E-tailers to access new markets. It is time consuming and costly for multinational E-tailers to build up new complete systems for local services. Cooperation with local complementors is the most efficient and economical way. For example, recently ASOS, the top English fashion E-tailer, entered China in cooperation with the largest Chinese online payment company - Alipay. Thirdly, complementors can use their own advantages in the value chain to enter the e-tailing market. For example, the largest search engine company Google is commencing to launch its own e-commerce platform. In addition, for the whole e-tailing market, complementors are always the innovator in the market. The development of complementors leads to sustainable development of the market. Consumers can also benefit from active market development with various products and services. So far, however, little attention has been paid to the complementors in the e-tailing market. The insufficiency of relevant research is one motivation of this thesis. In other words, my thesis also focuses on value creation model of E-tailers but from the perspective of complementors.

To explore the role of complementors in the value creation process, first of all is to define the concept of added value. The definition is significant in confirming the conditions for complementors to capture value and the dimension of value they can capture. In the context of web 2.0, I add 'user added value' to traditional concept of added value in the e-tailing market. For the value creation process, I combine value chain theory (Porter, 1985), virtual value chain theory (Rayport and Sviokla, 1995) and value network theory (Peppard et al, 2006) to give a complete picture of the whole process and to find out positions for complementors. Once both complementors and added value are confirmed, I next figure out their relations and mechanism behind

them. By using relevant theories, for example, transaction cost theory, innovation theory and so on, I indentify four value drivers for the complementors to add value to E-tailers. These value drivers connect complementors and value they can capture. In this way, I construct a value added model of complementors. My purpose is to find out how complementors lead to added value of E-tailers both from theoretical inference and real life observation. So empirical examples from practical business cases are also used to testify and verify the model. As a result, the findings of my study have both theoretical and practical meanings.

The organization of the rest of the paper is as follows. Chapter 2 presents all the relevant theories and literatures which will be used to build the model in this paper. Chapter 3 introduces the value added model of complementors, including definitions of dependent variables, independent variables and mediating factors. Chapter 3 also demonstrates the mechanism of the model and develops a set of propositions. Chapter 4 discusses research methods used in this paper. Chapter 5 gives a case study to testify the model and propositions. Chapter 6 concludes the outcomes and implications, and discusses about limitation and future research.

2. Theory and Literature Review

The theory and literature reviews follow the objective of the research question - how complementors add value to E-tailers. The first part is related to different types and definitions of E-tailers and complementors, which helps to identify the players in the game. The second part is that value based theories are used to explore the market structure and value creation mechanism, which helps to confirm the rules of the game. The final part states the theories and literatures regarding the value driver factors, which helps to explore the relationships between each player in the game.

2.1 Types of Players

2.1.1 E-tailers

E-commerce is characterized by instant information flows, the delivery of value chains, the emergence of new intermediaries, and the shifting economic rules and market dynamics (Choi et al., 1997). Business to Consumer (B2C) e-commerce is the most high-profile and prevalent e-commerce type. In the case of B2C e- commerce, buyers are individual consumers who use online purchasing and sellers could be online retailers, intermediaries or other suppliers. There are various business models in B2C e-commerce.

Laudon and Traver (2012) stated seven business models including Portal, E-tailer, Content Provider, Transaction Broker, Market Creator, Service Provider and Community Provider. In this paper, the topic is about E-tailers and how complementor partners add value to them in the B2C e-tailing market. The revenue model of E-tailer is product based. Since every Internet user is a potential consumer, e-tailing market has great opportunity for every player in the game. However, compared to physical retailers, this market is extremely competitive due to its low entry barrier and information transparency. Low expense, wide selection and inventory control are key variables to gain more profit and win the market for

E-tailers (Laudon and Traver, 2012). Not only E-tailers put efforts into chasing this goal but other complementor partners also play an important role to amplify these efforts. At the same time, there are multiple opportunities for complementors to develop new business models in the B2C e-tailing market.

2.1.2 Complementors

From relevant research papers regarding e-commerce, there are several forms of complementors, namely third party, agent or intermediary. According to Nalebuff and Brandenburger (1996, p16), 'a player is your complementor if customers value your product more when they have the other player's product than when they have your product alone'. In other words, complementor is a product or service that increases customers' willingness to pay.

Amit and Zott (2001, p12) define the complementor as 'whenever having a bundle of goods together provides more value than the total value of having each of the goods separately'. Their research includes the complementarities between products and services for customers (vertical versus horizontal), between online and offline assets, between technologies and between activities. Amit and Zott (2001) also highlight that efficiency gains help to exploit the complementarities in e-business. From the customers' point of view, complementarities may lead to increased efficiency.

The Internet exchange process is an interaction of four different entities: the buyer, the seller, the third party, and technology (Shaw, 1999). Buyers, sellers, and third parties can connect through an electronic market structure supported by information technology (Kim et al, 2005). E-commerce is characterized by following features, such as instant information flows, the delivering of value chains, the emergence of new intermediaries, and the shifting economic rules and market dynamics (Choi et al., 1997). There are many third party agents or new intermediaries working as different functional complementors. Based on research of Bakos et al (2005), although the online market promotes greater price transparency, it also makes it more difficult for

the customer to discern products/service quality and attributes. The complementors can help the online retailers to gain competitive advantages through reducing the information asymmetries about products/services. The Third-party partners encourage buyers to post requests or feedback, and sellers to post advertisements, maintain and document user profiles, document successful connection between buyers and sellers and to make recommendations to potential buyers and sellers (Simet al, 2000). The third party network platform is another information platform using word-of-mouth. In the early paper, Hagel (1999) discusses the important role of virtual community in the e-commerce. Nowadays Social Media platforms are not only communication tools but also the places to be informative, attention grabbing and amusing at the same time (Badaway, 2009). The social networks provide a wealth of word-of-mouth information about retailers and products (Pettey, 2008). Through the experiments of electronic word-of-mouth via online rating/comment, Park and Kim (2008) suggest that sellers should provide comments created by consumers along with advertisements. The shopping guide website is also another information platform using professional buyer advices. Taking The Wall Street Journal as an example, their "The Shop" website aims to offer consumers product options and professional selection service concentrated on product performance rather than brand impact (Steigrad, 2013).

The third party complementors play a role forming configurable auctions and making optimal deals between buyers and sellers. For instance, Sandholm, T. (2002) introduces a new efficient auction electronic commerce server prototype called eMediator which could solve Nash equilibrium threshold in multiple auction transactions. Some complementors protect the validation of payment for sellers. This kind of bargaining agent that is based on mimicking human bargainers' knowledge and judgment remarkably increases the customers' loyalty and satisfaction (Chan et al, 2008). For example, PayCash system is widely used in Eastern European countries and U.S. top e-commerce websites with its competitive advantages, such as tamper-proof records, privacy and password protection, wide range of payments,

multiple currencies, scalability and diverse supports (Peha et al, 2005). Additionally, the complementors could be impartial third parties using commercial and technical security features to deliver business confidence through an electronic transaction (Lekkas et al, 1999). TRUSTe is a nonprofit and private seal program. The TRUSTe mark informs the buyer on this website that the disclosure of information gathering and dissemination practices is backed by credible third-party assurance (Benassi, 1999).

2.2 Value-Based Theories

The research is aim to find out how complementor partners add value to E-tailers. Firstly, definition of added value, and the whole value creation process in the e-tailing industry need to be discussed. Porter's (1985) value chain has been a useful concept and tool to analyze business value from company perspective for many years. The value chain is a model that describes a series of value adding activities connecting supply side and demand side (Rayportet and Sviokla, 1995). This model has been proved as a very useful value creation mechanism that exists in the physical world within traditional industries, especially in manufacturing industry. Since the sector of e-retailing industry is still partly a kind of traditional retail industry and closely connected to manufacturing industry, the Porter's value chain analysis is still the most influential theory about value creation used in the e-tailing market. On the other hand, with the development of internet, from web 1.0 to 2.0, information is changing from a supporting element to becoming a value source in the value creation process of e-commerce. So Rayport et al (1995)'s virtual value chain analysis could complement the limitation of Porter's (1985) value chain theory on information goods.

2.2.1 Added Value

Definition of Added Value

Business value can obviously be reflected in financial performance. Porter (1985, p38) defines value as 'the amount buyers are willing to pay for what a firm provides them.

Value is measured by total revenue'. Brandenburger and Stuart (1996) argue that value creation is willingness to pay minus opportunity cost. This value is the sum of all values that can be created by the participants in business transactions. In addition to financial value, the customer value is a non-financial performance measure, which may lead to an improved financial performance (Rust et al., 1995). Internet influences the attributes of customer value from perspectives of service quality, product (quality) information and monetary price (Bucklin, 1966; Kotler, 1997; Stern and Ansary, 1992).?

For individual players, such as E-tailers, added value is identified as the difference between company income and cost (Virtel, 2001). Brown (2001) regards added value as value created by the difference between all the benefits and all the resources. Brandenburger and Stuart (1996, p42) also define the added value of a player as 'value created by all the players minus the value created by all the other players in the vertical chain'. From this point of view, the added value of complementors in the e-market is the total value creation in the market minus the value created by suppliers, competitors and customers. According to the principal of Co-opetition, the added value may be created by the cooperation of all the players in the game. So it is hard to calculate the precise value merely created by complementors in the market. Nalebuff and Brandenburger (1996) offer another definition of added value is the value creation when the player is in the game minus the value creation when the player is out of the game. This definition makes it easier to assess the contribution of single player, such as complementors, to the value creation of the whole market.

User Added Value

Different from Web 1.0, Web 2.0 websites allow users to interact and collaborate with each other and to create user-generated content in a virtual community. O'Reilly (2005) points out that Web 2.0 is turning consumers from service objective into added value creator. Compared to Web 1.0 as the "Web-as-information-source", Web 2.0 is

the "Web-as-participation-platform" (Wikipedia.org). An amount of literature has been published on the wisdom of crowds. The concept of 'The Wisdom of Crowds' is not a new concept, but is one reflection of 'User Add Value' concept of Web 2.0 (O'Reilly, 2005). Wisdom of Crowds lets potential customers acquire more valuable and transparent information from participation of previous customers in virtual communities. E-commerce also benefits from the users and data aggregation. Many researches support the idea of the wisdom of crowds. According to James (2004), four criteria, namely diversity, independence, decentralization and aggregation, would ensure rational of wise crowds. Oinas-Kukkonen (2008) argues that in some cases groups are intelligent and smarter than the smartest guy in the group. The 'User Add Value' concept of Web 2.0 also promotes development of "Big Data". With the cooperation between e-commerce and complementors, big data is becoming big impact (Chen et al., 2012).

2.2.2 Value Chain Analysis

Although e-tailing firms don't have physical stores they still need to sell physical products in the real world. In other words, they have to provide both online and offline services regarding products. So Porter's (1985) vertical value chain theory could be adapted in e-tailing market, especially for E-tailers which are e-merchants. These E-tailers have inbound logistics to purchase products from upstream manufacturing companies. Then they operate business online with both selected products and their online services, such as display, description, test, comparison and recommendation. There is a sequencing difference between E-tailers and traditional manufacturing firms in the vertical value chain. E-tailers have to do marketing and sales first and then use outbound logistics to distribute and deliver the physical products to the customers. Similar to other industry, E-tailers also provide services after transactions, such as feedback, return, repair and customer relationship management. In this value chain, each value added activity can be done by E-tailers themselves or in cooperation with complementors. With the development of internet

and information technology, more and more complementors assist E-tailers to add value directly or indirectly.

2.2.3 Virtual Value Chain Analysis

E-commerce is an information-based and-shaped economy by new industrial organizations (Stigler, 1968). The traditional value chain regards information as a supporting element of value creation process but not a source of value itself. Porter and Millar (1985) claim that information technology creates value by supporting differentiation strategies. In other words, information can be used to influence not only business decisions of companies but also transaction decisions of customers. The e-commerce firms could use information other than physical products to create added value for customers.

As noted by Bhatt (2001), the information can create value because of information economics. Information economics is distinct from physical product economics in many dimensions, because information has unique features different from physical products. The main feature is that information can be copied infinitely at very low cost and in a short time. So information does not follow the supply-demand relationship principle as physical products do. Based on all these insights, Rayport et al (1995) proposed a virtual value chain including a sequence of activities: gathering, organizing, selecting, synthesizing, and distributing information.

According to Bakos (2005), electronic markets increase efficiency by promoting price transparency but not necessarily quality transparency. The complementors in e-commerce could provide efficiency for customers by reducing the information asymmetry about products, participants or transactions and leading to greater overall transparency to some extent.

2.2.4 Value Network Theories

Consistent with the study by Peppard et al (2006), many strategy researchers use a

thinking way changing the focal point from value chain to the value network in emerging market. We adopt the idea in analyzing the complementors in e-tailing market. In other words, we focus on not only the value creation activities in specific firm or industry but also the connection of network itself. Based on network theories we can explore how the governance structure and quality of relationship between complementor partners and other players impact on the value creation.

Most of the literature available is on the configuration of network for value creation. The structural characteristics of network can affect the profitability of industry and firms within it, such as network density, centrality (Freeman, 1979), structural holes, network membership, level of ties (Zaheer et al, 2000), network size and heterogeneity of ties (Granovetter, 1973). Interaction and relationship between companies could be used to map the intra-industry group where partners in any one block were locked in to cooperate with each other (Zaheer et al, 2000). These ideas lead us to see how membership in such a complementor partners' block could lead to differences in profitability among e-tailing firms. Additionally, network might be used as strategic entry barriers providing both opportunity and constraint to the profitability of the market (Zaheer et al, 2000; Kogut, 2000). Network can be used to understand value creation of e-business. However, it may not fully capture the potential innovative value creation ability of the virtual market with wide reach, connectivity and low-cost information process power (Amit and Zott, 2001).

2.3 Value Driver Factors in E-commerce

The value driver factors discussed in former researches are classified into four categories. The classification is based on appearance frequency and chronological order. But some theories or conclusions can be used to explain more than a single factor in the conceptual analysis part.

2.3.1 Trust Relevant Literature Review

Earlier researches define trust in psychology and sociology perspectives. Lindskold (1978) concludes that trust can be derived from objective credibility. Pennington et al. (2003) argue that trust is subjective interpretation by one party to another. McKnight et al. (2002) develop a useful typology of trust, which consists of Disposition to Trust, System Trust, Trusting Beliefs and Trusting Intentions. The system trust can effectively form initial trust between unknown parties (McKnight et al. 2002). The nature of the internet increases the difficulty to evaluate the merchant's trustworthiness because of the low cost for the positive information transmission. Moreover, trust is a valuable character of relationship that parties desire to commit them into such relationship (Hrebiniak, 1974). As Achrol (1991) said, the trust is the key determinant of relationship. Consequently, trust leads to long-term relationships (Ganesan, 1994) between buyers and sellers. In contrast, mistrust will decrease the commitment of each party and turn transaction into short-term exchange. Some studies have already proved the casual relationship between trust and willingness to buy in traditional offline commerce environment. Hoffman et al. (1999) state that factors, namely trustworthiness, perception risk and reputation, would influence the willingness to purchase. Pennington et al. (2003) prove that trust has a positive effect on the attitude to vendors that caused purchase intention subsequently.

Numerous studies have attempted to explain the trust control mechanism. Grazioli and Jarvenpaa (2000) have proved that fraud will increase the willingness of customers to rely on impartial assurance mechanisms. That's why many researchers mentioned third party identification for trust mechanism. The initial research of third-party seals impact started from 1950. Parkinson (1975) has demonstrated that the Seal of Approval is ranked first in the credibility of "expertise" and "impartiality" dimension and second in the credibility of "trustworthiness" dimension, compared to three other information channels, i.e. Friends, Salesman and Advertisement. Later LaBarbera (1982) has proved that third-party approval increased credibility of the new company

with no-reputation. Kamins and Marks (1991) also show that third-party certification has positive impact on promotion and purchase intention of unfamiliar brands to customers. Sheffet (1983) states that it has more significant positive impact if the third party authority is a professional organization or an independent testing organization rather than government especially related to high involvement products. Later Lirtzman and Shuv-Ami (1986) report that company safety hazard information provided by independent testing groups and government is more believable. Further, Coney and Beltramini (1985) state that the presence of an independent seal increased credibility of advertisement rather than mere mention of seal authority (Beltramini and Evans, 1985). Later work by Beltramini and Stafford (1993) also concludes that some consumers do not know the meaning of seal hence do not use it as credibility evidence of product or firms. It is important to inform the public what the seals mean and it is also relatively easy under internet circumstances.

Privacy is another regularly mentioned keyword referring to online trust mechanism. Privacy is the right of the individual as to when, how and what extent of personal information is disclosed to others (Martin, 1973). Spiekermann et al. (2001) sum up three approaches to address the privacy issues through law, self regulation and technical standards. Most studies are concentrated on technical standards development. Privacy experts support government intervention while commercial firms prefer self-regulation (Udo, 2001).

Payment form is the most frequent topic in the area of online trust construction. The discussions are based on feature comparison among paper cash, credit card and online payment technology. Paper cash has the features of anonymity, transferability and fairness which electronic payment should possess (Anand and Madhavan, 2000). Credit cards are the most frequently used forms of e-payment (Hsieh 2001, Chou et al. 2004). But credit cards are involved with privacy issues since all the transaction records can be tracked (Laudon andTraver, 2012). Therefore, consumers rely on encrypted form designed by secured technology companies to use and send credit card

information during the online transaction process (Crowe, 1999). Additionally, credit cards are not suitable for small value transactions, for instance lower than one dollar (Kalakota and Whinston, 1996). The current online payment is normally based on cash-based payment rather than credit card online service. Chaum et al. (1990) explain that online cash-based payment systems use blind signature techniques and random serial numbers as third party organizations to protect the anonymity and security of customers from banks. For example, Brands (1995) introduces offline cash based payment systems using a secret key, connecting online sellers and banks, producing a tamper resistant device in buyers' computers to verify the authenticity of money transferred. Anand and Madhavan (2000) propose optimized cash-based e-payment with features of multiple e-cash, divisibility and verifying authority more than anonymity, transferability and fairness. To sum up, Kim et al. (2010) conclude that electronic payment has several advantages compared to traditional payment, such as security, reliability, scalability, anonymity, acceptability, privacy, efficiency, and convenience.

In addition to System Trust, the topics Trusting Beliefs and Trusting Intentions are also discussed in recent years. This is related to online word-of-mouth system, such as online feedback system. Resnick et al. (2000) regard online feedback system as an important reputation system to facilitate trust in internet interactions. The feedback should be long term and consistent, should be gathered and distributed and should impact future purchases (Resnick et al., 2000). Compare to traditional word-of-mouth institution, electronic word-of-mouth institution has advantages of lower cost, broader scope (Dellarocas, 2003) and fast spread. A survey from Deloitte published in 2007 reveals that 62% of US consumers read online consumer-generated reviews, 98% of them regard reviews as fair enough and 80% of them would be affected by reviews (emarketer.com, 12 October 2007). Parkinson (1975) proves that 'Friends Word' is the information channel with highest credibility of trustworthiness compared to three other information channels, separately 'Seal of Approval', 'Salesman' and

'Advertisement'. The information from acquaintances has more trustworthiness credibility but less expertise (Jalilvand et al., 2011). They also argue that the information not only influences the consumers' choices and purchase decisions but also shapes consumers' expectations, pre-usage attitude and post-usage perception of product or service. Awad and Ragowsky (2008) state that quality, perceived ease of use and perceived usefulness of word-of-mouth affect the establishment of online trust. They also discover that gender difference presented different degrees of dependence on online word-of-mouth institution, revealing that women rely more on social network and others' opinion for online shopping. Additionally, after case study of 100 social media websites, Leitner and Grechenig (2008) show that some of their most frequent functions refer to customizable user profiles, corporate blogs and product images, rankings, ratings and comments.

2.3.2 Loyalty Relevant Literature Review

Summing up from 13 studies, Toufaily et al. (2012) define online loyalty from the perspective of behavior and attitude. Behavioral loyalty refers to activities of repurchase and re-patronization (Ball at al., 2006). Emotional loyalty refers to the desire to continue relationships with E-tailers and recommend them to other friends even if competitors offer lower price (Dick and Basu, 1994; Chaudhuri and Holbrook, 2001). Toufaily et al. (2012) state ten positive consequences and two negative consequences of E-loyalty summed up from eight relevant studies. The consequences of behavioral loyalty are showed as repeat purchase, repeat visit, increased word of mouth and reduced search for alternatives.

Many studies focus on online loyalty formation. Through in-depth interview, Srinivasan et al. (2002) identify eight factors that impacted loyalty in e-retailing market: customization, contact interactivity, cultivation, care, community, choice, convenience, and character. Pan et al. (2012) adopt an interesting way to examine antecedents of customer loyalty from customer related factors and product related

factors. Customer related factors include customer satisfaction, trust, loyalty membership and psychological commitment while product related factors include perceived value, product quality, perceived fairness, switching cost and purchase volume. Besides these two dimensions, Toufaily et al. (2012) add company's characters, website characters and environment influence into the contribution dimension of loyalty construction. Transaction satisfaction is impacted by both economic and non-economic factors (Coughlan et al., 2001). Devaraj et al. (2002) prove that satisfaction of electronic commerce consumers is significantly determined by perceived ease of use and usefulness, assurance dimension of service quality, and general support for consumer satisfaction.

Additionally, some other factors also affect online loyalty. Beatty and Smith (1987) find out that 40-60% consumers visit the same store by habit. Jarvenpaa and Todd (1997) argue that convenience is the major benefit from online shopping. Many researchers regard convenience as an important driving factor contributing to e-commerce loyalty (Harrington & Reed, 1996; Rowley, 1996). Kuehn (1962) and Day (1969) prove a positive relationship between purchase size and loyalty. When perceived value is low, consumers tend to switch to other products to increase the perceived value, which decreased consumers' loyalty (Anderson and Srinivasan, 2003). Testified by many researchers, consumers' satisfaction and trust are the two most important variables significantly leading to consumers' loyalty. Consumers' satisfaction refers to complex emotion combined with contentment and surprise response to expectation and consumption experience (Oliver, 2010).

2.3.3 Efficiency Relevant Theories and Literature Review

Transaction Cost Theory

The strategy researches always focus on whether a firm should buy or make particular goods or services in the value creation process. Transaction cost theory normally decides governance mode of business, which is the way how to play the game

(Williamson, 1998). The theory explains the most efficient governance forms of these relationships in their transactions. Williamson (1975) divides transaction costs into search cost, information cost, bargaining cost, decision-making cost, supervisory cost and penalty cost. According to the sequence of the transaction process, Williamson (1985) further categorizes transaction costs into ex ante cost and ex post cost. Ex ante costs include searching cost, bargaining cost and contract cost. Search costs include opportunity cost of searching time and practical cost of obtaining information. Information asymmetry is the main factor causing transaction inefficiency (Williamson, 1975). He also points out that uncertainty and complexity would invoke more transaction costs. Bakos (1997) found that reduction of buyers' search cost leads to decrease of sellers' profit margin in the electronic commodity markets offering homogeneous products with different prices. Uncertainty, exchange frequency, and the specificity of assets enabling the exchange also impact transaction cost (Klein et al, 1978; Williamson, 1979). Ex post costs include adaptive cost, negotiation cost, operation cost and restriction cost. For example, satisfaction is a positive feeling about ex-post evaluation of consumers' experience with product and service performance (Anderson, 1973). The types of transaction cost classified by Dahlman (1979) are broadly referred to as search and information cost, bargaining cost and policing and enforcement cost.

The prior studies focus on hazards inherence in contracting of the transactions (Williamson, 1985). Consequently when the opportunism is likely and transaction cost is very high, internal control should be chosen rather than contracting. On the contrary, market contracting is preferred when the contract is uncomplicated and transaction cost is low. Transaction costs contain the costs of planning, adapting, executing, and monitoring transaction completion (Williamson, 1983). The later researches further regard alliance as an important substitute for acquisition, merger, or internal development (Gulati and Lawrence, 1999; Piskorski and Nohria, 1999). Zaheer et al (2000) suggest the alliance is the intermediate situation when the

transaction cost is not too high to require internal control but not too low for market exchange.

Coordination Cost Theory

Traditional transaction cost theory has limitation that transaction is regarded as a discrete event (Gulati, 1995). When every transaction forms a history of relationship or a broad network of relationships, it is found that this kind of network enhances the internal trust in the firm which can reduce the moral hazard and transaction cost. In addition, this kind of network can reduce the information asymmetries that increase the transaction cost. Network has the reputation effect which makes the opportunism more costly (Zaheer et al, 2000). Additionally, network can add value by improving the interaction among firms in the network, which means that the network can enable them to work closely without costly formal internal control (Gulati and Singh, 1999). Moreover, network coordination could add value by using complex transaction structure innovation in e-business (Amit and Zott, 2001). Cooperation concept exists not only in seller's perspective but also in buyer's perspective. Xue and Harker (2002) propose a new concept of "consumer efficiency" into the discussion of electronic business management. Enke (1945) demonstrates that consumer cooperation could not only minimize buyer's price but also maximize seller's profit and consumer's surplus.

Efficiency Relevant Literature Review

Numerous studies work on topics of cost reduction and efficiency in e-commerce. Summing up from former literatures, Baršauskas et al. (2008) outline that e-commerce creates added value from efficiency in three subjects, namely companies, suppliers and consumers. There are various definitions of efficiency in different dimensions. Due to the development of Information and Communication Technology, consumers of e-commerce have lower search cost and transaction cost than offline shopping. From this point of view, e-commerce improves transaction efficiency for consumers. Transaction efficiency is mainly from the perspective of consumer's

benefit while business or economic efficiency is mainly from the perspective of company's gain. Some economists regard that business efficiency and economic efficiency are not identical. Baršauskas et al. (2008) suggest that business efficiency should be treated as value creation divided by cost. So according to the definition of business efficiency, reducing input cost and improving output performance are two ways of improving the business efficiency of E-tailers. Meanwhile, economic efficiency refers to maximizing production output of products and services using the same amount of resources. Enke (1945) also argued that economic efficiency concerns resource allocation among different business units. So business efficiency concerns financial benefit while economic efficiency concerns efficient resource allocation.

Besides business governance discussions, including transaction theory mentioned above, there are also many studies of efficiency working on e-commerce capability. E-commerce capability refers to the ability of e-commerce to interact with consumers and suppliers and develop business over the internet (Zhu and Kraemer, 2002). Zhu (2004) found out the positive relationship between e-commerce capacity and IT infrastructure by developing a theoretical framework testing data from 114 companies in retail industry. The traditional IT technology can help E-tailers have efficient communication in the supply value chain. There are also many new technologies, such as text mining technology, web mining, social network analysis and spatial-temporal analysis, to help e-commerce form efficient communication channels between products and consumers (Chen et al., 2012). Mining technology concerns product search and information retrieval (Pang and Lee, 2008). According to Dave et al. (2003), mining technology is collecting a list of product's attributes and aggregating opinions about each of them based on web 2.0 platforms, such as blogs, rating/comment website, Peer-to-Peer network and so forth.

2.3.4 Innovation Relevant Theories and Literature Review

Innovation Theory

The early stage of innovation concept is concerned about the role of technology innovation in economic development or the combination of technology and economics. Different from technology improvement or invention, innovation defined by Schumpeter (1934) is new allocation of production factors. From his point of view, innovation contains the following situations such as new product introduction, new technology introduction, new market creation, new source supply and new company organization. He regards innovation as a way of value creation. Later, Schumpeter and Fels (1939) introduce and popularize the idea of "Creative Destruction" which is the essential fact about capitalism. "Creative Destruction" or named as 'Schumpeter's gale' refers to creative action to break the market equilibrium by entrepreneurs. However, the effect of creative destruction is not long lasting and will later diminish. Before innovation becomes established economic behavior in the mainstream market, entrepreneurs would get large economic benefit called "Schumpeterian rents" profited from their exclusive insight in the uncertain and complex market environment. This can also be explained by first move advantage in the game theory (Lieberman and Montgomery, 1988).

Consistency with "Creative Destruction", Christensen (1997) refines this concept and brought the idea of "Disruptive Innovation". Unlike traditional separation of "Radical Innovation and "Incremental Innovation", he emphasizes changing of valuation system (Disruptive Innovation) rather than technology improvement or invention (Sustaining Innovation). The company with good management was thrown into a dilemma that the better service improvement for the consumers the sooner they fail in the market because they ignore the development of disruptive innovation. Furthermore, disruptive innovation related to the business model significantly changes conventional competitive rules in the existing market or becomes a major player in

one underserved market (Thomond et. al, 2003). Christensen (1997) introduces principles of disruptive innovation as construction of independent business unit without mainstream consumers' impact, focusing on small market opportunities, necessary knowledge upgrade, figuring out potential organization advantages/defects, and catching up with market trends at all times.

E-commerce Innovation Literature Review

In the e-commerce market, the content of business innovation is around product, service and information (Amit and Zott, 2001). Through innovative personalized product and service, firms could find high profit customers. For example, value creation of customers and third parties exceed suppliers in metal-oxide semiconductor design (Thomke and Hippel, 2002). Many researches focus on technological innovation which can change company's operational and commercial activities (Calia et al., 2007). Others focus on a new business idea, such as changing customers into innovators (Thomke and Hippel, 2002). From marketing and managerial theories of firms, one source of performance differentials is innovation which is "to create new combinations that make rivals' position obsolete" (Stoelhorst and van Raaij, 2004, p466).

After the mid90's, many scholars put their research focus on electronic business model. Business model innovation helps companies stay ahead in the product and service innovation game (Amit and Zott, 2012). But it is hard to define the business model. After reviewing thousands of articles concerning electronic business models, Zott et al. (2011) argue that the topic is dispersed and there is still space to discover one authoritative definition of the business model. Timmers (1998, p2) regards the business model as "an architecture for the product, service and information flows, a description of the potential benefits for the various business actors and a description of the sources of revenues." Timmers (1998) classifies the electronic business model into eleven categories based on value chain deconstruction and re-construction along

the chain. Among all eleven business models, E-shop, E-mall and E-marketplace represent different forms of E-tailers according to increased degree of innovation level and functional integration. Moreover, we also partly agree to the definition of the business model stated by Amit and Zott (2001, p494) that "The business model depicts the design of transaction content, structure, and governance so as to create value through the exploitation of business opportunities." Amit and Zott (2001) further point out that innovation of transaction structure concerned about new participants, number of participants, links between participants, quality of linkage, patents, trade secrets, copyright and first introducer of the business model. Additionally, they also mention innovation of business model governance with new incentives. Recently, on the basis of business model innovation theory constituted by "content", "structure" and "governance", Amit and Zott (2012, p45) rearrange business model innovation by "adding new activities, by linking activities in novel ways, or changing one or more parties that perform any of the activities".

Some studies on business model innovation are from the network perspective. Methlie (2000) firstly proposes that business model innovation concept based on value creation in vertical and horizontal segmentation, which are specifically new value networks on supply side and new customer relationships on demand side. The value creation in network is exponential (Methlie, 2000). Methlie (2000) also mentions new customer value on horizontal aggregation of information on demand, which is exactly what some social media complementors do. Xue and Harker (2002) focus on customer relationship management in e-business model innovation. The concept of consumer efficiency they argued is lower cost of both buying and selling sides by contribution from consumers. Calia et al. (2007) focus on how innovation network is reflected in forms of business model and then has impact on business growth. The independent variables they use, namely relationship structures, innovation typology and innovation network dynamics, could also apply to digging out network value innovation of complementors in the e-tailing market. Methlie and Haugland (2011)

also work on the systemic study of media service innovation dimension from value network to market strategy, revenue model and value proposition and finally to customer value. In Iden and Methlie's (2012) latest paper regarding value drivers of service development on the next generation of network, they discuss service value proposition, revenue, market strategies and value network from company perspective.

2.4 Summary

The theories or theoretical framework mentioned above indicates possible ways for value creation in the e-tailing market. Each theory is limited with regard to explaining the value added method of complementors in the e-commerce environment, that's why we need to process these theories into a new value added model in the following discussions.

3. Conceptual Model: Value Added Model of Complementors

By induction from multiple literature reviews, a complementors value added model can be seen in Figure 1.

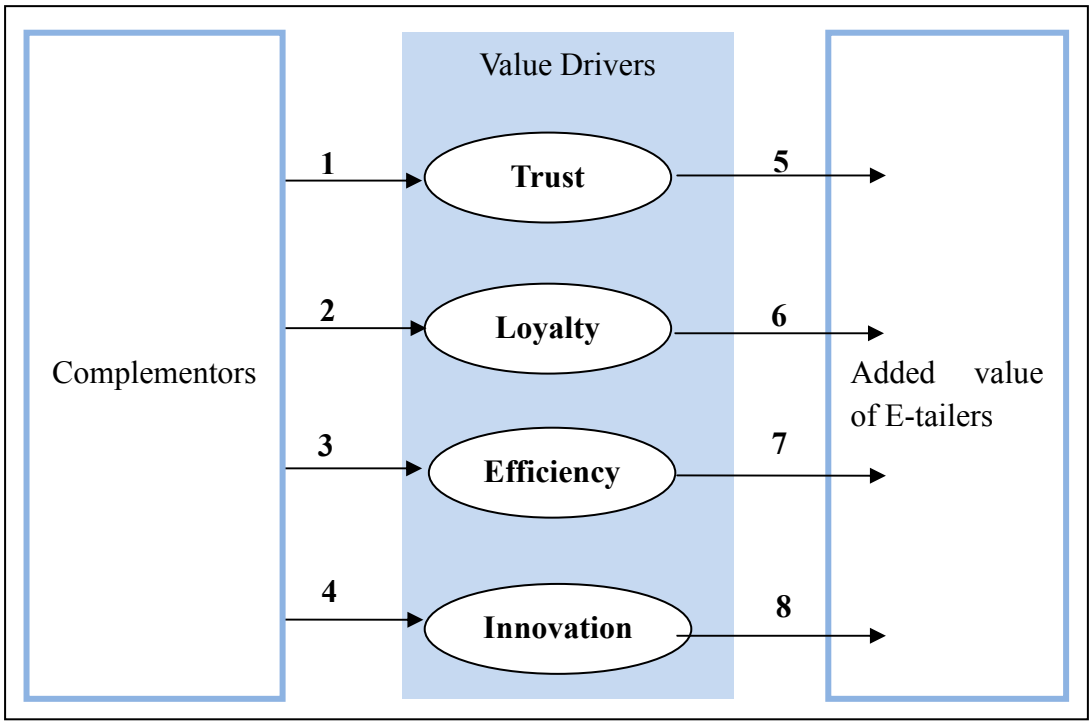


Figure 1 Value Added Model of Complementors

The analysis of the model is stated in the following part. Since the research question is how complementors add value to E-tailers, value-based theories are firstly used to position different complementors and E-tailers in the value chain and value net. Meanwhile, four frequent value drivers are conceptualized in the process of literature reviews. Subsequently, literatures and theories regarding the value driver factors are used to demonstrate the relationships between dependent variable, independent variable and value drivers.

3.1 Definition of Variables and Factors

3.1.1 Definition of Dependent Variable

Inspired by the e-commerce categorization idea of Timmers (1998), we classified the

E-tailers into E-shop, E-mall and E-marketplace. E-shop refers to the retailers that have both physical and virtual shops. E-mall refers to independent B2C merchants. E-marketplace refers to the E-tailers that only provide a platform for varied wholesale companies to sale to individual customers online. In this paper, the E-tailers more likely tend to be E-mall or a hybrid mode of E-mall and other forms.

The dependent variable in the model is added value of E-tailers. As discussed in the theory part, added value of E-tailers has two forms - tangible value and intangible value. Tangible value refers to sales and profit increase. Intangible value includes relationship, reputation, consumer satisfaction and so forth.

3.1.2 Definition of Independent Variable

The independent variable in the model is complementor partners of E-tailers. Summing up the definitions in the theory part, the complementor partners refer to the institutes or organizations that provide complementary products or services to E-tailers. Because there are various complementors in the e-tailing market, specific types and functions are categorized in the following section. The categorization also helps to understand the relationship between dependent variables and independent variables.

There are different ways to classify these complementors. The first one is from online and offline service. The majority of complementors provide online services, which regard information as transaction content. Some complementors provide offline services, such as warehouse management and logistic service. The second method of categorization is from different position in the value chain, that is E-marketing, E-contracting, E-payment, E-customer relationship management, delivery and IT service respectively. From observations and literature reviews, the examples of complementors with different functions are categorized in Table 1. The emerging of Web 2.0 brings many new types of complementors to E-tailers, such as E-word of mouth websites, Social Network Service and information aggregation. E-word of

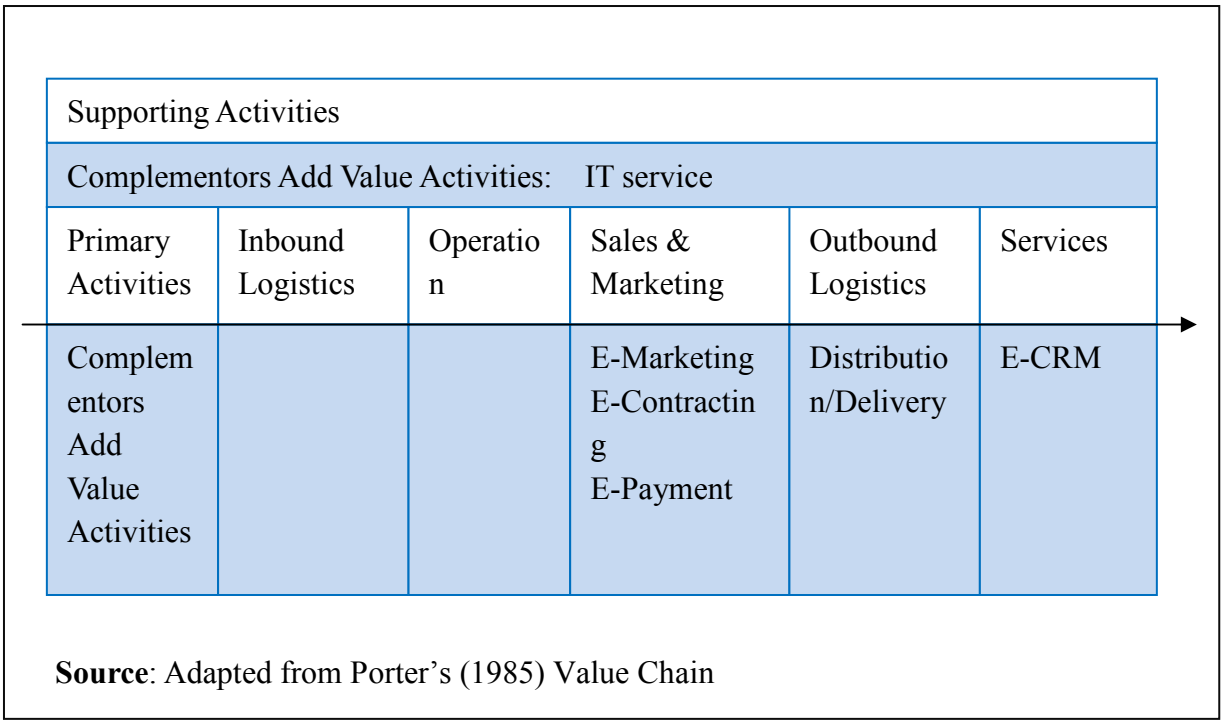
mouth websites refer to online comment and rating systems. Social network service refers to series of social media websites and forums Information aggregation refers to search engines, product information providers (price comparison, coupons, group purchase and shopping guide websites) and so forth.

Table 1 Example of Complementor Types

Value Positions	Examples of Complementor Types
E-marketing	Search Engines RSS Price Comparison Websites Blog Shopping Guide Websites Recommendation Websites Video Website Rating/comment Sites SNS (Social Network Service)
E-contracting	Third Party Security System Group Purchase Websites
E-payment	Online Banking Third Party Payment System
E-distribution	Logistics Warehouse
E-CRM	SNS (Social Network Service) Complementors' Membership Rebate/Coupon Websites
IT	Corporate Software Companies

Furthermore, adopted from Porter's (1985) value chain concept, Figure 2 shows

different positions of these complementors in the value chain. E-marketing, E-contracting and E-payment are related to sales and marketing activities. Delivery is related to outbound logistic of primary activities in the value chain. E-CRM is related to services activity. IT service is supporting activity in the value chain. As stated in Figure 2, there are potential parts of the value chain where complementors could contribute their knowledge or services to add value of E-tailers. This is the first step to figure out a rough model of how complementors play an important role in the physical value chain.

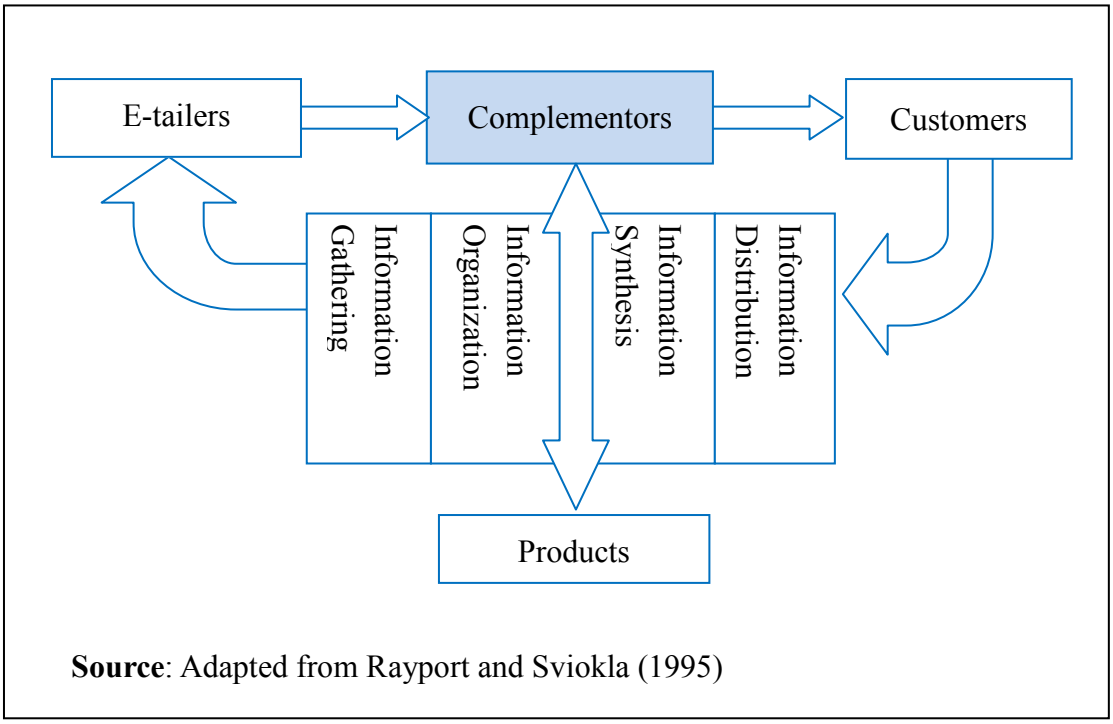


Source: Adapted from Porter's (1985) Value Chain

Figure 2 Complementors in the Value Chain

Adapted from Rayport and Sviokla (1995), a virtual value chain of product information flow among consumers, complementors and E-tailers firm is demonstrated in Figure 3 as follows on next page. This virtual value chain is helpful to find out how complementors provide added value to E-tailers from the information economics perspective. In general, the complementors are the product information intermediary between customers and E-tailers. They gather, organize, synthesize and distribute the information regarding the products from E-tailers to customers and vice

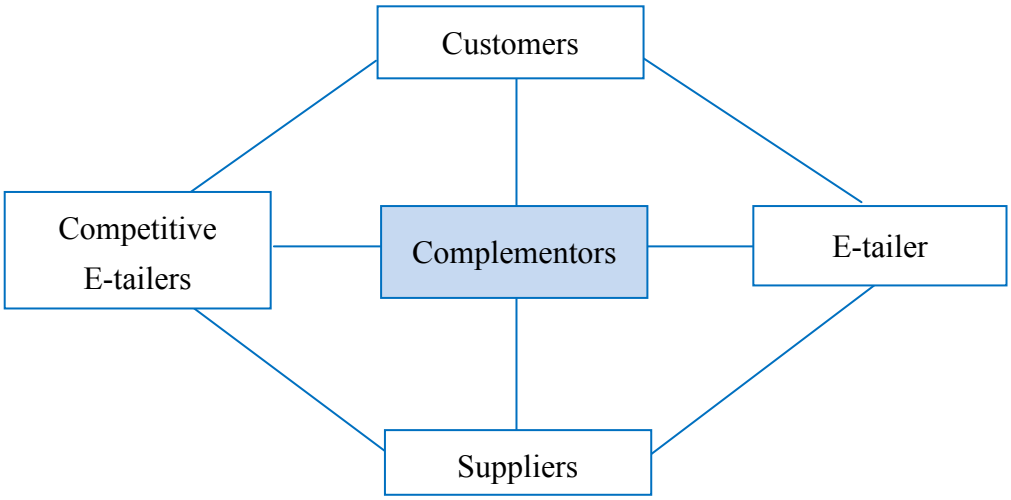
versa. For example, shopping guide websites and discount websites transfer the information products to consumers while rating and comment websites or social media websites collect feedbacks or preferences of products from consumers. Through the information transmission, the complementors add value to both parties of E-tailers and consumers.



Source: Adapted from Rayport and Sviokla (1995)

Figure 3 Complementors in the Virtual Value Chain

The value net adopted by Brandenburger and Stuart (1996) is in Figure 4. Complementors exist in the physical value chain from suppliers to E-tailers and customers regarding product transactions or services. The complementors also connect customers, various E-tailers and suppliers by product information exchanges in the virtual value chain.



Source: Adapted from Nalebuff and Brandenburger (1996)

Figure 4 Complementors Based Value Net

In sum, all these figures above help not only to explore different types of complementors but also to demonstrate functions, positions and potential contribution of complementors in the value chain and value net.

3.1.3 Mediating Factors

Trust

One of the top concerns of online consumers is related to trust. The discussion of trust construction in online retail market can be divided into two dimensions related to system trust, trusting belief and intention. System trust is gained from online transaction security to ensure customers believe safety of online shopping behavior. Trusting belief and intention is from the customers' perspective to ensure customers choose to shop in certain online retailers. Trust, as a psychological subjective, is hard to detect and measure. But trust can be reflected in actions, such as visiting and shopping.

Loyalty

Actually, trust is one but not the only antecedent of loyalty. Trust leads to purchase intention while loyalty leads to repeated transactions. In a word, consumer loyalty is a

crucial guarantee for a firm's profitability. However, consumer loyalty is difficult to quantify, especially emotional loyalty. The behavior loyalty could be reflected in revisit and repurchase at the same website. The emotional loyalty is attitudinal preference or psychological dependence accompanied by repeated behaviors. The emotional loyalty may be detected from positive comments or active interactions.

Efficiency

The e-commerce form itself is representative of efficiency, whereas complementors further improve the efficiency of e-commerce in multi dimensions. These are transaction, business and economic efficiency respectively. Transaction and business efficiency involve consumers, complementors and E-tailers while economic efficiency involves only complementors and E-tailers. The efficiency is embodied in time and cost reduction. But it is difficult to calculate and compare the dimension of efficiency in real life. So we focus on efficiency activities rather than exact efficiency measurement.

Innovation

Innovation is the key competitive advantage of E-tailers to win in a fast-changing industry like e-commerce. According to the innovation theories mentioned above in the theory section, innovation refers to an integration process of value creation, such as introduction of new product, new technology, new organization, new resource and new market (Schumpeter, 1934). In this kind of process, sustaining innovation would help players to win in the existing business model. Meanwhile, disruptive innovation would help players to win in the new industry revolution.

Table 2 Complementors Activities and Value Drivers

Complementor Activities	Trust	Loyalty	Efficiency	Innovation
E-marketing		√	√	√

E-contracting	√		√	
E-payment	√		√	
E-distribution			√	
E-CRM		√		√
IT	√		√	√

3.2 Relations between Independent Variables and Mediating Factors

3.2.1 How complementors assist to build trust in E-tailers?

Security

The features of information provide convenience of searching and sharing at the same time accompanied by more opportunity and less risk of online crime. The securities problems existing in the e-tailing market are mostly concerning about fraud, privacy and payment safety. The complementors play a key role to deal with these problems by themselves or by cooperating with E-tailers.

Normally E-tailer fraud exists in the transaction communication platform (for example, illegal phishing) and the communication object (such as dishonest online retailers). With the ongoing development of security technologies, such as encryption and digital certificates, the specialized complementors would provide solutions to protect the trust of the communication environment between two parties of transaction. Additionally, shown from literature and real life, the independent third-party seal is one important complementor to provide structural trust assurance, such as identity of high security websites and creditable vendors. This kind of seal is based on the technology expertise of the digital certificate. The third party seals would transfer the confidence of certificate authority to the E-retailers.

People are concerned about privacy due to the nature of internet related to information

gathering and transmission, e.g. web cookies. Through personalized advertisement and recommendation, E-tailers could attract customers to shop when they are surfing the net. But in the process of data tracking and gathering they also face coming problems from rights of information privacy. Through technical encryption methods, the complementors could offer a trust mechanism to increase customer's willingness to initiatively share more personal information about themselves with E-tailers. Some complementors also commence using new methods to replace traditional cookies, such as Google's anonymous identifier named AdID. Whatever security methods are to be used, customers should be informed and educated about the data gathering and privacy security principles. In other words, customers have the right to choose the information disclosure preference. Consequently, the two parties of buyers and sellers can have win-win outcomes through the privacy trust construction by complementors.

Compared to fraud and personal data misuse, payment security is the most noticeable issue when consumers enjoy the online shopping, especially for elder and uneducated persons. An online e-payment system exists in the presence of a third party to guarantee the authenticity of currency being safely transferred. In the meantime, complementors also protect payment information safety in the form of digitally encrypted identification and transmission. E-payment services are divided into account-based payment (such as credit card) and cash-based (such as e-cash). Third party offline payments are also emerging as an alternative option for customers.

Proposition 1a: Complementors assist to build trust in E-tailers by providing online transaction security.

Reputation

Besides creating the psychological trust to E-tailers, complementors also play an important role in establishing sociological trust to the E-tailer. The online feedback system has been proved as an important reputation system to facilitate online trust.

The reputation system collects, distributes and aggregates feedback from past transactions of consumers, which in turn helps consumers to decide whom and what to trust. So far word-of-mouth mechanism is the technology best known to build such a reputation system. Two sources of word of mouth information can lead to how these complementors establish reputation of E-tailers. The one is information from acquaintance, such as social networks. The other one is information from strangers, such as wisdom of crowds. Adapted from Litvin et al.'s (2008) typology, a digital word-of-mouth types system with updated communication technology and social media is diagramed in Figure 5. The typology is shown as a two-dimensional graph of Communication Scope and Interactivity Level.

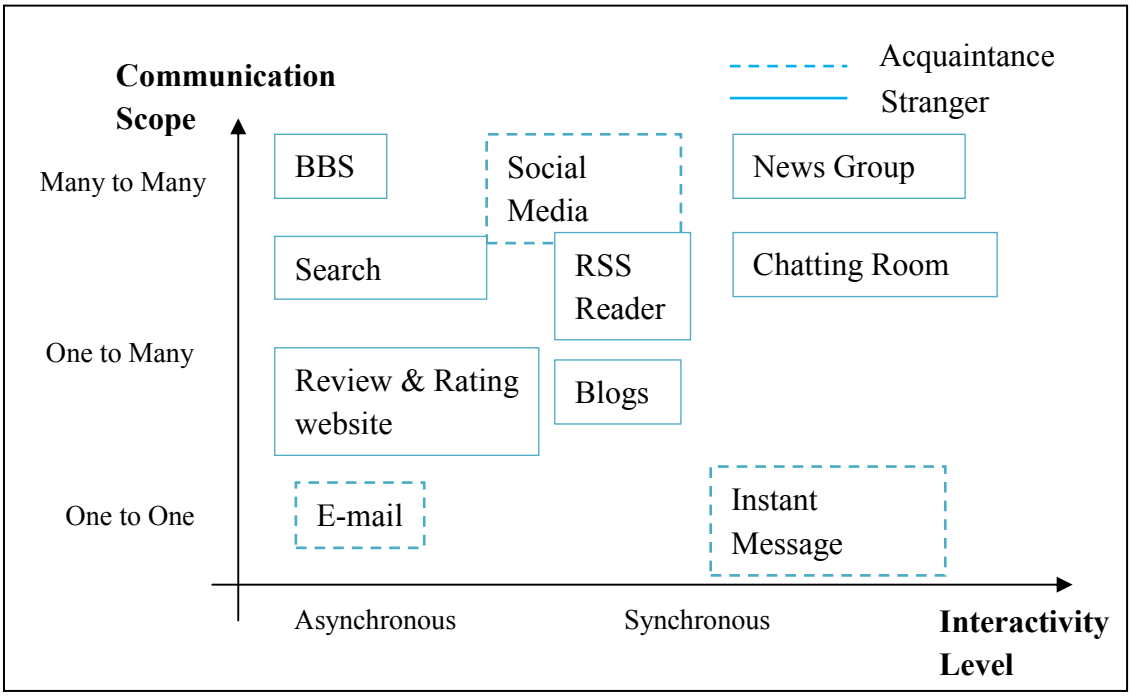


Figure 5 Communication Technology Map

Based on the theory part, quality of information, ease of use and perceived usefulness would affect online trust. The information from acquaintances has more credibility of trustworthiness and less expertise. But this kind of information will significantly influence consumers' choices and purchase decisions. The only problem with this kind of information is that it is not easy to use. The information is produced and transmitted peer to peer or a small group without definite goal or organization. Due to

the characteristics of information, it is not prompt and easy to retrieve. Therefore complementors could play an important role in selecting, gathering and distributing information exchanges about products for E-tailers. Taking Social Media as an example, it is typically a consumer-generated content tool with powerful social networks and relationships in the era of Web 2.0. Social Media is a platform not only gathering comments from groups of friends about products or services but also inviting them to improve the product or service as participants and collaborators. In other words, Social Media could establish trust in E-tailers by offering consumers credible information about products or services from familiar people while they could also help E-tailers to improve quality of products or services. From the literature review, it reveals that women are more likely to shop online and easier to build online trust than men. Complementors such as social media would greatly help E-tailers to build trust especially for female customers.

In the era of Web 2.0 another form of word-of-mouth is called 'Wisdom of Crowds', such as search engines, rating websites, online forums, wikipedia and blogs. This is a typically large scale information aggregation from strangers. Wisdom of crowds is a useful word-of-mouth because it is product or consumption oriented information posted and discussed spontaneously for similar consumption intention or behavior. Following the wisdom of crowds, the successful complementors create a new marketing channel "crowd-sourcing" to mass consumers. Additionally, the Google search engine is a representative using implicit feedback, links and hits volume, to build reputation of e-commerce websites. However, some consumers may suspect rationality and intelligence of the wisdom of crowds. From the theory part, it is known that complementors need to ensure the rationality of the wisdom of crowds from four criteria - diversity, independence, decentralization and aggregation. In real life, building an impartial platform for rational wisdom of crowds is the important task of complementors. Then the reputation of complementors could be leveraged by E-tailers to build their own reputation. In the long term, wisdom of crowds is also

used as a market forecasting tool for product or service decisions, which in turn leads to long-term consumer trust.

Proposition 1b: Complementors assist to build trust in E-tailers by building E-tailer's reputation.

3.2.2 How complementors assist to form online loyalty?

Based on discussion in the theory part, online loyalty is influenced by customer related factors and product related factors. Customer related factors include customer satisfaction, trust, loyalty membership and psychological commitment. Product related factors include perceived value, product quality, perceived fairness, switching cost and purchase volume. All the factors mentioned above lead to the construction of online consumer loyalty. We follow these ideas to distinguish which factors are determined or impacted by complementors.

Behavioral Loyalty

Behavioral loyalty is related to activities such as repeated visit, repeated purchase, long website duration time and increased purchase volume. Customers' behavioral loyalty is prone to arise from product/service related factors, such as perceived value, discounts and rewards, switching/sunk cost and purchase volume. Using these factors the complementors assist E-tailers to increase online consumer behavior loyalty.

As complementors, third party websites do not improve quality of product/service but amplify perceived value of the product/service in the mind of the consumers. Perceived value refers to consumer's benefit and expectation of product usage minus cost of consumption. Using the word-of-mouth mechanism the third party website would change the perceived value of consumers by credible experience information from former customers. The positive feedbacks increase the expectation of potential customers which in turn increases the perceived value of this product/service.

Nowadays to assist E-tailers to build online behavior loyalty, the most prevalent methods complementors adopt are using discounts and rewards. Price comparison websites, rebates websites and coupon websites are representative to gain consumer's loyalty in collaboration with E-tailers. Price comparison websites, as referral mechanism, recommend products of E-tailers by providing newest price information to consumers. The E-tailers could use this dependence relationship to build customer's loyalty by remaining in the price ranking list. The rebates and coupon websites exploit monetary benefit to induce consumers' repeated visit and order. The discount action taken by E-tailers may ruin their reputation and set them into blind severe price competition. The cooperation with debate and coupon websites would help E-tailers to leverage their impact power and membership loyalty to acquire more transactions from their customers.

The other type of complementors increases the switching cost or sunk cost to help E-tailers to build consumers' loyalty. Electronic word-of-mouth websites, such as Social Media, rating and comment sites, shop guide sites and so forth, facilitate the direct and frequent contact interaction between E-tailers and consumers. The third party interaction platform prompts E-tailers to customize products or services from consumers' feedback. Some complementors directly customize user profiles and link the product and consumers' need. The more customers get used to the interface or service tailored for them, the higher the cost of switching or dropping it. As complementors alliance with E-tailers the referral and shop guide websites provide the customer with multiple choices in categories. Similarly, price comparison sites provide the customer with the most economical choices in categories. These kinds of complementors afford convenience and lower search cost to consumers who do not want to spend a great deal of time on searching products among multiple E-tailer websites. On the other hand, some complementors charge a certain annual membership fee for the convenience, which increases sunk cost of online consumers. Once consumers lock in complementor websites, they are also closely connected to

some extent with E-tailers.

The complementors who adopt group coupon ideas get monetary benefit for consumers by scale merit. Similar to rebate and discount websites, they induce consumers to purchase more at attractive prices. The E-tailers could cooperate with these complementors to increase the purchase volume per consumer. Based on the conclusion in the theory part, the more consumers purchase, the more loyal they are.

Proposition 2a: Complementors assist E-tailers to gain customers' behavioral loyalty.

Emotional loyalty

Because information is easy and costless to obtain, behavior loyalty can be easily replaced by others' imitation. So E-tailers should also develop emotional loyalty to retain consumers. Customer emotional loyalty normally originates from consumer-related factors. The benefit from product/service is an obviously necessary but insufficient condition leading to emotional loyalty. The complementors also play a role in arousing emotional loyalty from the psychological perspective of the consumer.

Most complementors work on increasing frequency of interaction between two parties and strengthening consumers' emotional dependence on E-tailers. Firstly, most complementors assist E-tailers to provide convenience for consumers. Although the feature of electronic commerce, without time and geographical constraint, already offerd shopping convenience to consumers, it is becoming more time-consuming for customers to gather information about product quality and price comparison because of the explosive growth of online information. So the complementors, such as referral, shop guide, rating and price comparison websites, occupy an important position in this area to provide multiple choices accurately and efficiently. Additionally, the complementors could also provide offline convenience services, such as next day

delivery service or offline payment service. The more convenience the complementors offer, the more consumers rely on them. As a result, if E-tailers could use strategic cooperation with complementors, they would gain more consumers' emotional loyalty for the convenience motivation than practical benefit from product or service.

Secondly, some complementors use customization and personalization to build consumers' inertia on the E-tailers. In collaboration with word-of-mouth complementors, E-tailers could know more about their customers and make their visit and purchase more like a hobby rather than a conscious action. In addition, complementors, such as RSS readers, could be a bookmark category website to aggregate all the favorite websites or products as customer-subscribed. If consumers regard browsing and purchasing as daily entertainment activities, such as reading newspaper or watching TV, they might be less sensitive to satisfaction with the products because of the compensation from entertainment contentment.

Additionally, other complementors even provide personal care for consumers like friends. In the traditional commerce environment, vendors adopt loyalty customer membership to build emotional loyalty, by sending special greetings and offering special discount on birthdays or wedding anniversaries. It is easier to gather personal information and offer personalized care for customers online than offline. For instance, people would like to share personal information or interests in social network websites. On the premise of consumer's own accord, the E-tailers could cooperate with social network websites or other data aggregation websites to deliver personalized service as intimate friends. In the meantime, E-tailers can also utilize word-of-mouth websites to communicate with customers. With the help of these complementors, the relationship between online buyers and sellers becomes a quasi-humanized relationship development as friends. Consequently, consumers would have more emotional loyalty to E-tailers.

Proposition 2b: Complementors assist E-tailers to gain customers' emotional loyalty.

3.2.3 How complementors improve efficiency?

According to different definitions of efficiency mentioned in the theory part, consumers' efficiency relates to transaction efficiency while company's efficiency relates to business and economic efficiency. Moreover, consumers' transaction efficiency and companies' business efficiency is embodied in interactive activities between buyers, sellers and third party complementors. Economic efficiency is merely concerned about e-tailers and complementors. In the next section, further discussion is stated around how complementors assist consumers and E-tailers to realize their efficiency respectively.

Transaction and Business Efficiency

Transaction cost theory can be applied in the inference of transaction efficiency and business efficiency assisted from complementors. Transaction efficiency is reflected in time and cost reduction in transaction. Meanwhile, business efficiency is reflected in input cost reduction and output performance increase. So different types of cost conduct the analysis of how complementors contribute to reduce these costs.

Reduce Search Cost

Search cost and bargaining cost are two main types in ex ante costs. With information technology, e-commerce already reduces time to search, such as search engines, and reduces cost to access product information, such as transportation fees. In a word, information technology lowers the cost of obtaining product information. But it is still time consuming for the consumer to filter the information for the preferred product especially in the era of information explosion. At the same time, retailers also have search cost to find their target customers, such as market research, advertising, and sales calls. This is the place where complementors could make a perfect match

between product and customer needs.

First of all, sellers have no incentive to improve the efficiency of buyers about price information search. Consequently some buyer-based intermediaries are introduced into this market to reduce buyers' search cost. For example, price comparison websites. Furthermore, in the heterogeneous product market buyers need to acquire both price and charactersistic information of products. In accordance with the result in the commodity market, lower search cost for price information leads to lower profits and fierce price competition of sellers. However, based on former findings in the theory part, lower search cost for product features information resulted in increased sellers' monopoly power and profits. From this point of view, sellers may have incentive to build their information platform focused on product rather price. But the third party complementors have more convincing power to provide unbiased and accuracy accurate information for consumers to choose suitable products. Word-of-mouth websites are a good example, such as rating/comment websites, letting consumers know better about the use of products by reviewing others' use experience and feedback. If there is no manipulated situation, this kind of website saves consumers' time to learn about top popular products in each category. The shopping guide or recommendation websites also have a similar function. The lower the consumer search cost, the sooner and more accurate match between products and customers' preferences.

There are also complementors assisting E-tailers to reduce search cost for target consumers. Social media websites is are representative to gather information of consumer's consuming habit. So does the cookie tools, search engines and so forth. All these complementors not only provide information for E-tailers to personalize products and services but also could also help E-tailers to recommend heterogeneous products to target consumers. E-tailers could get high profits by attracting target consumers for heterogeneous products or services efficiently. Leading to efficient society resources allocation, complementors help the e-tailing market to increase the

efficiency of the entire market economy.

In sum, search cost reduction is the main function of complementors in the electronic commerce market because complementors are useful to match sellers' products and consumers' needs more efficiently and precisely.

Reduce Bargaining Cost

Compared to Business-to-Business (B2B) transaction, Business-to-Consumer (B2C) transaction may face lower quantities fewer amounts of products, more diverse customers and less complicated contracts. The buyers in B2C transactions also have less bargaining power than the ones in B2B transactions. But nowadays some complementors are introduced to get over the barrier of different business models with innovative ideas. The first one is called "group purchase". It is a quasi B2B transaction when the third party complementors gather different consumers had with similar needs to make group purchase from the e-tailing company. In this way, individuals gain more bargaining power to lower price on the same product and E-tailers also benefit from transaction volume. The third party complementors could do act as mediator between sellers and buyers to balance supply-demand curve and get achieve social economic efficiency. At the same time, both two sides of buyers and sellers reduce their transaction cost. Furthermore, the third party complementors could also collect information of consumers' preferences sequence to pre-negotiate group purchase price with E-tailers. The other one is more like "auction group purchase", which has many types of pricing strategies for the users. In general Consumer-to-Consumer (C2C) electronic commerce might have more auction forms for a bidding system, such as E-bay or Yahoo. Normally products for auctions have different valuation from different consumers. The auction group purchase is like the C2C market but involves sellers such as E-tailers. Being similar to C2C e-commerce, there are more transaction costs for uncertainty and complexity about bidding strategy in auction group purchase. The third party complementors play a role by forming

configurable auctions and making optimal deals between buyers and sellers.

Reduce Ex post Cost

Improving transaction satisfaction is the essence of reducing the ex post cost for both buyers and sellers. For consumers, it reduces conversion cost to change buying tactics and start over again. For retailers, it reduces cost and time to process consumers' complaints and compensation not to mention that it is cheaper to retain consumers than attract new ones. The third party complementors could assist E-tailers to improve consumers' satisfaction. As mentioned before, complementors could use information technology to lower search cost and use bargaining power to lower prices. Furthermore, the third party complementors could supply professional outsourced services to E-tailers, such as convenient payment, widely distributed warehouse facilities and fast delivery, to offer consumers an efficient shopping process.

In the era of Web 2.0, complementors also assist E-tailers to create efficient consumer added value. This consumer efficiency management refers to increasing consumer's contribution to production and service delivery. The third party complementors could also improve the dimension and quality of consumer engagement in the ex post process of transaction. For instance, rating/comment websites provide an ex post feedback platform for consumers to post real time feedback information, as do social media websites. As a result, this is also an efficient channel for E-tailers to improve their products and services instead of costly market research.

> *Proposition 3a: Complementors assist E-tailers to improve transaction and business efficiency.*

Economic Efficiency

Based on the discussion in the theory part, economic efficiency concerns resource allocation among different business units. So complementors could maximize the capability of E-tailers to improve their economic efficiency, such as consumer big

data analysis and value chain resource integration.

Consumer Big Data Analysis

In the era of web 2.0, users play a role on the internet as information creator. For this reason, the complementors, who collect and analyze information, are needed by E-tailers. That's also why the concept of "big data" becomes a hot topic nowadays. One example of this is search engines. Through click stream analysis, this kind of complementors can help E-tailers to figure out consumers' online habits and consuming patterns from the big data base. Another example is social network websites. Instead of traditional one way marketing methods, social network websites provide a communication platform for customers and E-tailers. More than quantitative data analysis, many complementors also work on qualitative analysis with innovative technology, such as content mining, web mining, network analysis and so forth. With the help from these complementors, E-tailers make up for capacity deficiency on consumer big data analysis. Moreover, data analysis improves the capacity of E-tailers not only to understand consumer better but also to make decisions on market strategy.

Value Chain Resource Integration

The E-tailer is part of the whole value chain, so they need to cooperate with other complementors to maximize the capacity of the whole value chain. In the physical value chain, this cooperation focuses on transaction process. For example, logistic complementors assist E-tailers to provide fast product delivery. Financial complementors promise the convenience and security of payment. In the virtual value chain, the cooperation focuses on the information flow of products. For example, enterprise software providers, such as SAP and IBM, assist E-tailers to manage business operation and customer relationship through information and communication technology. This kind of complementors makes sure information is being shared in the whole value chain efficiently and exactly. The cooperation with suppliers and other complementors in the value chain allow E-tailers to achieve whole resource

integration. They can respond quickly from market data to stock data. Meanwhile, they can also operate business efficiently inside the firm.

Proposition 3b: Complementors assist E-tailers to improve economic efficiency.

3.2.4 How complementors support innovation of E-tailers?

What we explore here is the innovation of E-tailers rather than complementors. However, the cooperation with some innovative complementors inspires E-tailers to create their own innovation. In this way, complementors can assist E-tailers to create both sustaining innovation and disruptive innovation. Innovation is much different from imitation or improvement, but sustaining innovation usually starts from imitation of superiors or improvement on old methods. Normally, the sustaining innovation goal of E-tailers exists in content innovation, such as product, service or information innovation. In the other hand, disruptive innovation is not easy to create or learn from others. But the E-tailers could leverage the innovative power of complementors. Disruptive innovation normally exists in the business model or cooperation mode. The possibility of E-tailers' innovation being supported by complementors is discussed in the following section.

Content Innovation

Usually the upstream supply manufacturer is responsible for product innovation in the e-tailing market. What E-tailers could do regarding product innovation is product display or reset. This is where complementors could help E-tailers to accomplish product innovation. An example of this is social media websites. E-tailers could offer personalized product mix based on data collected and analyzed from social media websites, as do browser software and search engine complementors. Even more, browser software and search engines could also provide a front product display platform without reconnecting to the websites of E-tailers. Meanwhile, the concept of

changing customers into innovators is also reflected in the function of complementors. From the consumer data collected by complementors, E-tailers could have innovative ideas to redesign products and services. Additionally, technological innovation of complementors can also be regarded as a resource to create E-tailers' information or service innovation. IT technology innovation can change a company's operational and commercial activities. Internally, it provides innovative operation mode for E-tailers. Externally, it changes the cooperation between E-tailers and complementors. For example, an innovative encryption algorithm could offer a new online payment method to E-tailers. An integrated logistic system could offer fast delivery services and precise control to the consumers of E-tailers.

Most content innovation leveraged by resources and capacities of complementors is sustainable innovation in the market. All these kinds of innovation assist E-tailers to improve product and service for consumers and then gain more competitive advantage than existing competitors in the same market. However, E-tailers also face the potential risk from a new market emerging in the existing market, which is referred to as disruptive innovation.

> *Proposition 4a: Complementors assist E-tailers to improve sustainable content innovation.*

Business Model Innovation

The innovation related to the business model is usually disruptive innovation. Based on former researches, the definition of business model is ambiguous and undetermined. But elaborate discussion of business model definition and taxonomy is not discussed in this paper. We just follow some definitions of business model and innovation to approach the way how complementors could help E-tailers to make business model innovation. Value creation mode and value network are also considered in the inference.

Based on discussion in the theory part, different forms of E-tailers, such as E-shop, E-mall and E-marketplace, represent increasing degrees of innovation level and functional integration. In fact, this conclusion is consistent with the testified proposition that it is a positive relationship between involvement of complementors and innovation level of E-tailers. Furthermore, transaction content, structure and governance innovation are sources of business model innovation. Transaction structure innovation refers to new participant, number of participants, links between participants, quality of linkage and so forth. In other words, any innovative alterations of new complementors, number of complementors, links between complementors and E-tailers and quality of linkage would trigger the business model innovation of E-tailers. New incentive is also a source to create transaction governance innovation. New activities, innovative activity links and changing performance also lead to business model innovation. In other words, E-tailers may have limited ability to create initiative business model innovation, but any connection to innovative complementors would trigger the new incentive to E-tailers' innovation. For example, innovative complementors transfer users to major content providers, and this action changes the thinking and business mode of E-tailers to some extent. The involvement of complementors in the transaction impacts the E-tailers' business model innovation. Besides that, the network of each party in the transaction also have influence on the E-tailers' business model innovation.

New IT technology changes the traditional network of E-tailers and other parties, as occurs in supply chain relationships and customer relationships. In this process, the value creation and network mode is changing as well. Aggregation of information gathered from complementors is the new customer value. The complementors also allow more customers to become involved in the business network or product circles. This action creates consumer efficiency by lowering the cost of both buying and selling parties. Additionally, the next generation of network also leads to new service value proposition, revenue mode, and market strategy. Using a similar principle in the

e-tailing market, E-tailers could create a new pricing and revenue model shared with complementors, such as rebate and coupon website. Or E-tailers could choose certain complementors to coproduce products and services. In other words, complementor selection, partnership construction and network dynamics could constitute the network innovation of E-tailers.

In sum, business model innovation of E-tailers is game-changing innovation more than product or service innovation. It mainly focuses on new transaction content, structure, governance, incentive, relationship and network cooperated with complementors. The technological innovation of complementors could provide new channels for E-tailers to communicate and bond to customers. Involvement and innovation of complementors and new networks with complementors could provide E-tailers with flexibility and variety for the new business model.

Proposition 4b: Complementors assist E-tailers to achieve disruptive business model innovation

3.3 Relations between Mediating Factors and Dependent Variables

3.3.1 How trust adds value to E-tailers?

As discussed above, complementors of E-tailers offer customers system trust, trust beliefs and intentions. All these kinds of trust would lead to value creation for E-tailers. It is discussed in the following section.

The trust mechanism provided by complementors eliminates risks in relationship building between E-tailers and online consumers. The trust from the security perspective provides protection for communication and transaction in the foundation of a dependence relationship foundation. The consumers and E-tailers could rely on system trust to build a short-term transaction relationship. Trust from the reputation perspective increases the opportunities for interaction and improves the quality of

communication between two parties that in turn build a deep dependence relationship between themselves. The E-tailers would use information from efficient interaction even including consumers' participation to customize the product or service. In this way, the satisfaction of consumers would lead to a deep dependence relationship with E-tailers. Moreover, long term trust would create emotional impact on the relationship. The likeness derived from long-term trust would build a deep bond between online retailers and consumers. Additionally, online trust also impacts on offline trust. If consumers trust the E-tailer website and online shopping process they also trust the E-tailer firms. Therefore, the trust becomes a brand impact power to add intangible value to E-tailers.

Proposition 5a: Trust constructs and strengthens the relationship between E-tailers and customers.

Many researchers have proved that trust, perception risk and reputation influence customers' willingness to pay. The trust mechanism provided by complementors decreases perception risk and ensures the safety aspect of online shopping. This security will increase the intention to purchase online to some extent. In other words, system trust is just the first but indispensable step to persuade users to shop online. The trust beliefs and intentions would influence consumer behavior and post-purchase perception. The reputation trust derived from complementors of social media would induce consumers' interests and awareness before purchase. When it comes to information selection and process level the reputation trust derived from complementors of electronic word of mouth would give potential consumers the crucial factors and arguments to decide what product or service to choose. With the help from E-word of mouth complementors, consumers increase the expectation of product or service and intention to purchase. Since the wisdom of crowds based complementors has the impact power to affect the next generation of products or services, consumers have the motivation to return to the complementors to express

satisfaction and feedback about the product or service after purchase. Consequently, the customized product or service developed from former wisdom of crowds would evoke the consumers' intention of repurchase. All these efforts from complementors in the purchase process increase customers' willingness to pay.

Proposition 5b: Trust increases customers' willingness to pay.

3.3.2 How loyalty adds value to E-tailers?

Based on discussion in the theory part, most frequently mentioned consequences of online customer loyalty are fewer searches for alternatives, more word of mouth, willingness to pay more and willingness to purchase/repurchase. All these consequences, whether measured behaviorally or emotionally, are finally contributed into profitability for E-tailers.

Repeat purchase obviously boosts E-tailers' sales while repeat visits arouse consumers' intention to purchase/repurchase. More word of mouth enhances the trust of other consumers, which leads to more purchase or purchase intention from them. Repeated purchase is directly reflected in value creation from the financial perspective of E-tailers. Reduced search for alternatives or resistance to change would enhance competitiveness of E-tailers, which is the value creation from the intangible asset perspective of E-tailers, such as brand reputation.

Proposition 6a: Loyalty increases customers' repeated purchase from E-tailers.

Since behavioral loyalty could be imitated and replaced by competitors, it is not steady enough to guarantee sustainable and long-term value creation. Compared to behavior loyalty, emotional loyalty is hard to build and also hard to imitate and replace. The consequences of emotional loyalty are represented as more tolerance to

price and new product/service, more customer profitability and more total satisfaction with the online experience. Consumers who have emotional loyalty are willing to pay more for products. They are also more willing to accept new products or services than consumers without emotional loyalty. For this reason, emotional loyalty could increase the profitability of each consumer in the long term, which adds value to the individual E-tailer. In the meantime, emotional loyalty would have brought total satisfaction with the online experience, which increases the online retailers' share of the whole market. Accordingly, it adds more value to each E-tailer in the market.

Proposition 6b: Loyalty increases customers' tolerance to price and innovation.

3.3.3 How efficiency adds value to E-tailers?

Based on transaction cost theory, business efficiency would definitely reduce financial cost of E-tailers. Through service provided by complementors, E-tailers save time and money to find their consumers, such as advertisement fee and market research cost. Moreover, complementors could also reduce cost of E-tailers in the transaction, such as payment confirmation and transaction fraud security. Additionally, E-tailers also reduce cost to communicate with consumers after transaction through the platform constructed by complementors.

Proposition 7a: E-tailers have financial benefit from efficiency.

Consumer efficiency which reduces financial cost of consumers also brings value to E-tailers. As we mentioned before, financial saving leads to behavioral loyalty of consumers. In other words, consumers would stick to certain E-tailers if they have had satisfactory experiences with efficient services or transactions. Furthermore, E-tailers also exploit economic efficiency assisted by complementors to provide more precise

services or products to match consumers' needs. In this way, consumers would prefer E-tailers in the long term by increasing transaction satisfaction.

Proposition 7b: Efficiency locks customers' channel preferences.

3.3.4 How innovations add value to E-tailers?

Regardless of innovation typology, innovation would bring in a new market. Sustainable innovation related to content reformation provides new products, services or information to customers resulting in added value for E-tailers. The idea of changing the customer into an innovator of product and service design would modify the cost model of product and service innovation. Through personalized product and service, E-tailers could find high profit customers.

Disruptive innovation is a new competitive advantage of E-tailers because it changes the competition rules or creates new rules. Disruptive innovation assisted by complementors in the e-tailing market occurs mainly in a new customer relationship and in an innovative value network. New customer relationships definitely change the conventional value creation model by adding new customer values. The forms in which complementors and E-tailers' networks evolve could change conventional value creation and distribution model by using different cooperation modes. Connection to innovative complementors provides win-win strategy to E-tailers. This strategy not only increases the old market size but also increases the possibility of leading a new market.

Proposition 8a: Innovation creates new revenue model for E-tailers.

The first advantage of innovation is the learning curve which offers E-tailers high profit before competitors learn and imitate it. The difference between sustainable

innovation and disruptive innovation is length of "the learning curve". Before innovation becomes mainstream behavior, the firm would profit from their exclusive insight. So does the network innovation. The stronger and more complex relationship between customer, complementors and E-tailers, the more profit E-tailers would get from business model innovation. The second advantage of innovation is "preemption of scarce asset". This first mover advantage prevents competitors from seizing key resources by strengthening the learning curve. The third advantage is "switching cost" which builds barriers for the second mover to divide the market. It makes it more difficult for second movers to change the relationship with first mover of innovation if they pay for the switching cost for customer and complementor partners.

Proposition 8b: E-tailers have first mover advantages from innovation.

4. Methodology

Many studies regarding value creation in e-business use qualitative methods, such as literature review (Methlie and Haugland, 2011) or case study (Amit and Zott, 2001). In order to explore the E-tailers' value added model from the perspective of the complementor, my research needs to follow interpretive philosophy. Therefore in an inductive research approach we need to make sense of the meanings and relations arising from the phenomenon with qualitative research methods, namely literature research and case study. The reasons why we choose these methods, and the procedures how we undertake these methods, are explained in the following sections.

4.1 Research Approach

That more and more complementors participate in the game to create value for E-tailers is an emerging phenomenon. Moreover, my research question is from the new perspective of complementors to find out how complementor partners add value to E-tailers. The amorphous form, complexity and novelty of the research question cause the research to become an exploratory approach. Exploratory research excludes the deductive research approach. Former studies related to this topic are either merely talking about the e-commerce industry or a single stockholder, mainly E-tailer firms, in the industry. The lack of existing theory requires us to shape a new value added model for complementor partners to E-tailers from former research results and practical case studies. According to the features of three research approaches defined by Saunders et al (2012, p144), my research mainly follows the inductive inference method to "explore a phenomenon" and "create a conceptual framework". Although we have some data analysis in the case study part to testify and modify the value added model, it is hard to identify quantitative parameters of some independent variables. So we can't say we follow a complete abduction inference method because we don't test propositions quantitatively in this paper.

4.2 Research Strategy

As said in the last section, with the purpose of phenomenon exploratory research and building a new theory to answer my research question, we follow an inductive research approach. In other words, we have to extract concepts and logics rooted in what was going on. Considering existing capability and time consumption, I choose literature research as main research strategy and case study as complementary research strategy.

4.2.1 Literature Research

Since I am undertaking research from a new perspective, it is necessary to arrange all the relevant theories in former researches. To create a conceptual framework, I review literatures I can find related to the subject. The procedures I take are like grounded theory. With inspiration in Amit and Zott's (2001) paper as a starting point, I find a few potential drivers of the value model. Some forecasts are also derived from real life observation. Based on these key words I search the relevant researches, coding and classifying them into my model. The difference from normal literature review is that I am seeking and explaining inside relations rather than presenting what they have done. In the process of reviewing over a hundred pieces of literature, I gather supporting theories or practical evidence from others' papers to form the value added model. More details are seen in the following data collection and data analysis sections.

4.2.2 Case Study

Without convincing causal relation theory, we can't use quantitative strategy of experiment or survey. In addition, according to the scale of the research question, we don't have enough time to undertake some time-consuming research strategy like action research, grounded theory or narrative inquiry. As a result, case study is a very worthwhile way of exploring and challenging existing theory (Saunders et al, 2012).

In this paper, case study is supplementary in real life context to verify and modify theoretically based propositions in the value added model. Considering the purpose of research, existing sources and amount of time available, I use holistic case studies of two firms in the same country. Multiple case studies focus on whether cases are replicated across the cases. These two cases are chosen by literal replication similar to the prototype of my research objective. But they also have different business features of their own leaving space for us to do exploratory research. The details of cases' backgrounds, limits and indications are stated in the case study part.

4.2.3 Data Collection

Firstly, some primary data is collected from observation as a complete observer, such as finding and counting what kinds of complementors related to E-tailers and so forth. Since this method normally exists in the exploratory stage of a research project (Saunders et al, 2012), the data is used for preparations before model construction and case study. The process of data collection follows structured observations. With the help of Google scholar search engine, we use coding schedules to review former papers with key words such as "E-tailing", "E-commerce", "B2C", "complementors", "third party agent", "value" and so forth. From the most cited papers we look up more references related to the more specific issues. In the meantime, we also use search engines, E-tailers websites and other websites to trace complementors who meet the requirements for the research question. From different categories of complementors we explore the features and relation status of them through structured observation. By using this method in the paper regarding online business, disadvantages of time consumption and expensiveness are overcome, since online observation is easier to implement than physical observation. Moreover, because completed online observation is a covert behavior it also avoids observe effect and informant error.

Secondly, much documentary secondary data is collected from primary literature relevant to the topic of research questions, such as theses and company reports. In this

paper the data which is usually fully updated, is mainly used for selecting and supporting current situations of my value added model construction. Furthermore, some secondary data is also collected from secondary literature, such as books and journals. Although the data is not updated as primary literature, it is more convincible and reliable. This data is mainly used in grounded theories for the value added model construction part.

Considering the scale and dimension of data we need to investigate for the case study, we adopt survey based secondary data mainly gathered from two online data resources. The first one is ALEXA.com which is a public global web information company belonging to Amazon.com. Alexa's traffic estimates are based on sample data from all internet users. The Alexa Traffic Rank is calculated by a combination of estimated average daily visitors and estimated number of page views on site over 3 months. The second one is CNZZ.com which is the largest Chinese web information data provider and analysis company covering over 90% of Chinese netizens. Over 4 million websites use CNZZ to calculate their visit numbers, so more specific data and data analysis about Chinese websites could be found here. There are other multiple source secondary data adopted as well, such as an industry analysis report from McKinsey Quarterly about Chinese e-commerce or business websites. The major one we used is IRESEARCHCHINA.com which is the leading consulting company focused on research in China's internet industry, including online media, e-commerce, online games, and wireless value added services. Iresearch.com not only provides solutions to specific customers, such as e-business companies, but also publishes quarterly industry reports from different e-business areas. Since the research is following an exploratory approach from a new perspective of third party complementors, secondary data collection is a way of saving time and money to find potential discoveries. Moreover, secondary data also have the advantages of permanence and longitudinal studies. However, using secondary data we may face the situation that the data does not perfectly match the research need. We also can't take

any action to control data quality and data may be influenced by initial purpose. That's why we mainly adopted secondary data from well-known institutions or universities to make sure they are reliable on data collection to the greatest extent.

4.2.4 Data Analysis

The main method of data analysis in this paper is qualitative analysis although we also quantify some variables in a few circumstances for comparison. The first thing to do is to use concept driven method to categorize data deriving from existing theory and literature. In this process we note abstract, main ideas and key words of literatures into a list with help of Excel software. Then we use these records and theories to recognize relationships and develop categories in the model. Finally, we develop testable propositions about relationship between categories and we also use case studies to testify all the theoretical propositions. In the case study, we use analytic induction to examine the phenomenon being explored. The difference is that we just use case study to test and refine proposition derived from literature research rather than initial case study. This is because the final conclusion is not only grounded in the cases but also developed from literature review. The incorporation of literature research and analytic inductive case study could make up the deficiency of analytic induction method, such as limited representativeness and generalisability.

4.3 Validity and Reliability

Validity and reliability issues need to be noticed in both data collection and data analysis process. The data collection resources are primary data from observation and secondary data from literature and websites. Data from observation is highly reliable by virtue of its replicability. Completed observation avoids observe effect and informant error, but structured observation still has some risks of observer bias and time error. Model testification from case study reduces the impact of observer bias from literature review. To deal with time error, we try to select data from random time and keep all the comparisons under the same period. When we use secondary data we

need have two stages to evaluate validity and reliability. One is overall suitability to research questions and objectives while another is suitability for research questions which need to be answered. Multiple literature searches would let us avoid measurement invalidity by examining secondary data in a similar context from different researches. Unmeasured variables may be excluded in survey based secondary data when we are undertaking an exploratory research. If there is data invalidity which can not be detected in this part, it will be left for later researches to complement or revise. As we said in the data collection part, we mainly adopted secondary data from well-known institutions or universities to make sure data sources are reliable. The number of quotes is also a criterion to select more reliable data sources by wisdom of crowds. Because most survey based secondary data is gathered from unobtrusive online behavior tracing, such as click number, this data is never influenced by measurement bias.

Qualitative data analysis methods in this paper are quasi grounded theory in the literature review and analytic induction in this case study. Since all the methods could be replicated and could prove causal relationship between two variables, these analysis methods of inductive approach exhibit high levels of reliability and internal validity. The external validity would be tested by other researchers under different settings.

5. Empirical Illustrations: Case Study of JD.com and Suning.com

5.1 Background

The reason why I select Chinese companies as case study samples is because of the rapid development of the Chinese e-commerce market in addition to my national and language advantages for searching information and data sources.The ratio (6.2%) of Chinese online shopping sale volume in total retail sales of consumer goods exceeded that of the US (5.2%) for the first time in 2012 (Iresearch.com). The total volume (213.8 billion) of Chinese online shopping is only 17.5 billion less than the US (231.2 billion) and it is expected the former would surpass the latter in 2013. Different from US (24%), most of large Chinese B2C E-tailers (90%) are marketplace based (Dobbs et al., 2013). After decades of development, the Chinese e-commerce market is centralized now, having 91% of market share occupied by the top 6 companies. The top four e-commerce companies are Alibaba, JingDong, Suning and Tencent respectively, with market shares of 56.7%, 19.6%, 5.5% and 4.7% in 2012. The first e-tailer, Tmall.com from Alibaba Company, is an example of the complete marketplace business model. Closer to the prototype of E-tailers assumed in this paper, the two largest E-tailers with the major business model of independent merchants are selected as case study in my paper, JD.com and Suning.com.

JD.com[1] is the former largest 3C online shopping mall founded in early 2004, increasing its sales from 1.6 million dollars to 216.6 million dollars in four years. The success code of JD.com is based on low cost in supply chain operation, product differentiation by cooperation with suppliers and independent customer management by virtual community of consumptions (Xie and Zhao, 2010). JD.com became a hybrid independent merchant and marketplace since it launched its market platform to

[1] The former name is 360buy.com, changed into JD.com in March 30, 2013

third party sellers in 2010. This move not only expanded its product portfolio range from 3C to shopping mall but also increased its sales scale. In the finance report of 2013, marketplace sales are ten times the size of independent merchant sales (SEC JD.com IPO report).

Suning.com is one of the two former largest offline retailers which sell home electronics and appliances. Till now, Suning Company has 1409 physical retail stores all over the country. With the success experience in the offline retail market, Suning.com joined the game of e-commerce in year 2010. Moreover, Suning Company purchased two e-commerce companies, relevant shopping websites for infants and women, to expand its product range in 2012. In the same year, Suning.com also launched its marketplace platform for third party sellers.

5.2 Trust

Based on discussion of model part, complementors assist to build E-tailers' trust through online transaction security and reputation construction.

Regarding online transaction security, complementors always contribute to three aspects, namely fraud, privacy and payment. The main issues focus on account and payment security regarding practical online shopping in China.

Both JD.com and Suning.com have their own membership system to protect account security and privacy. In order to increase account safety, both of them also encourage consumers to bind their account to a mobile number or E-mail address. Both of them have their own offline payment method to avoid online payment risk for consumers.

The difference is that JD.com utilizes more resources from the third party complementors for online transaction security. The first perspective refers to account security. JD.com let consumers use the digital certificate provided by the third party certificate authority center when they log in their JD.com account. This digital certificate prevents others from logging in on another device by user name and

password stolen via a virus program. Moreover, JD.com also allows consumers to use their social network account to shop on JD.com without applying for a new JD account. By this, JD.com leverages not only account security procedure but also network influence from the third party social network websites. The last big issue refers to payment method. Among eleven payment options provided by JD.com, only one is completely self-run business. In the online payment part, JD.com offers six options now, which are 100% dependent on third party online payment complementors. So JD.com leverages high digital safety technology from third party payment professionals. However, because online payment involves confidential trade sales information, JD.com terminates contracts with the top two third party payment platforms belonging to JD's competitors Alibaba and Tencent Company. The top 10 ranking list of Chinese Online Payment can be seen in Appendix 1. So JD.com keeps cooperating with the third largest online payment company and other specialized online financial companies. Meanwhile, in 2013 JD also purchased an online payment company named Chinapay.com to develop its own online payment ability. Additionally, to explore overseas business, JD.com also use worldwide universal third party seals to deal with transaction security risk and increase consumers' trust, for example ReD (a fraud prevention and payment service company), Visa and Trustwave.

In contrast to JD.com, Suning.com is more independent of complementors. The main reason is based on its offline business power. For this reason, Suning.com has advantages to develop its own tools for consumers in every stage of the transaction process. To protect online account, transaction and payment safety, Suning.com combined their online account with the membership system of physical retail stores. In other words, once you want to select any product online you can log in by entering membership number rather than creating a new online account, you can order online and you can fulfill the payment formalities and pickup in the nearest retail store within 24 hours. The perfect combination of online and offline services sufficiently

decrease the potential risks from online shopping. Furthermore, Suning.com also developed its own online payment system called Yi Fu Bao, which joined third party online payment security alliance in 2013. Besides Yi Fu Bao, Suning.com also cooperates with only two third party online payment professionals and directly with some online bank systems. The top 10 ranking list of Chinese Online Banks, which are all connected to Suning.com, can be seen in Appendix 2. In a word, although Suning.com has its own system, it still partly relies on third party complementors to build online transaction security trust.

Proposition 1a that complementors assist to build trust in E-tailers by providing online transaction security is verified in JD.com and Suning.com.

Both JD.com and Suning.com have their own platforms for social network and word of mouth. JD.com and Suning.com have a customer online community for product information sharing and discussion. The difference between these communities is that product purchase feedback is connected to the product website on JD.com, whereas feedback is discussed separately in the forum on Sunning.com. Although both two E-tailers encourage customers to post their ex post purchase experiences online, JD.com is more active and efficient. JD.com has thousands of comments whereas Suning.com has only hundreds of comments per product. Product quality trust in Suning.com relies mainly on its own traditional offline service and brand reputation.

Both JD.com and Suning.com use third party social network services to interact with consumers. The highest ranking social network service website (SNS) in China is Weibo (Appendix 3), which is quasi Chinese Twitter. JD.com and Suning.com have opened accounts on Weibo, but the interaction is not active. JD.com has nearly one hundred comments or concerns per post and Suning.com has nearly fifty comments or concerns per post. In contrast, most hot topics can have millions of comments per post. Recently, Weibo has strategically cooperated with Alibaba, the biggest E-tailer in China, to combine social network power with an online shopping system. So JD.com

and Suning.com missed their opportunity to have the first mover advantage. However, the second highest ranking social network service in China is Douban.com, which is a well known online forum. In 2013 Douban.com launched a new channel, named Dongxi, providing an online shopping information sharing platform connected to 22 Chinese, and 13 foreign online commerce websites. The form of this channel seems to be purchase wishing and recommendation lists rather than mere shopping comments and ratings. Moreover, this channel also has the social network power from Douban.com to transmit the information to the target consumers. Users regard browsing this channel as entertainment attached to former online forum experience. Using this channel, consumers focus on the feature and feedback of products more than price. JD.com has connected to this channel whereas Suning.com has not yet. Based on the great power of its numerous active users, the product quality trust in JD.com is increased.

Besides social network services, shopping guide websites or recommendation websites are two other sources for the two E-tailers. The shopping guide website category ranking list is shown in Appendix 4. In the list, the highest ranking one is based on female products and mainly cooperates with the largest E-tailer, Alibaba. The second largest one is zmzdm.com with the English meaning of "What is worth buying". This shopping guide website is a third party platform for users to recommend products. Both JD.com and Suning.com are connected to this website. However, there are more discussions on JD.com than Suning.com, with 11180 and 3307 posts respectively. Since this is an independent online shopping comment and recommendation website, users consider it has more trustworthiness than the platforms belonging to the E-tailers. There are also more positive comments about JD.com than about products. From the contents of the comments and feedback, it is obviously useful in building up the reputation of JD.com.

In sum, since JD.com and Suning.com have their own comment systems, their reputation construction does not rely on the complementors. However, some

complementors such as social network services and word of mouth are complementary to E-tailers' own comment systems.

> *Proposition 1b that complementors assist to build trust in E-tailers by building reputation of E-tailers is partly verified in JD.com and Suning.com.*

Both JD.com and Suning.com provide multiple methods to assure the transaction safety which lets consumers choose to shop with these two E-tailers. Through the whole transaction process, consumers build a relationship with these two E-tailers. The transaction experience impacts the quality of the relationship. Although price is a primary factor for Chinese consumers' decision to purchase, service and product quality are also essential factors. Here is an example of how JD.com proves that consumers could pay more for better service and product quality. As mentioned above, JD.com introduced marketplace platform for third party sellers in 2010. Some third party sellers have a bad service and product quality record, which forces consumers to choose products with higher price at JD.com self-operated store rather than at third party sellers. In other words, consumers are willing to pay more for the good reputation of JD.com. Consumers also choose Suning.com because they are confident that Suning.com has good service and product resources.

> *Proposition 5a that trust constructs and strengths the relationship between E-tailers and customers is mainly verified in JD.com and Suning.com*

> *Proposition 5b that trust increases customers' willing to pay is mainly verified in JD.com and Suning.com*

5.3 Loyalty

As retail websites, there are many sales and marketing activities undertaken by JD.com and Suning.com to increase behavioral loyalty. Some of them are independent

activities and some of them are cooperated with complementors. One of the most successful types is that E-tailers leverage the complementors' membership base to provide discount. For example, bank membership has a huge consumer base. The E-tailers not only use their professional financial services but also leverage their consumer base. JD.com cooperates with many banks to promote installment payment with zero interest, such as China Merchants Bank, Bank of Communications and China Minsheng Bank. These are the most popular online banks with the greatest number of consumers. The ranking list can be seen in Appendix 2. Moreover, from time to time JD.com provides clients of these banks special discount on certain products. Suning.com also has the same strategy with China Construction Bank. The difference is that China Construction Bank has its own online shopping guide platform and Suning.com is only one of its cooperators. Additionally, shopping discount websites are also very useful complementors to increase behavior loyalty to online E-tailers. The shopping discount websites include price comparison, rebate and coupon websites. The ranking list is in Appendix 5. The top ranking site is owned by Alibaba, the leading E-tailer in China. Following this is the third party independent website called fanli.com. The users of Fanli.com can access various debates when they purchase from different online retailers. Fanli.com can rebate a maximum of 4% to consumers of JD.com and 2.8% to consumers of Suning.com. Meanwhile, Fanli.com recommends more products on JD.com than Suning.com. The pragmatic consumers would choose to purchase a product on JD.com unless it is only sold on Suning.com.

Proposition 2a that complementors assist E-tailers to have consumers' behavioral loyalty is verified in JD.com and partly verified in Suning.com.

Emotional loyalty, similar to reputation, is valuable to get for E-tailers especially in China. Chinese customers are the most pragmatic consumers in the world. The price is the primary factor to be considered in their shopping process. Nowadays service is

also playing an important role in the purchase decision. Emotional loyalty is also hard to detect. From the content of comments on JD.com and complementors' websites, there is a lot of positive feedback about JD.com. JD.com's fast delivery and response are highly praised by online users. In contrast, Suning.com have many complains about the delivery speed. JD.com also gains emotional loyalty from its wide range of products, for example, it launched a new channel for products imported from Japan and South Korea. Many consumers express their satisfaction and intention of future purchase on JD.com. The positive comments increase the consumer's emotional loyalty and also attract their audiences as new consumers. Suning.com has advantages in offline services, such as ex ante enquiry and ex post services in their physical retail stores. But this kind of positive information is hard to transmit online because the customers who focus on offline services are not usual online users, e.g. the older consumer group. Furthermore, Suning.com acquired one famous infant product E-tailer to expand its product range thereby gaining more emotional loyalty from target consumers.

Proposition 2b that complementors assist E-tailers to have emotional loyalty of customers is partly verified in JD.com.

Behavior loyalty is shown by repeated purchase, which obviously adds value to E-tailers. As mentioned before, since Chinese consumers are very pragmatic consumers, price is the primary factor to create behavior loyalty. So the shopping discount websites allow JD.com to have more behavior loyalty from consumers. Moreover, good service experience creates emotional loyalty. The consumers who are impressed by the fast delivery speed of JD.com will regard JD.com as first preference when they want to shop online. But this kind of loyalty does not let consumers have tolerance to price and innovation as does the emotional loyalty from exclusive products. The consumers will pay more for imported products on JD.com than similar products sold by other E-tailers. So does Suning.com. Consumers will pay more for

infant products seldom sold by other E-tailers.

Proposition 6a that loyalty increases customers' repeated purchase from E-tailers is verified in JD.com and Suning.com.

Proposition 6b that loyalty increases customers' tolerance to price and innovation is partly verified in JD.com and Suning.com.

5.4 Efficiency

JD.com and Suning.com have their own methods to achieve transaction and business efficiency. JD.com has developed its own logistic system many years ago while Suning.com already has its own stores, warehouse and product stock system. But they still need complementors to improve transaction or business efficiency. As stated above, shopping discount websites and shopping recommendation websites both reduce search cost of product information, features and prices. Some debate websites, such as fanli,com, also reduce ex post cost by increasing transaction satisfaction. Some channels of social network services, such as Dongxi channel on Douban.com, also submit product information to the customers interested. In the multi-media era, blogs and video websites also provide product information by text or video expression. JD.com is the first E-tailer in China to use its own blog to explain technology features of electronic products. It is also the first E-tailer to use videos of their working process as marketing on third party video websites. The ranking lists of video websites and blogs in China can be seen in Appendix 6 & 7. The most popular information video is about electronic equipment and beauty products. Suning.com have acquired one video website, named pptv.com. The search engines and browser software are also working on reducing search cost for customers. Chinese search engines frequently used are google.hk, baidu.com and soso.com (Appendix 8). The popular browser software includes Chrome, 360 and QQ browser. These

complementors provide information to customer within a few seconds. Meanwhile, they also provide personalized product advertisements to E-tailers' potential consumers by tracking their browser history. All these moves also reduce the search cost of E-tailers for target consumers.

Furthermore, some group purchase websites and shopping discount websites also reduce bargaining cost for both buyers and sellers. As third party independent websites, they offer more discount opportunity for consumers. They also let E-tailers know what major consumers need. Additionally, group purchase websites also expand the offline market for E-tailers. In the middle of 2012, JD.com cooperated with four large group purchase websites to launch its group purchase platform, lashou.com, manzuo.com, didatuan.com and 55tuan.com respectively. The ranking list of group purchase websites in China is seen in Appendix 9. Meanwhile Suning.com built up its own group purchase platform by acquiring the second largest group purchase website in China nuomi.com, so it does not rely on other complementors' contributions.

Regarding transaction satisfaction improvement, both JD.com and Suning.com depend on their own logistic system to provide quick delivery services. Because Chinese consumers care about the delivery speed, JD.com and Suning.com provide various delivery methods. For example, they have within 3 hours, within 12 hours, next day delivery and nighttime delivery services in over 100 Chinese cities. But JD.com also uses third party express delivery firms to places it does not cover itself. Suning.com does not rely on complementors to provide ex post services. It even has various ex post services provided by its own website, such as online technology assistance for consumers and so forth.

Proposition 3a that complementors assist E-tailers to improve transaction and business efficiency is partly verified in JD.com and Suning.com.

Regarding economic efficiency for E-tailers themselves, JD.com and Suning.com are

both building their own big data base containing consumers' online behavior. But in this process, they still rely on some assistance from complementors. For example, JD.com use Oracle's business intelligence tools to construct their own business intelligence system. Suning.com is also introducing top technology from the leading business intelligence companies, SAP and IBM. This business intelligence system is used for not only consumer analysis but also resource integration. Through this IT system, JD.com and Suning.com can keep track of the stock situation from suppliers and warehouses all over the country. Based on this information, they can make decisions about products and prices efficiently.

Proposition 3b that complementors assist E-tailers to improve economic efficiency is verified in JD.com and Suning.com

The exact financial benefit from efficiency of JD.com and Suning.com can't be simply measured. But JD.com gains consumers loyalty by efficient response and delivery. Their efficient IT system enables Suning.com not only to operate faster but also to connect easily to new markets. Moreover, the complementors bring more transactions through search cost, bargaining cost and ex post cost reduction. All of these activities are reflected in financial profit figures.

Proposition 7a that E-tailers have financial benefit from efficiency is verified in JD.com and Suning.com.

Proposition 7b that efficiency locks customers channel preference is verified in JD.com.

5.5 Innovation

The cookie technology used in browser software and recommendation websites changes the advertisement method of E-tailers. IT technology innovation integrates all

the resources of E-tailers. Social media websites change the network platform provided by E-tailers. Shopping discount websites and video websites enrich the marketing methods of E-tailers. All of these phenomena can be found in JD.com and Suning.com. But this kind of innovation is easy to imitate and upgrade.

Proposition 4a that complementors assist E-tailers to have sustainable content innovation is verified in JD.com and Suning.com

The business model innovation in these two firms is the cooperation relationship between E-tailers and complementors. JD.com was once connects connected to Weibo.com, the top one social network service platform, but then it stops stopped this cooperation with Weibo.com because former Weibo has an innovative cooperation with another competitor. Recently, JD.com cooperates cooperated with Baidu.com, the top search engine, to build an information sharing platform for intelligence hardware manufactures. Additionally, through shareholding in or acquisition of some complementor firms, JD.com is joining new business areas like online payment, online travel service and online advertisement platform. In the same way, Suning.com turned itself from an offline electrical appliance retailer to an online company with a whole package of online services. Retaining a supply chain network and financial resources, Suning.com is building an online finance service platform. In the future, JD.com would be a big data provider, such as Amazon. Meanwhile, Suning.com is becoming a large Online to Offline (O2O) service provider. By strategic cooperation with different complementors, they will create more business and revenue models.

Proposition 4b that complementors assist E-tailers to have disruptive business model innovation is verified in JD.com and Suning.com

The different forms of cooperation with complementors arises create new revenue models for both JD.com and Suning.com. These new models are regarding profit margin and sharing. For example, different roles of marketplace and online sellers

have different revenue models for JD.com and Suning.com. The Through transformation from product retailers to online service providers, they definitely have different value models to gain profit. Moreover, the innovative concept of marketplace is not initiated by JD.com or Suning.com. So they don't have first mover advantages. But in the imitation process, they create their own disruptive innovation as well. These innovations are their market strategy for the future. Now their first mover advantages are not obvious yet.

Proposition 8a that innovation create new revenue model for E-tailers is verified in JD.com and Suning.com.

Proposition 8b that E-tailers have first mover advantages from innovation is not verified in JD.com or Suning.com.

6. Discussion and Conclusion

6.1 Discussion of the Result

All the results of this case study are listed in Table 3. As can be seen, most propositions are verified in the case of JD.com and Suning.com, which means the present findings support the value added model of complementors. However, complementors have different weightings in the different value drivers of these two E-tailers. Instead of being completely dependent on complementors, JD.com and Suning.com have developed some value drivers, such as trust and efficiency, to their own advantage. Trust is the foundation of online shopping while efficiency is the key point of service quality. Obviously, trust and efficiency factors are more important in short term business development. That's why these two E-tailers need to develop their own competitive advantages rather than purely rely on complementors. These findings are consistent with the transaction cost theory and cooperation cost theory. More than these, fierce competition is also another important reason. If the complementors are owned or acquired by other E-tailers, JD.com and Suning.com have to develop their own complementors to avoid risk of trade secret exposure. In accordance with the value net theory, JD.com also closely cooperates with other complementors under the concept of co-opetition. The complementors connect most E-tailers, increasing the whole added value of the e-tailing market. In other words, complementors could to some extent change competition into symbiosis between different E-tailers.

In addition, loyalty and innovation are two important value drivers for long term business development. Since most complementors have emerged during the last five years, they are not capable enough to build reputation for E-tailers. But they do have certain influences on the reputation construction of E-tailers. The same is the case for innovation factor. The innovation activities initiated by complementors are not

sufficient to inspire JD.com and Suning.com to create disruptive innovation. But they impact the business process of these two E-tailers considerably. All in all, the findings are in agreement with virtual value creation theory and sustaining innovation theory.

From the findings of this research, it can be found that value drivers of E-tailers remain unchanged when technology or business ideas are evolving. In other words, the value drivers of E-tailers, trust, loyalty, efficiency and innovation, remain the same whereas the components of these drivers vary. Following these steady factors, E-tailer companies can discover and develop their competitive advantages in a changing market environment.

Table 3 Propositions Verified List in the Case Study

Factors	Propositions of Value Added Model	JD.com	Suning.com
Trust	1a: online transaction security	√	√
Trust	1b: online reputation	partly	partly
Trust	5a: relationship	√	√
Trust	5b: willing to pay	√	√
Loyalty	2a: behavioral loyalty	√	√
Loyalty	2b: emotional loyalty	partly	x
Loyalty	6a: repeated purchase	√	√
Loyalty	6b: tolerance to price and innovation	partly	partly
Efficiency	3a: transaction and business efficiency	partly	partly

Efficiency	3b: economic efficiency	partly	√
Efficiency	7a: financial benefit	√	√
Efficiency	7b: channel preference	√	x
Innovation	4a: content innovation	√	√
Innovation	4b: business model innovation	√	√
Innovation	8a: new revenue model	√	√
Innovation	8b: first mover advantage	x	x

6.2 Theoretical Implication

As stated, almost all the relations between variables and mediate factors are testified in this case study. But complementors weigh more on trust, loyalty and efficiency than on innovation. In other words, although some E-tailers have made an innovative move by acquiring some innovative complementors, disruptive innovation inspired by complementors is still not obvious till now.

On the other hand, complementors do change the market value creation model. One of the innovations is making consumers become one source of value creation, which means that "Consumer" is another important indirect value driver of E-tailers. Consumers create and share value on platforms offered by complementors. That's why some complementors themselves do not create value but they gather value from consumer aggregation for E-tailers.

6.3 Managerial Implication

Firstly it is the indication discussed from the E-tailer's point of view. When the new

technology or business model comes out, E-tailers could identify to which value driver in this value model it belongs and then use it as a complementary to their own advantages. Meanwhile, when multinational E-tailers want to explore an overseas market or the offline retailers want to expand their online business, they can choose some suitable complementors to assist their market composition. For example, recently the US third largest retailer – Costoc - has been planning to enter the Chinese e-tailing market. Rather than acquiring or investing small E-tailers, cooperating with complementors is a better option, which is less time consuming and costly. Costoc can also leverage a significant local user base from these complementors. Additionally, a good relationship between E-tailers and complementors is also crucial for E-tailers. The E-tailers could choose different networking methods to cooperate with complementors or acquire some complementors to build their own competitive advantages. By using the value added model of complementors, E-tailers can make different business decisions based on their needs and capacities.

The indication for complementors will be discussed as follows. For startup companies, the value added model can help them quickly find their roles in the market. It is useful to find a niche market for small companies. The value drivers could inspire small companies to create innovative business models adding value to E-tailers. If they create a new market, they can get high profit from first mover advantages. Moreover, based on user big data, large complementor companies could also enter into the e-tailing market. They can start by using their own advantage from value drivers and develop with assistants from other complementors. According to the value added model, they can easily find suitable cooperative partners.

6.4 Limitation and Future Research

This paper, as a starter for future researches, will fill up the insufficiency of existing research. However, due to finite time and capacity, the paper has limitations and reserves space for the future research. Firstly, this research limitation refers to the

limited method of verifying and modifying the value added model. Due to finite time and capacity, I depended on secondary data and qualitative analysis methods to approach the model. Using qualitative methods, I can only get a rough model prototype but can't identify the dimension of the variables and the strength of the relations. In future research, it could use primary data gathered from questionnaires or surveys of consumers, or from managers of E-tailers and complementor firms, and could use quantitative analysis to verify the causal relations in the value added model.

Additionally, the dimension of the case study in this paper is still limited. National bias may exist if selecting samples in only one country. Future research could use multiple case studies in different countries to compare the results, which will increase the reliability and generalization of the value added model. Furthermore, company size and age are also key factors influencing the results. In future research, it could be better to add more different kinds of E-tailers to testify the model.

The future discussion may also extend the applicable scope of the model, from B2C e-tailing market to B2B market and C2C market. Different markets rely on different value drivers, so it is worthwhile exploring a new value model applied to the whole E-commerce market based on the model in this paper.

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Appendix

Appendix 1 Complementors list of Online Payment

China's Third Party Online Payment Market Traffic Share-June 2013 From: Alexa

Ranking	Online Payment	Number of Visit	Traffic Share (PV)
1	alipay.com/ (Alibaba Co.)	99,033	93.69%
2	tenpay.com/ (Tencent Co.)	4,542	4.30%
3	99bill.com/	632	0.60%

4	chinapay.com/	558	0.53%
5	yeepay.com/	394	0.37%
6	beijing.com.cn (PayEase)	163	0.15%
7	Others	380	0.36%

Appendix 2 Complementors list of Online Bank

China's Online Bank Market Traffic Share-June 2013 From: Alexa

Ranking	Online Banking	Number of Visit	Traffic Share (PV)
1	ccb.com (China Construction Bank)	1,530	26.09%
2	icbc.com.cn (Industry and Commercial Bank of China)	1,050	17.91%
3	cmbchina.com (China Merchants Bank)	1,020	17.39%
4	boc.cn (Bank of China)	860	14.67%
5	95599.cn (Agriculture Bank of China)	800	13.64%
6	95559.com.cn(Bank of Communications)	159	2.71%
7	cebbank.com(China Everbright Bank)"	131	2.23%
8	cib.com.cn (Industrial Bank Co.）	116	1.98%
9	cmbc.com.cn (China Minsheng Banking Co.)	107	1.82%

10	spdb.com.cn (SPD Bank)	91	1.55%

Appendix 3 Complementors list of SNS

China's Social Network Service Website Market Traffic Share-June 2013 From: Alexa

Ranking	SNS Website	Number of Visit	Traffic Share (PV)
1	weibo.com/ (Sina Co.)	241,300	44.28%
2	douban.com	79,291	14.55%
3	tianya.cn/	40,986	7.52%
4	http://t.qq.com/ (Tencent Co.)	38,391	7.04%
5	renren.com/	32,789	6.02%
6	kaixin001.com/	29,492	5.41%
7	kdnet.net/	13,356	2.45%
8	mop.com/	11,172	2.05%
9	Others	58,179	10.68%

Appendix 4 Complementors list of Shopping Guide Website

China's Shopping Guide/Recommendation Website Market Traffic Share-June 2013 From: Alexa

Ranking	Shopping Guide	Number of Visit	Traffic Share (PV)
1	55bbs.com/	11,972	28.45%
2	smzdm.com/	7,475	17.76%
3	meilishuo.com	6,461	15.35%

4	mogujie.com	6,139	14.59%
5	kimiss.com/	5,184	12.32%
6	mplife.com	4,850	11.53%

Appendix 5 Complementors list of Shopping Discount Website

China's Price Comparison Websites/ Rebate/Coupon Websites Market Traffic Share –June 2013 From: Alexa

Ranking	Shopping Discount	Number of Visit	Traffic Share (PV)
1	etao.com (Alibaba Co.)	17,427	54.52%
2	51fanli.com	5,668	17.73%
3	fanhuan.com	3,212	10.05%
4	egou.com/	2,714	8.49%
5	askyaya.com/	782	2.45%
6	beargoo.com.cn/	616	1.93%
7	51bi.com/	554	1.73%
8	Others	990	1.24%

Appendix 6 Complementors list of Video Website

China's Video/TV/ Movie Website Market Traffic Share-June 2013 From: Alexa

Ranking	Video Website	Number of Visit	Traffic Share (PV)
1	youku.com/	65,013	23.03%
2	ku6.com/	46,408	16.44%

3	video.sina.com	40,183	14.23%
4	56.com/	35,297	12.50%
5	v.ifeng.com	32,883	11.65%
6	tv.sohu.com	25,506	9.03%
7	tudou.com/	18,450	6.54%
8	baomihua.com/	8,633	3.06%
9	pps.tv/	5,049	1.79%
10	funshion.com/	2,799	0.99%
11	pptv.com/	2,089	0.74%

Appendix 7 Complementors list of Blog

China's Blog Platform Website Market Traffic Share-June 2013 From: Alexa

Ranking	Blog Platform	Number of Visit	Traffic Share (PV)
1	qzone.qq.com (Tencent Co.)	138,782	71.76%
2	blog.sina.com.cn	36,805	19.03%
3	blog.ifeng.com	4,925	2.55%
4	blog.163.com	3,265	1.69%
5	blog.csdn.net/	2,909	1.50%
6	blog.sohu.com/	2,686	1.39%
7	poco.cn/	1,969	1.02%
8	Others	2,045	1.06%

Appendix 8 Complementors list of Search Engine

China's Online Search Market Traffic Share - June 2013 From: Alexa

Ranking	Search Engine	Traffic Share (PV)	Traffic Share (UV)
1	Baidu	69.37%	65.74%
2	Qihoo 360 (So.com)	15.26%	16.58%
3	Sogou	8.83%	9.27%
4	Soso	3.40%	3.94%
5	Google	2.13%	3.05%
6	Bing	0.36%	0.63%
7	Yahoo	0.26%	0.47%
8	Youdao	0.22%	0.35%
9	Others	0.06%	0.08%

Appendix 9 Complementors list of Group Purchase

China’s Group Purchase Website Market Traffic Share-June 2013 From: Alexa

Ranking	Group Purchase	Number of Visit	Traffic Share (PV)
1	meituan.com	9,709	39.58%
2	nuomi.com	4,422	18.03%
3	lashou.com	3,964	16.16%
4	tuan800.com	2,622	10.69%
5	55tuan.com	2,162	8.81%

6	cocotuan.com	910	3.71%
7	tuanweihui.com	738	3.01%