

A Framework for Evaluating the Performance of Supply Chain Risk in E-commerce

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Abstract

The perceived risk is found to be a barrier for e-commerce application. It has been widely demonstrated in previous studies that the e-commerce is closely related with risk assessment. Taking into account of the scope of supply chain management, the activities of e-commerce system mostly deal with information flow, rather than either product or service flows. With regard to the rapid growth of e-commerce, there is imbalance between preparation and mitigation activities. More specifically, there is no formal model which shows supply chain risk in the e-commerce system, regarded as the research gap. Hence, one way to analyze and map out complex system as potential risk is to make Supply Chain Risk Management (SCRM) framework. This study is conducted to develop a framework about SCRM in the e-commerce area. Taking a case study on e-commerce based company, the SCRM framework is developed incorporating 8 perceived risk model in e-commerce: such as financial, social, time, performance, physical, privacy, security, and psychological risk. The expected contribution in theory and practice is discussed.

Keywords

Supply Chain Risk Management, framework, e-commerce

1. Introduction

At the moment, global competition is tight and supply chain be continues to be long and more complex (Tummala & Schoenherr, 2011). Not achieving the desired supply chain performance is expected to increase, especially because the risks. Supply chain risk can be defined as an explanation in terms of the causes of abnormality that affect the management of the supply chain efficiently (Ghadge et al, 2012).Companies are important to adapt the strategy of abnormalities especially on their network. Risk involved in supply chain as well as the relative the damage can be seen from the recalls and lawsuits for car toy (Story, 2007), animal food (FDA, 2008), and recently withdrawal one of the products Samsung in 2016.

According to Djojosoedarso (2003) risk management is the implementation of the functions management in risk reduction, especially risk faced by organization / company, the family and social. Function management it includes activities plan, organizing, composing, lead, and supervise (including evaluate) risk reduction programs.

Risk management is a process identification, set risk, and shape a strategy for managing them through resources available. Strategy that can be used among other: transfer risk on other parties, avoid the risk, reduce ill effects from risk, and receive a portion nor the whole a consequence of certain risks. Supply chain risk management (SCRM) is an integrated the concept of between supply chain and risk management where the collaboration between partner supply chain in application of the process risk management (Brindley , 2004) .Today supply chain risk management requiring attention serious risk because were often happens and had an impact long-term on performance company management . SCRM Activity covering activity identification , assessment , and mitigation systematically to disorder in a web of logistics to the objective to reduce a negative impact on network performance supply chain (Paul , 2014) .SCRM demanding company to have a good performance , especially in the reliability , in responding to speed , exactness in procurement , exactness in the fulfillment of demand , flexibility , the cost , the accuracy of lead time of activity logistics (Zaroni , 2015) .

E-commerce played an important role in the strategy everyday business, and that role will continue to increase every year (Reinsch, 2005). E-commerce involve electronic transfers, electronic data exchange, automatic inventory management system, and collection systems automated data. According to Wong (2010), e-commerce is the purchase, sales, and marketing goods and services through an electronic system. With the development of e-commerce which is quite rapid, existing risk will be identified.

The best way to analyze and develop a complex system is to set it in meaningful structure (Zwass , 1996) . Developing framework is expected to help map complex problem as on risk e-commerce. Of various research on risk management has conducted, found that framework about risk management still limited number of, especially if associated with e-commerce. The SCRM framework is developed incorporating 8 perceived risk model in e-commerce: such as financial, social, time, performance, physical, privacy, security, and psychological risk (Xiao, 2004). This study is conducted to develop a framework about SCRM in the e-commerce area.

2. Literature review and hypotheses development

Hypotheses about E-commerce Performance will be proposed according to the current research on the relationship between SCRM and E-commerce

2.1 Perceived risk as E-commerce barriers

Researchers in psychology and other disciplines have widely studied the risk theory. Bauer (1967) introduced the notion of perceived risk. He suggested, “Consumer behavior involves risk in the sense that any action of a consumer will produce consequences that he cannot anticipate with anything approximating certainty, and some of which are likely to be unpleasant” (Bauer, 1967). Stone and Gronhaug (1993), in their studies on perceived risk, showed the existence of an important difference between how the risk concept is introduced and adopted in consumer behavior research and how risk concept is conceived and used in other disciplines such as economics, psychology, statistical decision theory and game theory. They pointed out that, in other disciplines, “the concept of risk is related to choice situations involving both potentially positive and potential negative outcomes” (Weber and Bottom, 1989; Stone and Gronhaug, 1993) while in studying perceived risk in consumer behavior, however, “the focus has primarily been on potentially negative outcomes only” (Stone and Gronhaug, 1993). In the context of E-commerce adoption, when studying perceived risk, the focus is primarily on potentially negative outcomes or potential losses/harms. Perceived risk is defined as a person’s perception on the possibility of having negative outcomes or suffering harm or losses associated with E-commerce.

2.2 Perceived SCRM development

Taking into account of the scope of supply chain management, the activities of e-commerce system mostly deal with information flow, rather than either product or service flows. Xiao (2004) have developed 8 perceived risk model in e-commerce: such as financial, social, time, performance, physical, privacy, security, and psychological risk. E-commerce is a part of SCM since e-commerce mostly deal with information flow. The framework will then be developed variables and indicators to measure the perceived SCRM.

Table.1 Definition of Eight dimension of Risk in E-commerce (Xiao, 2004)

Financial Risk	The possibility of suffering monetary losses .
Social Risk	The possibility of having the losses related to the influences of social value and views from friends or family.
Time Risk	The possibility of having the feeling of losses of time as spending too much time in E-commerce.
Performance Risk	The possibility that the actual products or services are not performing as desired and are far from expected.
Physical Risk	The possibility of having potential physical harms.
Psychological Risk	The possibility of feeling psychological uncomfortable.
Privacy Risk	The possibility of suffering the losses due to the misuse of personal information by Internet stores.
Security Risk	The possibility of suffering the losses due to the misuse of personal information by third parties.

2.3 Customer trust as E-commerce Performance indicator

Trust has direct effect on intention to purchase online (Oliveira et al, 2017). Building trust in the digital age is very important. By building trust in customers, they will gladly use the products or services they offer, in this case, help grow the company's business. Since the e-commerce business is hardly face-to-face, the e-commerce company's performance is strongly influenced by trust. How well their growth will be influenced by consumer trust, it will be an indicator of its performance. There are 3 sources influence the dimension of consumer trust: competence, integrity and benevolence (Oliveira et al, 2017)

2.4 Relationship between Perceived SCRM and E-commerce Performance

The bigger risk perception the greater the consumer the potential involvement on the purchase (Engel et al, 1995). Consumers were being in an arena thought of the risks that may be will be faced when consume a product. Risk contemplated by consumers because consume a product or service will coloring behavior buying them .In other words, risk to be wrong or factor under consideration by the consumer for decryption the purchase of a product .When perception to high risk, is motivation whether to avoid purchase and use or risk to minimize through the search for and evaluation alternative after purchase in the decision making. Consumer perceptions of products and their risk perceptions of online shopping will significantly affect consumer online shopping decisions when they are considering buying certain physical goods. (Xiao, 2004). Thus, companies must improve consumer perceptions about the product and reduce the perceived risk consumers in e-commerce environments. Risk reduction activities in perceived SCRM conclusion will help companies gain consumer trust. Based on the literature that has conducted research on the relationship of perceived SCRM with performance, the hypotheses for this research:

H1. Perceived SCRM positively influence on E-commerce performance

3. Research methodology

This is a theoretical research, so the result is the result of the overall the study literature and collecting data have not done. This research will focus on develop framework about SCRM in e-commerce area. The framework will develop the relationship between the 8 perceived risk of SCRM and e-commerce area i.e. financial, social, time, performance, physical, privacy, security, and psychological risk, and competence, integrity, and benevolence.

4. Analysis and result

Modeling for perceived SCRM and e-commerce performance has been illustrated in the model. Indicators of each construct based on the relationship will be described.

4.1 Proposed framework

The relationship between SCRM and e-commerce is presented based on the relationship between several literature review indicators

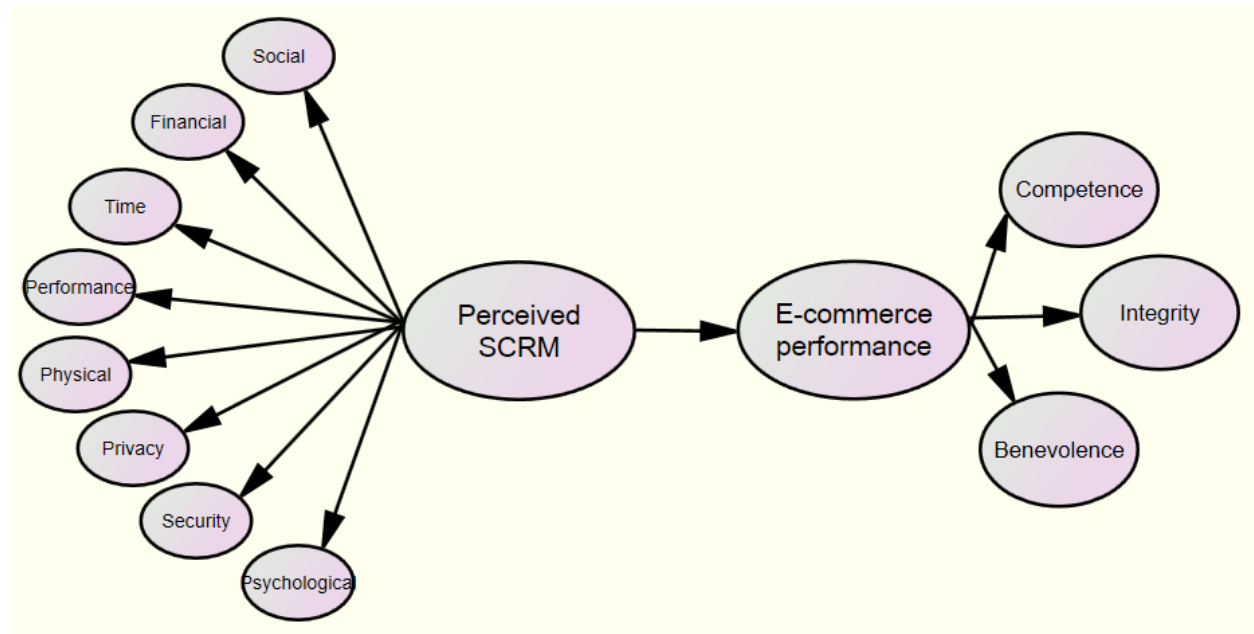


Figure 1. Proposed Model

4.2 Construct between framework

Perceived SCRM in e-commerce consist of 8 constructs. Construct of Perceived SCRM will be explained in Table 2

Table 2. Perceived SCRM in E-commerce

Construct	Code	Description
Financial Risk	FR1	E-commerce would be a bad way to manage my money as it may cause me some monetary losses
	FR2	If I accepted E-commerce methods, I would be not safe and I would be concerned that I may have financial losses through this service.
Social Risk	SR1	The thought of E-commerce causes me concern because some friends would think I was just being showy.
	SR2	My experience of E-commerce action would cause me to be thought of as being foolish by some people whose opinion I value.
Time Risk	TR1	I am concerned that I would have to spend too much time searching the information I need on E-commerce website.
	TR2	I am concerned that I would have to spend too much time learning how to use the systems on E-commerce website.
Performance Risk	PF1	I worry about whether the E-commerce will really perform as well as it is supposed to.
	PF2	I worry about whether the E-commerce will guaranteed that I will get the right products at the right time.
Physical Risk	PH1	It may do harm to me physically if I spend too much time in front of computer.
	PH2	I become concerned about some uncomfortable physical side-effects associated with this E-commerce.
Psychological Risk	PS1	The thought of E-commerce makes me feel psychologically uncomfortable
	PS2	The thought of E-commerce causes me to experience unnecessary tension.
Privacy Risk	PR1	I may suffer from privacy risk.
	PR2	I worry that E-commerce platform share my private information without my consent in the future.
Security Risk	SE1	I do not have confidence in the security of my online transaction.
	SE2	I worry that the information I provide during my transaction will reach inappropriate parties during storage in E-commerce databases.

E-commerce Performance Indicator consist of 3 Constructs. Construct of E-commerce Performance Indicator will be explained in Table 3.

Table 3. E-commerce Performance Indicator

Constructs	Code	Description
Competence (CM)	CM1	Company has sufficient capacity to do their work
	CM2	Company has sufficient experience in marketing the products/services they offer
	CM3	Company has all the resources necessary to perform their activity successfully
Integrity (IT)	IT1	Company usually fulfill its commitments
	IT2	Company offer is true and honest
	IT3	Company never make false statements
Benevolence (BN)	BN1	Company address their user needs
	BN2	Company is concerned about their users present and future interest/benefits
	BN3	Company wouldn't doing anything to their user intentionally

5. Conclusions and Recommendation

This study shows how perceived risk as e-commerce barrier can have an effect on e-commerce performance. It is obvious that consumers would have to look for evidence of the quality in means other than the physical inspection of the goods on offer. In this aspect, perceived risk as e-commerce barrier is given particular attention. E-commerce Performance Indicators consist of 3 constructs and there are 9 indicators for measuring those constructs. Future research is expected to use a variety of methodologies and further research and development on the relationship between SCRM and e-commerce.

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