A VALUE CHAIN PROCESS MODEL OF

CONSUMER CO-CREATION ACTIVITIES

By Kyungwon Lee

A dissertation submitted to the

Graduate School-Newark

Rutgers, The State University of New Jersey

In partial fulfillment of requirements

For the degree of

Doctor of Philosophy

Graduate Program in Management

Written under the direction of

Jerome D. Williams and Can Uslay

And approved by

_____
Jerome D. Williams

_____
Can Uslay

_____
Sengun (Shen) Yeniyurt

_____
Avinandan Mukherjee

Newark, New Jersey

May 2018

ABSTRACT OF THE DISSERTATION

A Value Chain Process Model of Consumer Co-Creation Activities

By Kyungwon Lee

Dissertation Directors: Jerome D. Williams and Can Uslay

With path-breaking advances in technology, consumers have become more informed, connected, and empowered than ever before in hypermedia computer-mediated environments (CMEs). No longer passive recipients in the value creation process, consumers are increasingly active participants co-creating value through interactions with companies and other stakeholders.

This has also triggered theoretical evolutions in the marketing discipline, extending from exchange to value creation to value co-creation paradigm. Now, value co-creation has emerged as the central theme in contemporary marketing with a growing body of literature to advance our understanding around the concept. However, there is lack of consensus on the definition, theoretical domains, or process of value co-creation, creating a need to provide an integration of the different existing perspectives around the concept in the literature with empirical validation of the process.

By integrating two primary theoretical perspectives on co-creation in the literature (technology and innovation management perspective and service science perspective), my dissertation examines the antecedents and consequences of a wide spectrum of consumer value co-creation activities, ranging from pre-launch (i.e. co-ideation, co-test, co-design,

and co-finance) to post-launch (co-promotion, co-distribution, co-maintenance, and co-price). The objective of this paper is to empirically examine the entire process of value co-creation from the marketer-initiated *co-production* efforts, such as B2C and C2C interaction, equity, and knowledge sharing, to consumers' *value-in-use* through experience, relationship, customization, and satisfaction across a variety of value co-creation activities.

Using the online video gaming industry as a context for data collection, a total of 561 online video game players completed the survey. Survey-based data collected to test the proposed framework was analyzed using structural equation modeling approach. The results show that pre-launch and post-launch co-creation have different sets of significant antecedents and consequences. As for the drivers of dual forms of interaction (B2C and C2C interaction) knowledge sharing has a positive effect on both B2C interaction and C2C interaction while equity positively impacts B2C interaction only. The influence of consumer motivations varies depending on the nature of interactions. While economic motivation is the only primary predictor for B2C interaction, C2C interaction is found to be influenced by social motivation and psychological motivation. As for the consequences of C2C and B2C interactions, they have different effect on consumer participation in pre- and post-launch co-creation activities. C2C interaction has positive effect on both pre- and post-launch co-creation activities, while B2C interaction has direct positive impact only on pre- not on post-launch co-creation activities; yet indirect effect on post-launch co-creation activities through C2C interaction. Interestingly, this indicates that C2C interaction fully mediates the relationship between B2C interaction and consumer participation in post-launch co-creation activities. Consumers' co-created outcomes (i.e. *value-in-use*) are

influenced differently depending on consumer participation in pre- vs. post-launch stages. While perceived level of customer relationship and satisfaction are highly influenced regardless of the types of consumer co-creation participation, experience is impacted only by post-launch co-creation participation while personalization is impacted only by pre-launch co-creation participation.

ACKNOLWEDGEMENT

It has been quite a journey to come along up to this moment. This journey would have never been possible without the guidance of my committee members, assistance from friends and unconditional love and support from my family.

I want to give my special thanks to my co-advisors, Dr. Jerome Williams and Dr. Can Uslay. My sincerest gratitude to both of them for having me under their wings. I am very fortunate to have them as my co-advisors. They always had time to listen to my ideas, encouraged me to explore new topics, gave generous advice, and helped me to grow throughout the years. To me, Dr. Williams and Dr. Uslay are influential mentors, admirable role models, and lifelong academic colleagues. I also want to express my thanks to Dr. Sengun (Shen) Yeniyurt, who helped me to develop technical details of my work and provided valuable advice. Thanks also to Dr. Avinandan Mukherjee who agreed to be an external member of my committee. He introduced me to this academic journey and gave me constant guidance and support.

Last but not the least, I would like to express my special thanks to my family for their love and encouragement: aunt (Yon), dad (Juhoo), mom (Manhee), and my sister (Kyunghwa). Thanks also are due to my many friends and colleagues from Rutgers.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

With the rapid growth of marketing in hypermedia computer-mediated environments (CMEs) (Hoffman and Novak 1996) and the resultant disruptive technology developments, consumers in the contemporary marketplace are more informed, connected, and empowered than ever before. No longer passive recipients in the value creation process, consumers increasingly become active participants co-creating value through interactions with companies (Prahalad and Ramaswamy 2004a) and other stakeholders. An emerging trend in modern marketing where companies and consumers come together to collaboratively create value is the phenomenon of consumer co-creation.

One of the most common industry practices is consumer co-creation in new product (physical goods or service) development context where consumers can engage with companies to generate ideas for collaborative innovation. There are many successful stories of consumer co-creation in idea generation, product design, collaborative support system, and product launch. Not only are companies engaging consumers in product design and launch, but also they continue to do so after launch to promote, price and distribute the product. Many companies provide information and communication technologies (ICT) platforms for consumer participation in various types of co-creation activities. For instance, Threadless is an online based t-shirt manufacturer without professional designers, sales force, company generated advertising, and retail distribution. Such functions, which have been handled by the company in the traditional business model, are now supported by a variety of actors (e.g. consumers, fans, designers, hobbyists, artists, and managers) in the co-creation domain. The designs submitted online by external actors (about 1,000 designs

per week) (i.e. co-design) are put out to the public for vote (about 10 designs are selected per week) (i.e. co-evaluation) for the final design to be launched in the marketplace. The promotion of the selected designs and creation of catalogues (i.e. co-promotion) are also conducted by the multiple external actors. The entire process from pre-launch (i.e. voice of consumers) to post-launch (i.e. word-of-mouth) is all conducted by the external actors.

Reflecting such transformative role of consumers in the value creation process, Time magazine chose the "person of the year" as the anonymous "You" in 2006. This recognizes the power of millions of individuals contributing to an entire spectrum of company-initiated to consumer-driven user-generated co-creation activities.

This has also triggered theoretical evolutions in the marketing discipline, extending from exchange to value creation to value co-creation paradigm (Sheth and Uslay 2007). Value co-creation, a process where value is co-created jointly among the multiple stakeholders, has emerged as the central theme in contemporary marketing literature. This has been supported by the growing body of literature in the last decade in an attempt to advance our understanding of the concept.

However, there is lack of consensus on the definition, theoretical domains, or process of value co-creation (Alves et al. 2016; Fernandes and Remelhe 2015; Ranjan and Read 2016; Vargo et al. 2008). Extant literature still focuses on the conceptualization of co-creation in the form of theoretical and conceptual frameworks particularly in the service science perspective; yet empirical validations in the literature have been relatively scarce (Agrawal and Rahman 2015). Little is known about the entire process of value co-creation and there is an ongoing need to provide an integration of the different existing perspectives around the value co-creation concept in the literature (Edvardsson et al. 2011; Payne et al.

2008). Empirical validation to understand how co-created value is processed while incorporating complete theoretical domains is still needed.

Thus, the broad objective of my dissertation is to understand the entire process of value co-creation and explore the relative influence of various dimensions of value co-creation. More specifically, this study contributes to the co-creation literature by addressing the following research objectives.

1) To extend the entire spectrums of value co-creation encompassing pre-launch (co-ideation, co-design, co-test, and co-finance) and post-launch (co-promotion, co-distribution, co-pricing, and co-maintenance) co-creation activities.

2) To provide a comprehensive model to understand how co-created values are processed: from company-led efforts in co-creation (*co-production*) to consumer-led co-creation (*value-in-use*) across various types of co-creation activities from the perspectives of the consumers.

3) To broaden the value co-creation concept from company-consumer dyadic perspective to company-consumer-other fellow consumer triadic perspective, particularly focusing on dual forms of interaction, namely B2C and C2C interaction.

4) To compare two segments of consumers (lead users and regular consumers) for diverse types of value co-creation activities.

To address these objectives, my dissertation addresses the following broad research questions.

RQ1. What are the antecedents and consequences of a wide spectrums of consumer value co-creation activities, ranging from pre-launch (i.e. co-ideation, co-test, co-

design, and co-finance) to post-launch (co-promotion, co-distribution, co-maintenance, and co-price)?

RQ2. How co-created value flows from marketer-initiated *co-production* efforts to consumers' co-created value (i.e. *value-in-use*)?

Overall, the contributions of this study are threefold.

First, to the best of my knowledge, my dissertation is the first to empirically examine the entire process of value co-creation activities incorporating pre-launch (co-ideation, co-design, co-test, and co-finance) and post-launch (co-promotion, co-distribution, deco-pricing, and co-maintenance) activities. It is a rich and comprehensive conceptualization of value co-creation by examining the breath (i.e. scope) and depth (i.e. intensity) of the co-creation activities. The context for co-creation in the literature is largely concentrated on new product (i.e. physical goods and services) development (i.e. pre-launch co-creation activities). There is still paucity in the literature examining the commercialization (Hienerth 2006; Hoyer et al. 2010) and post-launch co-creation activities (Hoyer et al. 2010). It has been recognized in the literature that the extension of co-creation contexts such as co-conception, co-price, co-distribution, co-consumption, co-maintenance, co-disposal, and co-outsourcing should be addressed (Frow et al. 2015; Saarijärvi 2012; Sheth and Uslay 2007). Acknowledging that post-launch stages are critical for product success, my proposed model fills the gap in the literature by extending the spectrums of value co-creation by incorporating both pre- and post-launch co-creation activities. Additionally, the choice of the data collection context (online video gaming industry) is highly appropriate to examine diverse co-creation activities due to its unique combination of consumer-participatory culture practices along with the media technologies

development (Green and Jenkins 2009). Yet, this context has not received much attention in the marketing literature in general. This study can shed light on this context which is worthy of further exploration in the marketing literature.

Second, I frame the process of co-created values into three theoretical pillars of value co-creation: 1) company-led value co-creation (*co-production*) such as interaction, equity, and knowledge sharing, 2) consumer participation in value co-creation activities, and 3) consumer-led value co-creation (*value-in-use*) through experience, relationship, customization and, satisfaction. While consumer participation in co-creation (behavioral aspect of value co-creation) where consumers can actually participate in diverse types of co-creation activities (similar to technology and innovation management perspective) is the primary focus of my proposed model, the process of value is adopted from the service science perspective, which links two major conceptual domains of value co-creation (*co-production* and *value-in-use*). In this way, the proposed model includes two theoretical pillars of value co-creation from service science perspective (under the umbrella of Service-Dominant logic) and consumer participation in co-creation activities where actual interaction happens between company and consumers (from technology and innovation management perspective and aligned with the view from Grönroos and Voima (2013)). While existing research involves different meanings of co-creation due to the lack of consensus on the definition of the value co-creation concept (Alves et al. 2016; Fernandes and Remelhe 2015), my dissertation can contribute to integrating both streams of literature as an eclectic interpretation of value co-creation phenomenon.

Additionally, the concept of value co-creation has been extended to integrate all of the actors (e.g. consumers, company, consumer communities, suppliers, networks of

company etc.) within the entire system, compared to the earlier conceptualization focusing on company-consumer dyadic perspective (Prahalad and Ramaswamy 2004a; Prahalad and Ramaswamy 2004b; Prahalad and Ramaswamy 2004c; Vargo and Lusch 2004). Specifically, my dissertation incorporates dual forms of interaction, B2C and C2C interactions. By examining the triadic perspectives among company, consumers (online video game players) and other consumers (fellow online video game players) in the online video gaming context, my dissertation contributes to the literature by switching its focus from a linear consumer-company dyadic perspective to a consumer-company-other consumer network perspective of value co-creation.

To empirically address these research issues on how co-created value flows from company-led efforts (i.e. *co-production*) through consumer value (i.e. *value-in-use*) along the entire spectrums of co-creation activities, survey-based data collection was conducted in the online video gaming industry to test the proposed framework and analyzed using structural equation modeling approach.

In seeking to address these issues, the rest of my dissertation is organized as follows. After this introduction, I discuss the theoretical perspectives and the relevant stream of literature. Then, hypothesis development section is provided, followed by the methodology and analysis. Lastly, I conclude with a discussion of the limitations and future research directions.

CHAPTER 2: PERSPECTIVES AND RELATED LITERATURE REVIEW

2-1. Evolution of Marketing Thoughts and the Rise of Co-Creation Paradigm

While *exchange* was a predominant underlying paradigm of marketing for several decades, newer conceptualizations of the discipline have evolved to refocus on *value creation*, followed by further refinement to the collaborative concept of *value co-creation*. The evidence of such evolving marketing paradigm can be traced to the official definitions of marketing adopted by the American Marketing Association (AMA) over the years.

The term "*exchange*" was first adopted in the 1985 official definition of marketing, which was the first adaptation of the original definition of marketing since 1935. This adaptation implies that marketing discipline accepted the exchange paradigm. *Exchange*, the act of transferring goods with a return of relative value as an underlying assumption in any form of economic transactions, has been the focal construct in all human science (Anderson et al. 1999). Marketing also accepted this foundational concept as a key phenomenon for the desired outcome (i.e. enhancing satisfaction) (Houston et al. 1992; Sheth and Uslay 2007). However, the exchange paradigm has been subsequently challenged by several marketing scholars as it faces a number of limitations to fully explain every aspect of the marketing process (Sheth and Uslay 2007).

The primary focus of the exchange paradigm lies in the visible role of *sellers* in creating customer value (Sheth and Uslay 2007). This implies that the role of company is the primary focus of the marketing under the exchange paradigm. Aligned with this view, the company almost entirely drives value in value creation process, emphasizing the *value-in-exchange* (between buyer and seller). For any exchange to happen, there should be at

least one buyer and seller in the market; yet, the other roles of the seller such as supplier, producer, distributor, or financer have been underappreciated, leading to depreciating or underestimating other types of values derived from such roles (Sheth and Uslay 2007). Since the particular roles of sellers are the primary focus, any relationship engagement during the value creation process is also deemphasized in the exchange paradigm (Grönroos 1990; Sheth et al. 1988).

Vargo and Lusch (2004) propose "*value-in-use*" with the Service-Dominant (S-D) logic in their seminal paper, leading to a huge impact in the discipline by shifting the focus on *value-in-exchange* to "*value-in-use*". While *value-in-exchange* is limited to capture "goods" as a primary form of the exchange transaction, *value-in-use* can help to explain the entire process of value creation such as intra-and extra-network, and consumers experiential value as a part of value creation process by focusing on service as a unit of analysis (Vargo and Lusch 2004). While exchange paradigm limits on specified roles and responsibilities of market participating actors such as companies and consumers, the introduction of *value-in-use* helped to realize that there are other types of value, other than *value-in-exchange*. In return, marketing discipline has undergone a shift from the exchange to value creation paradigm. While value creation paradigm accepts that there are many types of values, it still holds a view that value is created in the company and then exchanged to consumers (Sheth and Uslay 2007). Yet, some scholars propose that value can be co-created by the company and consumers together (Prahalad and Ramaswamy 2004a).

Value co-creation, a process where value is co-created jointly by the company and consumers (Prahalad and Ramaswamy 2004a; Vargo and Lusch 2004), has received significant attention as consumers became more empowered and informed than ever before

due to the technological development and wide availability of the Internet. In other words, the company-centric view in value creation shifts to value co-creation, particularly highlighting the vital role of consumers in value creation process. One of the essential aspects that differentiate value co-creation from the value creation is the spectrums of collaborative activities that can be performed jointly by the company and the consumers along the entire value chain starting from co-conception, and co-design through co-production, co-promotion, co-pricing, and co-distribution to co-consumption, and co-disposal (Frow et al. 2015; Saarijärvi 2012; Sheth and Uslay 2007). Such a broad spectrum of value co-creation activities involving more than two actors makes value co-creation a much richer, enduring and relational perspective than the traditional concept of exchange. Similarly, self-service, where consumers co-created the service delivery process with the company is only a small part of the diverse co-creation spectrums. The spectrum of co-creation does not only limit to self-service type but also incorporate consumers' needs and wants reflecting the voice of the consumers (Jaworski and Kohli 2006; Sheth and Uslay 2007). The value co-creation focuses not only on company and consumer but also on other stakeholders (e.g. other consumers, suppliers, distributors, employees, stockholders, and other network partners), further extending the scope of value co-creation participants. In addition, different from exchange paradigm whose basis is on self-interest (win-loss), value co-creation paradigm assumes mutual win-win in nature and dependency on the quality and diverse personal experiences (Leavy and Moitra 2006; Sheth and Uslay 2007). As consumers and other stakeholders (e.g. firms, consumers, suppliers, distributors, employees, stockholders, and other network partners) are more engaged in the value

creation process, we are noticing a shift from value creation to value co-creation as the focal point of interest in marketing.

In light of the above factors, AMA proposed and introduced a new definition of marketing in 2004, focused on creating and delivering "*value"* through customer relationship, thus replacing the historical exchange paradigm (see figure 1). Further, the revised definition in 2007 emphasizes delivering "*value*" to multiple stakeholders. The changing definitions of marketing show how marketing paradigm has evolved (see table 1).

Table 1. American Marketing Association's Definition of Marketing

Year	AMA's Definition of Marketing
1935	Marketing is the performance of **business activities** that direct the flow of goods and services from producers to consumers.
1985	Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods and services to create **exchanges** that satisfy individual and organizational objectives.
2004	Marketing is an organizational function and a set of processes for creating, communicating, and delivering **value** to customer and for managing customer relationships in ways that benefit the organization and its stakeholders.
2007	"Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have **value for customers, clients, partners, and society at large**.

Figure 1. Evolution of Paradigm Shift in Marketing
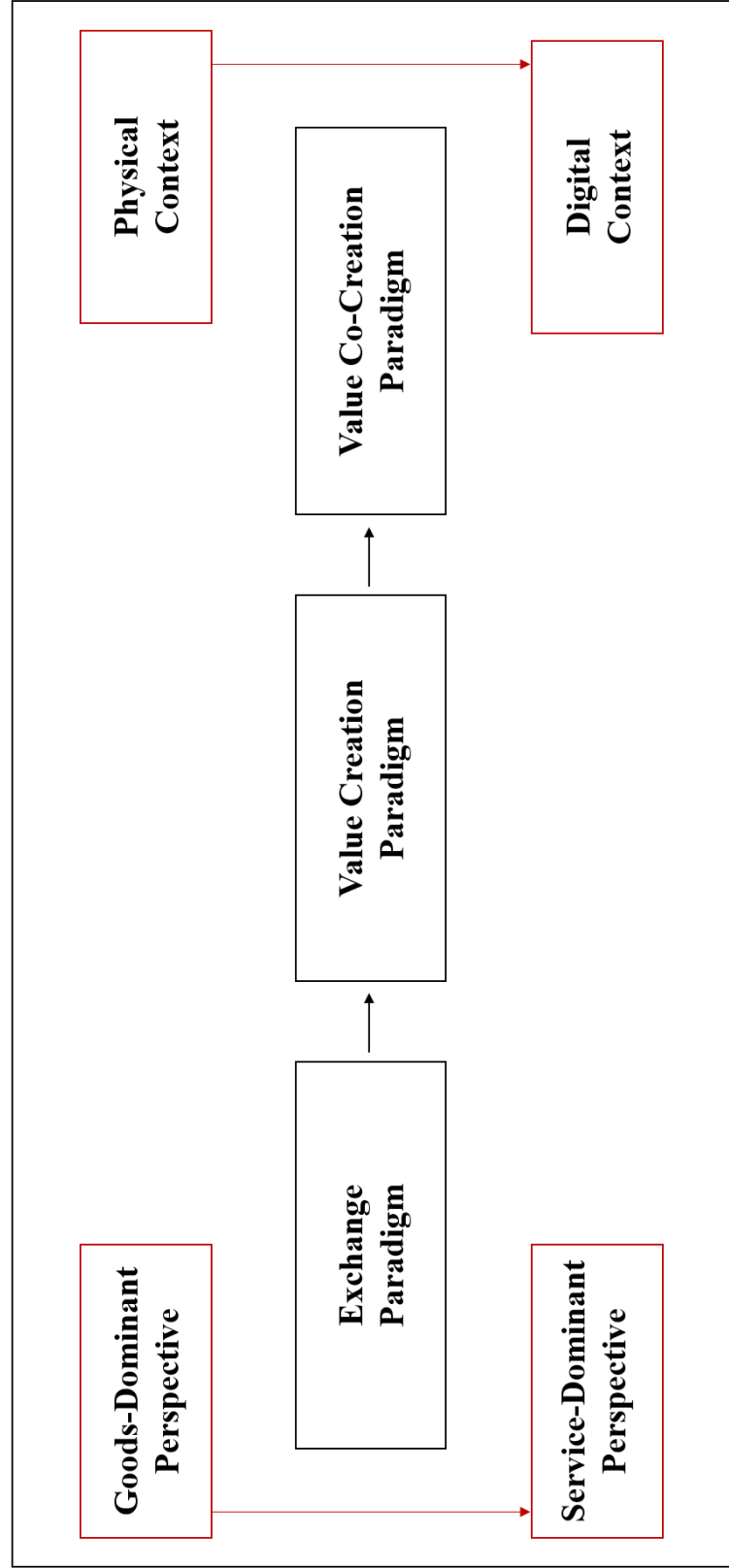
2-2. Current Trends in Literature on Value Co-Creation

As value co-creation has emerged as the central theme in contemporary marketing, a growing body of literature has been built up around the concept, indicating great interest in this topical area (Alves et al. 2016). The literature on value co-creation has blossomed in various areas, which has contributed to diverse approaches and theoretical perspectives in co-creation research[1]. There are two major theoretical perspectives in the co-creation literature: (1) technology and innovation management perspective in new product development, and (2) service science from service theory perspective.

Literature has been greatly influenced by two seminal papers, "Co-opting customer competence" by Prahalad and Ramaswamy (2000) and "Evolving to a new dominant logic for marketing" by Vargo and Lusch (2004). Prahalad and Ramaswamy (2000) introduce the concept of "co-creation" by emphasizing the transformative role of the consumer in value creation process, who can co-create value through the interaction and collaboration with companies. This implies that certain part of the work is shifted to the consumer in the co-creation paradigm (e.g. consumer participation in idea generation, evaluation, testing, or self-service), which can benefit both companies and consumer. Through consumer co-creation, companies can achieve product/service innovation (Bitner et al. 2000; Füller et al. 2008; Sawhney et al. 2005), improved financial performance (Ostrom et al. 2010), and enhanced fit with consumer needs (Fang et al. 2008) while consumers experience enhanced level of consumption and usage experiences (Gentile et al. 2007; O'Cass and Ngo 2012;

---

[1] Because the focus of this study is "consumer" value co-creation, I limit the scope of value co-creator as the consumer.

Payne et al. 2008), improved relationship with company, greater personalization, and higher satisfaction (Zhang et al. 2015).

2-2-1. 1st Theoretical Perspective: Technology and Innovation Management

Due to path-breaking technological advances along with the wide accessibility of the Internet, consumers have become connected and informed than ever before, making them active participants in the value creation process rather than passive recipients (Prahalad and Ramaswamy 2004a; 2004b; 2004c). Such a changing role of consumers has become an underlying assumption for the technology and innovation management perspective (Galvagno and Dalli 2014). This perspective includes literature from a number of disciplines, other than marketing, such as management (innovation studies whose primary focus is on collaborative and open processes among companies and users), and information systems research (whose primary focus is on technological and open innovation platforms) for consumer participation and engagement (Galvagno and Dalli 2014).

Extant research from this perspective examines open forms of innovation (open-innovation[2]), which invites consumers to participate in company-initiated co-creation activities to improve the existing product or to satisfy the needs that have not been addressed in the market. This form of user innovation becomes increasingly vital, notably, in the context of new product development (Hoyer et al. 2010). In return, the vast amount

---

[2] Among four types of open innovation (technology transaction, user innovation, business models, and innovation markets), this study limits its scope to 'user innovation' (Lichtenthaler 2011). This study also limits its focus on user innovation form requiring interaction between company and consumers, excluding 'mass collaboration/peer production' (e.g. Wikipedia or Linux).

of literature from this perspective emphasizes how companies make consumers engage in co-creation activities. Co-creation is a focal opportunity for companies to get the knowledge and needs from consumers in areas such as product design or assembly (Franke et al. 2006; Kristensson et al. 2004), and customization of product functionality (Simonson 2005), or service design (Melton and Hartline 2015). Therefore, the focal point of interest from this perspective is on consumer participation in co-creation activities (i.e. behavioral manifestation of consumer participation in co-creation activities).

There are abundant studies examining antecedents and consequences for consumer participation in co-creation activities, mainly in the new product development context. Examples of such antecedents include consumer motivators such as financial, social, knowledge, and psychological (Fernandes and Remelhe 2015; Frey et al. 2011; Hoyer et al. 2010; Nambisan and Baron 2009; Verleye 2015); consumer segmentation such as lead user (von Hippel 1986), emergent nature consumer (Hoffman et al. 2010), innovator (Moore 1991) and market maven (Feick and Price 1987); or company impediments such as secrecy concerns, sharing of intellectual property, and production infeasibility (Hoyer et al. 2010); and company stimulators such as increased consumer benefits and reduced consumer costs through enhanced level of interaction (Hoyer et al. 2010). Benefits such as product quality improvement, reduced risk, and market acceptance increase are some of the consequences of consumer co-creation activities (Hoyer et al. 2010). However, the scope of co-creation activities in this perspective tends to focus on new product development process, in other words, up to the pre-launch stage. Post-launch co-creation activities such as commercialization and post-launch stages (later stages of the new product

development) have not been covered much (Hoyer et al. 2010), which remains the missing

gap in the literature.

2-2-2. 2nd Theoretical Perspective: Service Science Perspective

The Service-Dominant (S-D) logic has emerged as a contemporary paradigm in marketing, which views service as what is always exchanged, and goods as one method of service provision (Lusch and Vargo 2006a). Service is defined as "the application of specialized competencies (knowledge and skills), through deeds, processes, and performances for the benefit of another entity, or the entity itself" (Lusch and Vargo 2006a).

The S-D logic focuses on services rather than products as a unit of analysis and service as the common denominator of the exchange process, which shift the focus from exchange to value creation. The S-D logic also moves the focus in marketing from tangible (operand) to intangible (operant) resources (Lusch and Vargo 2006a). This line of research has become the foundation for the service science perspective in marketing (Alves et al. 2016; Galvagno and Dalli 2014). The S-D logic is increasingly relevant in the contemporary market as today's business inherently competes on service delivery and quality. While goods, from the perspective of the S-D logic, are simply distribution mechanisms for service capabilities, value is created by the end users/consumers when they experience/consume service within a system of service exchange, namely "*value-in-use*". The experiential or phenomenological views of value (i.e. *value-in-use*) have been the primary focus in this perspective. Lusch and Vargo (2006a) differentiate co-created value into values derived from the usage/consumption stage (*value-in-use*) and *co-production* which precedes the usage/consumption phase. In other words, value co-creation is the superordinate construct which has two theoretical sub-dimensions: *co-production* and *value-in-use*.

The concept of value has been extended, elaborated, and further consolidated in S-D logic as reflected in the changes in foundational premises (FPs) (Vargo and Lusch 2016). "*Value-in-use*" has been extended to "*value-in-context*" (Chandler and Vargo 2011; Vargo 2008), and "*value-in-social-context*" (Edvardsson et al. 2011), both of which reflect the fact that value has contextual nature. Value is relativistic in different contexts, and such context should be understood from social constructions (Edvardsson et al. 2011), which further needs to be understood from institutions and intuitional arrangements (Vargo and Lusch 2016). For instance, consumer co-creation activities in the online video game industry can be a great example to understand how value is co-created through *co-production* and *value-in-use* in the context of video gaming industry (*value-in-context*). The online video game industry offers a rich context in which companies and consumers collaborate to co-create value. In this context, consumers participate in diverse types of co-creation activities such as attending beta testing and providing ideas for new/sequential game development etc. (i.e. value creation through *co-production*). Game players (i.e. consumers) experience unique value (i.e. value creation through *value-in-use*) through collaborating with other fellow game players (i.e. other consumers) and the company in this online video gaming context (value creation through *value-in-context*).

As value co-creation is still an evolving paradigm, there is lack of consensus on the definition, theoretical domains, or process of value co-creation (Alves et al. 2016; Fernandes and Remelhe 2015; Ranjan and Read 2016; Vargo et al. 2008). Extant literature, especially in service science perspective, has still mainly focused on its conceptualization in the form of theoretical and conceptual frameworks; yet empirical validations in the literature have been relatively scarce (Agrawal and Rahman 2015). About a fifth of the

literature applies complete two subordinate domains (*co-production* and *value-in-use*) of value co-creation and only about 3% of the studies examine all the sub-dimensions of value co-creation (Ranjan and Read 2016). Little is known about the entire process of value co-creation. Empirical validation incorporated from theoretical domains is warranted to understand the value co-creation process.

2-2-3. Different Focus on Value Co-Creation Between Two Perspectives

Co-creation is the fundamental construct for both streams of perspectives. Through the evolution and prospects of S-D logic, "co-creation" is one of the five identified themes conceptualizing ideas in the S-D logic related literature, and most connected with the focal cluster of S-D logic research since the formative years (2004-2008) up to the continuing evolution (2009-2015) (Wilden et al. 2017). The co-creation theme within S-D logic extends to other areas, and one of the emerging cross-reference areas is open innovation from technology and innovation management perspective (von Hippel 2005; Wilden et al. 2017). There is a growing need to incorporate innovation related literature in S-D logic conceptualization. Yet, it is interesting that the primary approach or attention to co-creation is different between two perspectives.

To understand how each perspective's approach to co-creation is different, it is important to acknowledge that S-D logic started while challenging the Goods-Dominant (G-D) logic based on the foundation of economics. G-D logic interprets value as embedded in final output captured by final price; yet S-D logic proposes another form of value, "*value-in-use*", which refers that the value is determined and derived by the end

user/consumer (Lusch and Vargo 2006a; Vargo and Lusch 2004; Vargo et al. 2008). The nature of *value-in-use* is experiential and phenomenological. However, it does not necessitate the consumer *participation* in co-creation activities, which requires any direct or indirect interaction between company and consumer. Consumers creating values during usage/consumption stage is considered as value co-creation as this perspective interprets value co-creation from the entire process of resources integration in the service system. In other words, value is created with combined efforts between multiple stakeholders within the service system. This, in turn, suggests that the entire process of resources integration among service systems is the basis of understanding value. All of the stakeholders within the service system are value co-creators, and the beneficiary (e.g. consumer) always determine the value (Vargo and Lusch 2008; Vargo et al. 2008). Hence, value is co-created within the service system as each actor plays a role in integration resources for value co-creation. This view is reflected in the most updated FP6 from the S-D logic ("*Value is cocreated by multiple actors, always including the beneficiary*") (Vargo and Lusch 2016)

However, some scholars have challenged S-D logic's view on value co-creation (Grönroos and Voima 2013). Grönroos and Voima (2013) state that value is co-created only in a joint sphere where direct and personal interaction arises between provider and customer. They claim that customers create value in customer sphere where *value-in-use* arises but not co-create value. The way that Grönroos and Voima (2013) interprets value co-creation is focused on the behavioral aspect of "consumer participation" in value co-creation, which is similar to the technology and innovation management perspective. This clearly shows that the lack of consensus on the definition of value co-creation exists among scholars within the service science perspective.

Although these two theoretical perspectives on consumer value co-creation use the same term (value co-creation), the different focus on value co-creation explains the major trend in two streams of literature. While the literature from the technology and innovation management perspective are mostly empirical with a focal construct as consumers' participation in co-creation activities (mostly in new product development context), that from service science tend to be conceptual. Although service science perspective also considers value co-creation naturally requires participation of beneficiaries among one or more than one service system, the innovation and technology management perspective mainly focuses on behavioral aspect of co-creation in collaborative activities when it comes to the co-creation.

Based on two theoretical pillars of value co-creation (*co-production* and *value-in-use*) proposed by Lusch and Vargo (2006a), the focus of *co-production* could be behavioral aspect of co-creation, which is the primary focus of the technology and innovation management perspective. When it comes to the focus of service science perspective, their primary focus of co-created value belongs to *value-in-use* within the service system. Based on the definition of value co-creation (joint creation of value among multiple stakeholders), technology and innovation management perspective interprets co-creation more narrowly than the service science perspective. Conceptually, service science focuses on expanded scope of value co-creation, the technology and innovation management perspective zoom into a smaller aspect of value co-creation, particularly behavioral manifestation. Yet, we see, the term (value co-creation) in the literature has been used simultaneously between two perspectives.

One of the major contributions of this study is to link the two streams of research by relying on the value co-creation definition that can be accepted to both perspectives. The existing research involves different meanings of co-creation as the definition of value creation is not consistent (Fernandes and Remelhe 2015), which is apparently a missing gap in the literature.

While we focus on consumer participation in co-creation activities (behavioral aspect of value co-creation) where consumers can actually participate in diverse types of co-creation activities (similar to technology and innovation management perspective), the purpose of this study is to understand how "*value*" is *processed* through diverse types of co-creation activities along the value chain from the consumers' perspective. The process of value is adopted from the service science perspectives, which links two major conceptual domains of value co-creation (*co-production* and *value-in-use*). In this way, the proposed model includes two conceptual pillars of value co-creation from service science perspective and consumer participation in co-creation activities where actual interaction happens between company and consumers (from technology and innovation management perspective and aligned with the view from Grönroos and Voima (2013)).

2-3. Extending the Spectrums of Value Co-Creation Contexts

Traditionally, companies hold sole responsibilities to deliver products (i.e. physical goods or services) to the market through a set of activities along with the entire value chain. This means that every company performs a collection of activities from product design and production, sales and marketing, distribution, and after service support, which is named

primary activities (Porter 1985). Yet, these activities are not at the hand of companies anymore in the consumer co-creation era. Consumers actively complement every process of activities along the value chain, from product development stage (i.e. pre-launch) to deliver products in the marketplace after product launch (i.e. post-launch). Such practice of engaging consumers has become even more a common practice in the market with the proliferation of new technologies (e.g. smart phones, tablets, laptops, etc.) and social technologies (e.g. online brand communities, forums, social networking sites, wikis, etc.).

Extant literature, mainly from the technology and innovation management perspective, dive into consumer co-creation in the context of new product development, namely categorized as pre-launch stage. Since identifying and fulfilling consumers' needs for new product development is a critical success factor, companies employ a variety of methods to better serve and identify consumer needs. Yet, traditional marketing research methods have limitation to identify these needs, companies started involving consumers in all stages of product development process such as co-ideation, co-evaluation, co-design, co-test, and co-launch (OHern and Rindfleisch 2009; von Hippel 2005; Russo-Spena and Mele 2012). These stages, constituting five types of pre-launch co-creation activities, cover the entire process of consumer co-creation before a product is launched in the market. There are specific product categories and consumption situations where co-innovation happens most frequently and with the greatest impact. Such categories tend to be related to technologically savvy products with noticeable differences in product attributes (Etgar 2008). Therefore, the success of a co-innovation process tends to skew toward a product which involves radical innovation with the help of consumers' knowledge and insights on products.

While there is some research on different consumer value co-creation activities such as co-development (i.e. voice of consumer) particularly in innovative product development context, and co-promotion (i.e. word-of-mouth), the spectrum of value co-creation in the literature is largely concentrated on pre-launch stages. However, in co-creation era, consumers perform all ranges of *primary* activities such as sales and marketing, distribution, and maintenance than ever before. Some studies examine consumer co-creation in commercialization and post-launch stages such as product support service to peer consumers (Nambisan and Baron 2009; OHern and Rindfleisch 2010), and commercialization of the rode kayak industry (extreme sporting industry) with consumers (Hienerth 2006). The examples of such consumer post-launch co-creation activities vary by its scope. Consumers promote products to other consumers through electronic word of mouth, or even refer others to try products (i.e. consumer-led referral programs) through either shared transactional platforms or other microblogging services (Zwass 2010), or even participate in blogging or online brand communities (Brodie et al. 2013). These co-created activities fall into commercialization or post-launch stages. Although commercialization and post launch stages tend to be expensive and high in risk (Crawford and Di Benedetto 2008), relatively little attention has been paid to consumer co-creation during commercialization (Hienerth 2006) and post-launch stages (Hoyer et al. 2010). Now that consumers can take roles of core business activities for which companies were traditionally responsible, there is a clear need to extend the spectrums of value co-creation activities[3] to post-launch stages, such as co-conception, co-pricing, co-distribution, co-consumption, co-maintenance, co-disposal, or co-outsourcing (Frow et al. 2015; Saarijärvi

---

[3] Since the focus of this research limits to consumer value co-creation, other types of co-creation activities among other stakeholders are not within the scope of this paper.

2012; Sheth and Uslay 2007). Yet, the current literature on co-creation focuses on either pre-launch co-creation activities or particular contexts such as co-promotion, which is a piece meal from the entire spectrums of the co-creation activities from pre-launch to the post-launch. Although co-creation can happen across diverse types of value creation processes, to date, there is no empirical study examining the entire spectrums of the co-creation activities from the consumer perspective.

To address this gap in the literature, this study provides a comprehensive context where all stages of the consumer co-creation process can be examined from pre-launch to post-launch. By extending the breadth (i.e. scope) and depth (i.e. intensity) of the consumer co-creation contexts, this study selects four co-creation activities for the pre-launch (co-ideation, co-design, co-test, and co-finance) and four for the post-launch (co-promotion, co-distribution, co-price, and co-maintenance[4]) context (see figure 2). Post-launch co-creation tends to be more driven by consumers while pre-launch tends to be initiated by the company. Regardless of our categorization of who initiates such co-creation activities, one common factor between pre-launch and post-launch co-creation is that consumer co-creation happens in a variety of settings in various forms.

---

[4] For this study, the categorization between pre- and post- launch depends on the product launch stage. For instance, co-promotion such as word-of mouth or personal blogging can happen in pre-launch or co-testing can happen in post-launch; however, this study uses categorization where it is more predominant between pre- and post-launch.

Figure 2. Extended Spectrums of Value Co-Creation Context in the Proposed Model
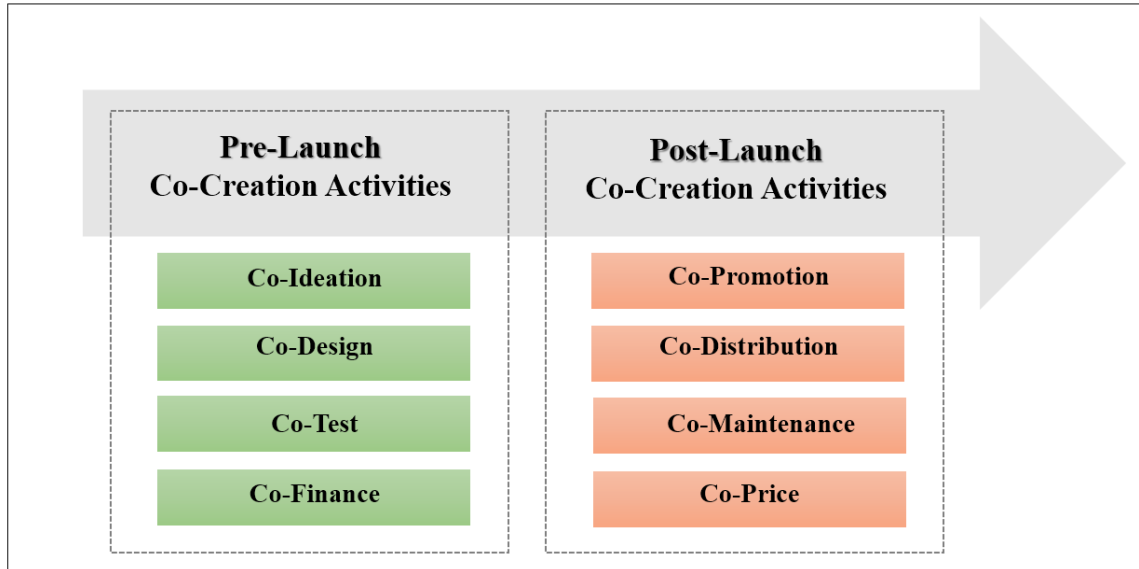
2-3-1. Pre-Launch Co-Creation Activities

Companies engage consumers in a variety of types of pre-launch co-creation activities in order to use consumers' knowledge about needs and solutions during diverse stages of new product development process. This type of co-creation activities are primarily initiated by companies through interactive platforms where information exchange and interaction take place between company and consumers, and between consumers (Fernandes and Remelhe 2015; Frey et al. 2011; Prahalad and Ramaswamy 2004b). The primary focus in this context is new product development for innovative product, up to product and service launch stages. Extant literature focuses on user-led innovation such as open innovation with consumers, lead-user approach, and crowdsourcing.

Companies invite multiple actors such as lead-users, consumers, fans, partners, professionals, and intermediaries to generate ideas ("co-ideation"), evaluate ideas ("co-

evaluation") through commenting and voting, helping with designing by linking the identified ideas or needs with possible solutions ("co-design"), and testing the product or service before launch to improve product/service prototypes ("co-test and co-launch") (Russo-Spena and Mele 2012). The four types of pre-launch co-creation activities in the proposed model are: 1) co-ideation, 2) co-design, 3) co-test, and 4) co-finance.

Co-ideation is the process of co-generation of ideas from consumers that companies employ to obtain direct and external voices. Companies open the idea generation phase to a wide network of external actors, and frequently create web sites as connecting spaces for actors to communicate and share their ideas and insights (Russo-Spena and Mele 2012). For instance, Starbucks implemented 277 ideas into new products or services out of more than 150,000 ideas submitted over the five years since its launch of the idea generation website (mystarbucksidea.com). Such ideas do not limit itself for product such new flavors (e.g. hazelnut macchiato, mocha coconut Frappuccino), but for services such as free wi-fi service (i.e. one click wi-fi service without any cost) or mobile payment through drive thru.

Co-design is defined as a collaborative practice of bringing together companies, consumer and other actors who are linked by a shared context and interest and engage in a wide range of practices aimed at bridging the gap between identified ideas or needs and the possibility of finding a solution. In co-design, users are assigned the role of "experts" based on knowledge, experience, interest, passion and effort, and play a large role in concept and product development (Russo-Spena and Mele 2012).

Co-test is defined as the process of companies engaging their consumers to support the improvement of prototype product/services before they are launched and marketed. Co-test is used to assess the marketability of a product or service (Russo-Spena and Mele 2012).

There are a number of companies which have provided platforms to interact with external actors and accommodate external voices from them: BMW's co-creation lab, Dell's idea storm, Fiat's solicited design via their website, or P&G's Connect+Develop. Some of these platforms are geared towards one particular type of co-creation activity while others towards multiple types of co-creation activities. For instance, P&G Connect+Develop platform is mainly to develop new solutions (i.e. co-design), while Threadless, an online-based t-shirt manufacturer, provides opportunities for anyone (e.g. consumers, fans, designers, hobbyists, artists, and managers) to participate in diverse types of co-creation activities: submitting t-shirt designs (i.e. co-ideation), voting for the best design (i.e. co-evaluation), and promoting the selected designs and creating catalogues through consumers word-of-mouth (Russo-Spena and Mele 2012).

An additional type of co-creation activity that can be considered as pre-launch is "co-finance". Co-finance is a type of crowdsourcing which falls within interdependent activities through virtual communities with well-structured tasks (the solution to the problem is well-defined) with low commitment (Nakatsu et al. 2014). Co-finance, synonymously named as crowd funding, engages crowds to invest in financing for inventions, new design ideas, and other creative projects for launch in the marketplace (Nakatsu et al. 2014). One of the most well-known crowd funding platforms is Kickstarter, which invites lay persons from the crowd to financially support thousands of creative projects regardless of the size of investment. For example, Pebble, a start-up company selling a smart-watch, raised over $1 million in an hour and over $9.5 million a week later through a project on Kickstarter (Metz 2016).

2-3-2. Post-Launch Co-Creation Activities

The success of any new product does not rely solely on pre-launch stage only. Post-launch and commercialization stages are critical stages for product success. Companies can derive benefits by engaging consumers in these stages including faster diffusion through WOM, saving cost and time on product support (Nambisan and Baron 2009), and early detection of potential problems with the new products. Post-launch stages involve activities converting inputs to outputs to create value through physical creation, sales, maintenance, and support of a product or service, named as *primary* activities by Porter (1985). Four types of post-launch co-creation activities are chosen as post-launch co-creation activities for this study: 1) co-promotion, 2) co-distribution, 3) co-maintenance, and 4) co-price.

Co-promotion is defined as consumer involvement in communicating company's products or services to others [5]. With the technological advances along with the proliferation of social media, co-promotion has become much more prevalent than any time in the form of e-WOM promotion via website. The e-WOM promotion can be conducted through shared transactional platform (e.g. Amazon), social networks (e.g. Facebook), and other social media such as microblogging site (e.g. Twitter) (Zwass 2010). Companies actively deploy e-WOM in co-creation activities (Zwass 2010). Any form of consumer actions in raising awareness of a product or brand can be considered as a co-promotion activity. The e-WOM is "any positive or negative statements made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet" (Hennig-Thurau et al. 2004). For instance,

---

[5] Co-promotion can happen both in pre- and post-launch stages. For example, movies are highly advertised through consumer blogging or word-of-mouth before they hit the market. However, this study doesn't include such co-promotion activities which can happen before product launch.

consumer co-promotion examples not only limit to online reviews regardless of the content of the review but also include sharing personal experiences and concerns with other consumers on brand communities (e.g. P&G's community for consumers to share hygiene products experience).

Co-distribution is defined as involving consumers in sharing and supplying company or company related information/materials, which helps in the process of making a product or service available through channels distinct from the traditional business model.

Co-maintenance can be defined as involving consumers in maintaining company related activities or communities. This type of activity, traditionally all conducted by the company, could be transferred to the consumers due to technological innovation with affordable high-speed internet. One such example can be co-hosting or co-maintaining brand communities with consumers. Co-maintenance can include not only maintaining the server of the communities, but also creating an interactive atmosphere on such communities by those consumers who are actively participating. For instance, Harley Owners Group (HOG) is a special community for the Harley-Davidson consumers operated by Harley-Davidson. Due to its unique lifestyle and culture among Harley-Davidson users, the million plus active member brand community truly represents a unique brand image for the Harley-Davidson users.

Co-price can be defined as consumer involvement in price setting initiatives by communicating the willingness to pay information for particular features. The traditional business model used to setting up price by determining value of the final outcome (physical goods or service) since it considers that value belongs to the company as a fixed pie (Bertini and Gourville 2012). However, engaging consumers into value creation, delivery, and

determination process is a possible way to enlarge the size of the pie (Bertini and Gourville 2012). One such consumer engagement is a co-price. Co-price can be considered as a primary asset to assist in designing value propositions through interactions and dialogue (Ballantyne et al. 2011) after a product is launched. In this way, pricing can be used to create shared value by allowing prices to change based on customer needs such as auctions (Bertini and Gourville 2012).

2-4. Linkage Between Co-Production and Value-In-Use

2-4-1. Process of Value: From Co-Production, Co-Creation Activities, to Value-In-Use

Value co-creation consists of two separate theoretical pillars: *co-production* and *value-in-use* (Lusch and Vargo 2006a; Ranjan and Read 2016). In other words, value co-creation is a superordinate construct and those two constructs (*co-production* and *value-in-use*) are theoretical pillars.

Co-production refers to consumer participation in diverse activities of the product design process in the creation of the core offering itself (Etgar 2008; Fang et al. 2008). Not only consumers, any partners in the network can collaborate with company for *co-production*. In the *co-production* stage, the locus of control primarily belongs to company, which implies that the nature and extent of *co-production* is typically within the company (Grönroos and Voima 2013; Vargo and Lusch 2004).

As consumers are considered as endogenous in the process of value co-creation, value derived through experiences from the usage/consumption process (*value-in-use*) suggested as another theoretical pillar of value co-creation. This means that value co-

creation is fully determined and defined throughout the usage/consumption stage by the end users/consumers (Sandström et al. 2008), emphasizing experiential and phenomenological aspect of value (Grönroos 2011; Grönroos and Voima 2013; Svensson and Grönroos 2008). Therefore, *value-in-use* is mostly free of company's exchange or intervention (Grönroos 2006; Vargo and Lusch 2004).

The value derived from the *co-production* is accomplished by the company by their putting efforts in the process or activities to add value along with the value chain with consumers. Grönroos and Voima (2013) term this company's efforts as "provider sphere" where company generates potential value which consumers later turn into real value (-in-use). The rationale behind is that *value-in-use* cannot be assessed or emerged before usage because it exists only after the usage process (Grönroos and Voima 2013).

Hence, it is logical that *co-production* proceeds *value-in-use* in general even though consumer value creation process is not always linear (Grönroos and Voima 2013). Any company's efforts in *co-production* can helps to shape unique personalized consumer co-creation experience. For example, consumers can submit a new idea (e.g. products, or experience) on MyStarbucksIdea.com. Based on consumer participation in sharing one's idea on that platform (co-creation participation) through active dialogue with company representatives and other community users (i.e. interaction), the consumers' experience has become unique and customized. Indeed, *co-production* is directly linked to consumer experience, which is one of the key domains where *value-in-use* arises. This implies that the company-initiated efforts in *co-production* through quality interaction influence the decision to participate in any co-creation activities and further influence consumers' *value-in-use*. Vargo and Lusch (2006a) state that *co-production* and *value-in-use* are linked as

consumption stage cannot be separated from the production activities. Yet, extant literature primarily focuses on the outcomes and implications from *co-production* from the company perspectives such as improved productivity (Mills et al. 1983), lower operational costs and reduced risks (Prahalad and Ramaswamy 2004b), and improved financial performance (Ostrom et al. 2010).

While such *co-production* efforts create the conditions for companies to engage with consumers in actual co-creation participation activities, the actual participation in co-creation activities needs to be measured as an outcome of such company-initiated efforts in value creation. In other words, *co-production* is the stage where the company can exert efforts to initiate the value co-creation process. *Co-production* from the company point of view encompasses but is limited to the role of an enabler in consumer participation which can potentially encourage consumers to engage in actual co-creation activities. Grönroos and Voima (2013) name this condition where consumers participate in value co-creation process through personal and direct interaction with providers (i.e. companies) as "joint sphere"[6]. For example, some factors of *co-production* that companies typically initiate such as knowledge sharing, access to platform across devices etc. enable consumer participation but do not guarantee it. Thus, *co-production* efforts do not necessarily translate into actual co-creation behavior from consumers but increase the possibility for consumers to participate in co-creation activities.

---

[6] Grönroos and Voima (2013) state that value is only co-created in a joint sphere through direct, personal interaction between the company and consumer. This study follows the view that two conceptual pillars, *co-production* and *value-in-use*, are core elements of value co-cretion (Vargo and Lusch 2016; Ranjan and Read 2016).

Based on this flow, I frame the process of co-created values as three theoretical pillars of value co-creation: company-led efforts in value co-creation (*co-production*), consumer participation in value co-creation activities, and consumer-led value co-creation (*value-in-use*). In this way, the proposed model fills the gaps in the literature by investigating the empirical model in examining the linkage from *co-production* to *value-in-use* through actual consumers' co-creation participation activities with companies as well as with other peer consumers while fully adopting two theoretical domains of value co-creation (see Figure 3). It should be noticed that each layer of the proposed model represents theoretical pillars of value co-creation (Lusch and Vargo 2006a). While extant literature focuses on the co-creation in one layer (mostly in behavioral manifestation of engaged behavior), the proposed model incorporates three layers of co-creation, where each layer of the proposed model is a part of co-creation. In this way, this proposed model contributes to the literature by empirically examining how co-created values are processed along the value chain.

Figure 3. Process of Co-Created Value for the Proposed Model
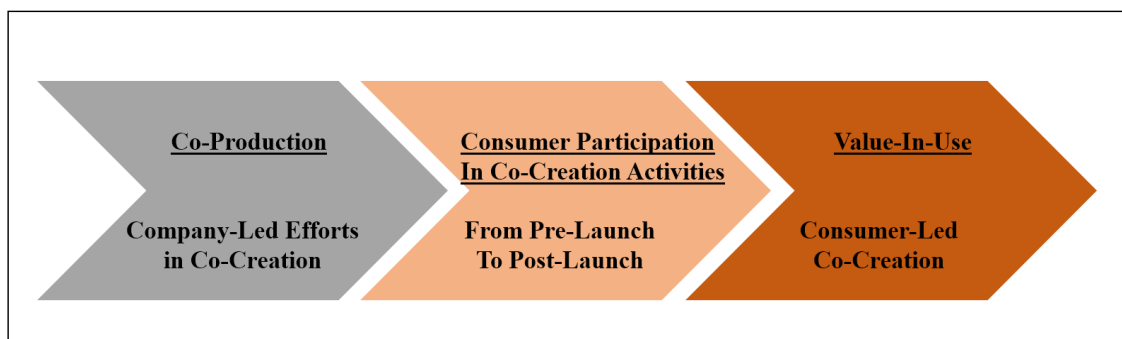
2-5. Company-Led Efforts in Value Co-Creation: Multiple Actors Perspective

In the proposed model, dimensions of the value co-creation construct are adapted to incorporate two theoretical dimensions (*co-production* and *value-in-use*) of value co-creation (Ranjan and Read 2016). Equity, knowledge sharing, and interaction are three underlying theoretical elements of *co-production* (Ranjan and Read 2016). Earlier conceptualization of value co-creation has focused on company-consumer dyadic perspective (Prahalad and Ramaswamy 2004a; 2004b; 2004c). Such a dyadic perspective has also been reflected in recently developed measurement scales for value co-creation construct (Ranjan and Read 2016) and DART (Dialogue, Access, Risk Assessment, and Transparent) construct (Albinsson et al. 2016).

However, the concept of value co-creation has been extended, elaborated, and further consolidated to incorporate a broader perspective including all resource integrating actors (e.g. consumers, company, consumer communities, suppliers, networks of company etc.). All such actors can create value along with others, which can facilitate value creation experiences (Svensson and Grönroos 2008; Vargo et al. 2008). Some scholars emphasize customer-related aspects in the value creation process rather than service provider related factors such as products, service, systems, costs or growth, namely called Customer-Dominant (C-D) logic (Heinonen and Strandvik 2015; Heinonen et al. 2013). The future research agenda from C-D logic proposes a need to address the customer focused value formation indicating how, where, when, what types of values are determined by customers and the primary agent (who) in the value creation process (Heinonen et al. 2013). Further, another future agenda that needs to be addressed is to identify and determinate the roles of

others in the consumer's value formation and the process where value arises (Tynan et al. 2014).

There are some empirical studies examining the relationship and interaction between multiple actors from a consumer perspective (Pinho et al. 2014; Yi and Gong 2013). Yet, there is paucity in empirical literature on understanding value co-creation from a multiple actor perspective (Pinho et al. 2014; Tynan et al. 2014). From a consumer's perspective, one of the most interactive actors other than company would be other consumers. Interaction with other consumers (consumer-to-consumer interaction) creates value not only to the company as a powerful marketing tool, but also to consumers by sharing ideas and experiences, and influencing others (Fernandes and Remelhe 2015). This in turn can have an impact on *value-in-exchange and value-in-use* (Lusch and Vargo 2006b).

In addition, influence of other consumers is more relevant in the online video gaming industry as the culture for online video gaming is to interact and collaborate with other consumers (i.e. online gamers). Yet, the value co-creation construct from Ranjan and Read (2016) captures only a dyadic relationship between company and consumer (B2C). Hence, we measure and extend all the elements of *co-production* (1st and 2nd layer in the proposed model) and co-creation activities (3rd layer in the proposed model) to the consumer to consumer (C2C) collaboration in addition to B2C collaboration. Therefore, this research differs from extant research by capturing co-creation variables in terms of two levels of collaborations: B2C and C2C. This study contributes to the paucity of literature by incorporating the role of multiple actors in co-creation contexts and providing empirical evidence to theoretically validate various types of co-creation activities (pre- and post-

launch) and the three elements of *co-production* (equity, knowledge sharing, and interaction) including the company, the consumer, and other consumers. Proposed is provided in figure 4.

Figure 4. Proposed Model
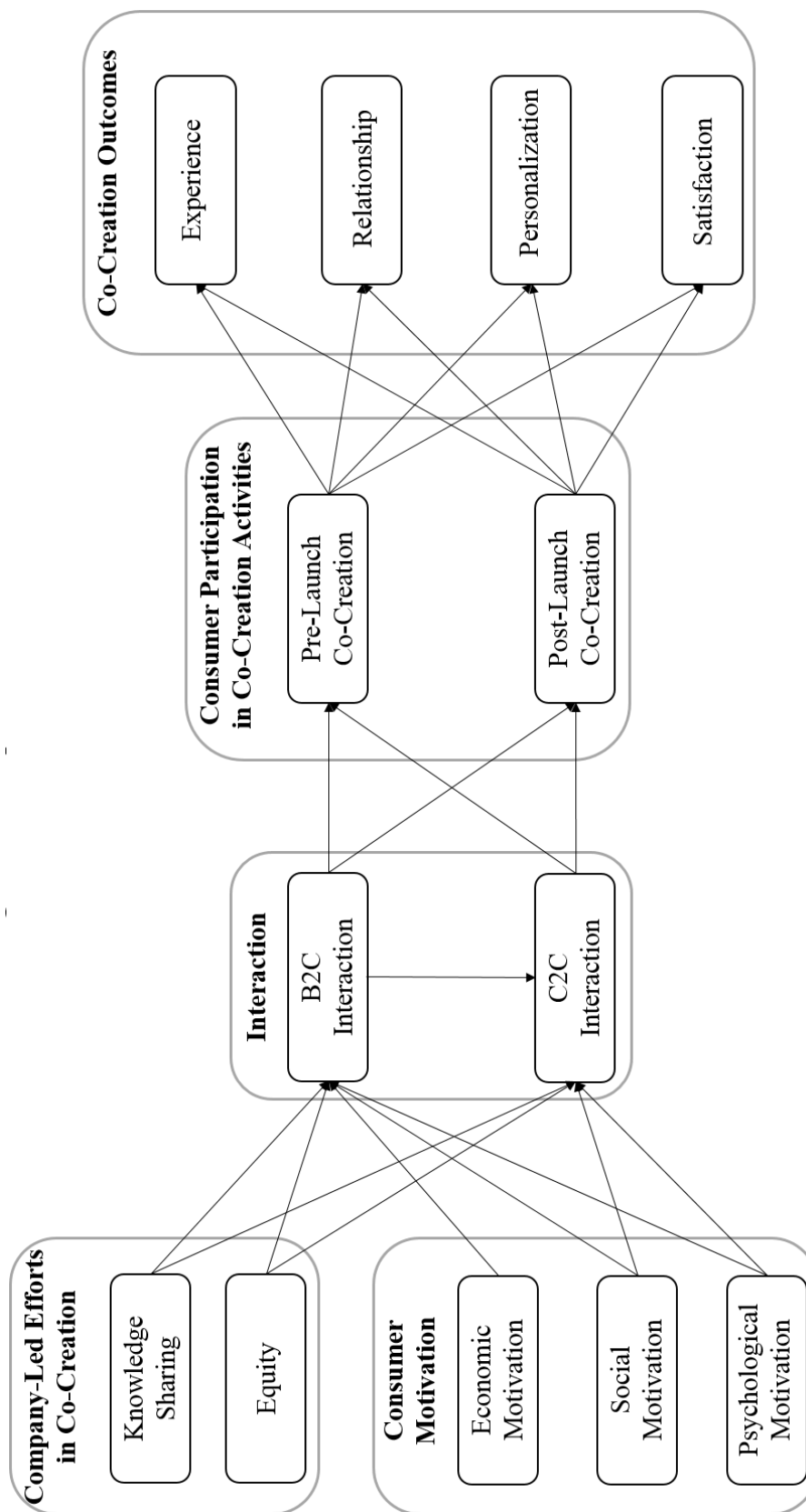
CHAPTER 3: HYPOTHESES DEVELOPMENT

3-1. Interaction

Companies exert their efforts to create an environment where knowledge can be shared freely, consumers feel an enhanced level of equity (i.e. shared control), and quality dialogical interaction takes place between the company and consumer and between consumers. Knowledge sharing, equity, and interaction, are three theoretical elements of *co-production* (Ranjan and Read 2016).

Among these elements, the role of interaction, particularly, has been emphasized in the extant literature (Ramaswamy 2011; Prahalad and Ramaswamy 2004a; 2004b; 2004c). Since co-creation, by definition, is a collaborative phenomenon, interaction between different entities is a sine qua non to its success. Interaction, as the locus of value creation and value extraction, is manifested form of co-creation where consumer and company can communicate and collaborate and exchange information (Prahalad and Ramaswamy 2004a; Ballantyne and Varey 2006). Companies are the entities which are responsible for facilitating experience-based values (i.e. *value-in-use*) through interaction (Ramaswamy 2011). In other words, the success of co-creation, leading to unique and personalized consumer co-creation experience, primarily relies on interaction. Therefore, the role of interaction is examined as a consequent condition of other two elements of *co-production*, knowledge sharing and equity, for the proposed model.

While company and personality-related variables have been studied about their effects on consumer co-creation behaviors, interaction in its multidimensional form seems to be a missing link in understanding this emerging concept. Other than direct

communications between company and consumers, there is a need to reconceptualize the interaction into another form, between consumers (Albinsson et al. 2016). The theoretical, taxonomical, and empirical investigation of interaction as a construct in the context of consumer co-creation is still relatively underexplored. Therefore, this study incorporates two forms of interaction, namely B2C and C2C interaction.

3-1-1. B2C Interaction

While the locus of economic value is extracted mainly by the company in the traditional concept of the market, the co-creation paradigm considers interaction as the locus of co-creation of value by both consumer and company (Prahalad and Ramaswamy 2004b). Companies can understand, share, and serve consumers' needs and assess and adapt their resource commitments through interaction (Prahalad and Ramaswamy 2004b). Since companies are in most cases responsible for designing the products they have on offer for aggregation of consumers, business managers have at least partial control over the interaction environment and the networks they build to facilitate co-creation experiences. Therefore, earlier literature, particularly in technology and management perspective, focuses more on the company-consumer dyadic perspective of interaction, meaning that the nature of interaction in the previous literature largely focuses on B2C interaction.

B2C interaction involves information exchange, communication, and collaboration between the company and the consumer[7]. Companies can enhance their competitive

---

[7]Some scholars interpret interaction as "situations in which the interacting parties are involved in each other's practices. The core of interaction is a physical, virtual, or mental contact..." (Grönroos and Voima 2013, p. 140). This study defines interaction as dialogical interactions between different entities (Prahalad and Ramaswamy 2004b; 2004c; Ballantyne and Varey 2006).

advantage by encouraging high-quality interactions that enable an individual customer to co-create unique experiences with the company (Prahalad and Ramaswamy 2004a). The core elements of interaction are dialogue, access, risk-assessment, and transparency (DART), which can help to establish an environmental climate to nourish value co-creation (Prahalad and Ramaswamy 2004a; 2004b; 2004c). Interaction, as a dialogical process (Ballantyne and Varey 2006), provides a ground for companies to invite consumers in co-creation activities as a coordinative and interactive process (Grönroos and Voima 2013). Since interaction is not an automatic process for consumers to create value, company's efforts in engaging with consumers for interaction cannot be underestimated for value co-creation (Grönroos and Voima 2013).

3-1-2. C2C Interaction

Under the web 2.0. environment where its focus is on interaction and collaboration with other consumers in interactive platforms, there is a growing body of literature focusing on the C2C interaction from both academics and practitioners. The focus is on changing nature of consumers from passive content readers to active content creators through communicating, sharing and collaborating with others. In return, there has been a growing interest to understand antecedents and consequences of C2C interaction both from academics and from practitioners (Libai et al. 2010).

C2C interaction involves consumer-to-consumer sharing of ideas, information and experiences that have come to characterize successful online discussion forums and virtual communities. The importance of C2C interaction is highlighted in virtual communities where groups of people brought together by common interests and goals online platforms

(Adjei et al. 2010). C2C interaction is same as B2C interaction, except the fact that participating entities in interaction is between consumers. C2C Interaction involves communication and dialog among consumers. C2C interaction creates value not only to the company but to consumers by sharing ideas, experiences, and influencing others (Fernandes and Remelhe 2015; Millan et al. 2016).

3-2. Drivers of Interaction: Elements of *Co-Production*

Two elements of *co-production*, knowledge sharing, and equity, are selected as predictors of dual forms of interaction (i.e. B2C and C2C interaction).

Knowledge, a set of shared beliefs derived from social interactions and embedded in social contexts of which it arises (Berger and Luckmann 1996), is a basic operant resource for value co-creation. Knowledge sharing is manifested in the sharing of knowledge, idea, and creativity between company and consumers. Knowledge can be co-created among multiple actors through mutual learning in a community of practice (van Veen et al. 2013). Compared to working independently, knowledge sharing is found to have better results because of greater incentives and new capabilities through co-creation (Grover and Kohli 2012).

Acknowledging the fact that the amount of information, knowledge, skills, and other operant resources which consumers can access and use is found to be one of the primary factors to create value (Normann 2001), a company should put more efforts in creating an environment for enhancing consumer knowledge sharing. This can stimulate opportunities for consumers to interact with other fellow consumers (i.e. C2C interaction)

and the company (i.e. B2C interaction). Just as companies can co-create business value through knowledge availability, sharing, and assimilation (Grover and Kohli 2012), consumers can also co-create business value through the same process.

The company must share apriori knowledge on the product or technology with potential consumers. Since companies have significant asymmetric knowledge advantage over consumers due to proprietary knowledge and research and development work, consumers are generally not in a position to interact meaningfully with the company on co-creation unless the knowledge gap is reduced. Knowledge sharing from company to consumer is more critical when consumers are expected to share knowledge back, leading to efficient and transparent B2C interaction.

The difference in knowledge level between the company and consumers creates a knowledge disequilibrium which inhibits the ability of the party having less knowledge to effectively interact with the other party. For example, if a gaming company does now share the required information and knowledge on the characteristics or intricacies of the game, it will be very difficult for the video gamers to effectively interact and contribute to the efforts of the company. In other words, an effective interaction is necessarily two ways, which means that both sides need to be equally informed regarding product knowledge. Therefore, it is important for companies to create an environmental climate where not only companies provide sufficient information to the consumers but also sharing ideas, suggestions, or other information between consumers and with consumer is well accepted. In that way, consumers learn more information from both company and consumers, leading them to engage more dialogical interaction between the company and with other consumers. Thus, it is hypothesized:

H_1: *Knowledge sharing is positively related to a) business-to-consumer (B2C), and b) consumer-to-consumer (C2C) interaction.*

Equity describes the extent to which a company shares or cedes control to enhance

consumer empowerment in the value creation process (Ranjan and Read 2016). Previous

studies find that consumers' perceived power and control based on enhanced perception

of equity has positive relationship with self-determination (Deci and Ryan 2002), self-

efficacy (Bandura 1997), trust (Füller et al. 2009), and willingness to participate in co-

creation activities (Fisher and Smith 2011; Füller et al. 2009) and largely relies on

organization context (Siegall and Gardner 1999). Hence, those companies which create

an environment of a high level of equity are expected to more effectively empower

consumers. With the greater sense of equity leading to a heightened feeling of

empowerment, quality of interaction can improve because consumers feel less obligated

and more willing to participate in co-creation activities. This can lead to an active

interactions between business and consumers, and among consumers. Consumers would

be interested to interact with the company and other consumers if there is heightened

level of equity perception. Following this rationale, I generalize that

H_2: *Equity is positively related to a) business-to-consumer (B2C), and b) consumer-to-consumer (C2C) interaction.*

3-3. Drivers of Interaction: Consumer Motivations

Motivation can be considered as an important precedent condition for all aspects of behavioral activation and intention (Ryan and Deci 2000). It is one of the well-known constructs to understand why people behave in certain ways. Based on self-determination theory, there are two types of motivation, namely, intrinsic-"doing something for its inherent satisfaction"- (Ryan and Deci 2000, p.56) and extrinsic motivation- "doing an activity to attain some separable outcome"- (Ryan and Deci 2000, p.60). Accordingly, in the context of consumer co-creation, existing studies focus on different types of consumer motivation and their resultant effects on behaviors such as consumer participation (Claffey and Brady 2017; Hoyer et al. 2010; Nambisan and Baron 2007; 2009; Roberts et al. 2014) or consumer participation intention (Fernandes and Remelhe 2015), while some studies examine other resultant factors such as quality of consumer co-creation contributions (Frey et al. 2011) or even moderating role of consumer motivations (Verleye 2015). However, no study has examined the direct effect of motivation on interaction in the co-creation context.

Consumer motivations can be categorized into three different types in the co-creation context: 1) opportunity/goal motives such as economic motive, 2) altruistic motives such as social motive, and 3) egocentric motives such as hedonic, psychological/personal, pragmatic (Claffey and Brady 2017; Fernandes and Remelhe 2015; Roberts et al. 2014; Hoyer et al. 2010). These motivations can be understood from perceived benefits accrued from participating in co-creation activities; thereby, consumers expect different types of benefits deriving from their participation (Nambisan and Baron 2007; 2009). While some studies examine both extrinsic and intrinsic motivations

(Fernandes and Remelhe 2015; Frey et al. 2011; Hoyer et al. 2010; Roberts et al. 2014; Verleye 2015), others focus more on intrinsic motivations such as social, learning, or psychological motives (Claffey and Brady 2017; Nambisan and Baron 2007; 2009). Since consumer participation in co-creation activities are purely voluntary actions, the focus of consumer motivations might have been more on intrinsic motivation. However, extrinsic motivation is also an important factor which has found to have a considerable impact on human behavior. Indeed, companies frequently attract consumer co-creation participation using monetary or non-monetary benefits (i.e. extrinsic motivation). Threadless, for example, provides gift cards or varying amount of cash awards for those consumers whose designs were selected as the final printed works. Therefore, to complete the full understanding of consumer motivations in co-creation context, both intrinsic and extrinsic motivations need to be addressed. This study adopts economic motivation as extrinsic motivation, and social motivation and psychological motivation as intrinsic motivation.

Though the effect of consumer motivational factors on consumer co-creation participation is well researched in previous studies, the direct link between motivational factors and interaction is missing in the literature. As interaction is an essential foundational piece to make consumer co-creation experience successful, it is important to examine what consumer motivational factors affect two types of interaction, namely B2C and C2C interaction.

Based on Roberts et al. (2014)'s finding that consumer motivation as an underlying value is different for each type of co-creation activity, each type of motivation may affect differently depending on the nature of the interaction. Below, I present the rationale for three types of motivations on interaction.

Economic motivation is consumers' desire to get some compensation in line with their efforts. Companies attract consumer participation by providing direct monetary compensation such as financial rewards or monetary prizes or indirect compensation such as intellectual property (Hoyer et al. 2010). Among different types of co-creation, consumer tends to be motivated by economic motives when directly working with a company (Roberts et al. 2014). Therefore, companies try to interact with consumers by providing some economic benefits in their messages. On the consumer side, this motivation applies mainly with consumer interaction to companies because consumers look for better information and access to products and potentially some financial rewards from the company. As consumers get to know more by interacting with companies, key motivation will be to get preferential treatment from the company. Therefore,

H_3: *Economic motivation is positively related to business-to-consumer (B2C) interaction.*

Social motivation refers to consumers' desire to attain and develop social ties in line with their efforts. Social motivations include being accepted and recognized within the consumer communities and share consumption goals and strategies for enhanced outcomes (Hoyer et al. 2010; Roberts et al. 2014). Consumers get to know like-minded peers who will share the same interests and help in creating consumer homophily. Previous study finds that social motivation especially drives consumer co-creation as part of community (Roberts et al. 2014). Therefore, consumers with a high level of social motivation expect to interact more with like-minded peers in co-creation and with the company in seeking of status which can also be bestowed by the company. Thus,

H_4: *Social motivation is positively related to (a) business-to-consumer (B2C) interaction, and (b) consumer-to-consumer (C2C) interaction.*

Psychological motivation refers to consumers' desire to attain psychological motives such as hedonic benefits, or personal development through gaining some knowledge (Etgar 2008; Hoyer et al. 2010; Roberts et al. 2014). The hedonic aspects of psychological motive are considered to be distinctive from the utilitarian aspects, which is largely encompassed within economic motive. The hedonic aspects of collective consumption have a strong influence on the willingness and ability to interact with company and consumers and to involve on the journey to co-creation. In return, this motivation will also be served by consumer interaction with both company and other consumers. Therefore:

H_5: *Psychological motivation is positively related to (a) business-to-consumer (B2C) interaction, and (b) consumer-to-consumer (C2C) interaction.*

3-4. Consequence of Interaction: Consumer Participation in Co-Creation Activities

Traditionally, companies have long relied on consumer engagement methods such as focus group to gain insights for marketing purposes. The difference in recent years is that companies engage with larger groups of consumers in a way that facilitates even greater opportunity for individualized extraction of value by each consumer. Consumers either complement or even substitute some of the business activities that companies have been solely responsible for. In return, the contexts where consumers can co-create have

been extended than ever before. Therefore, there is a need to understand consumer participation across a wide spectrum of co-creation contexts.

In this study, consumer participation in co-creation activities is defined as a behavioral manifestation of consumer engagement, as the extent to which consumers are involved with the company (or service provider) directly or indirectly in the various stages of the new product development process (Carbonell et al. 2009; Fang 2008). More specifically, consumer participation refers to breadth (i.e. scope) and depth (i.e. intensity) of the consumers' engagement in a wide range of co-creation activities. The breadth of the consumer participation refers to the extent of consumers' engagement across all the stages of the co-creation activities, including pre-launch (co-ideation, co-test, co-design, and co-finance) and post-launch (co-promotion, co-distribution, co-maintenance, and co-price). The depth of the consumer participation refers to the extent of consumer engagement within a particular co-creation context. The customer participation level may vary by both breadth and depth. For instance, some consumers participate in all stages of co-creation activities, while some may participate in one or some particular co-creation activities only. When it comes to depth of consumer participation, some may deeply involve in co-creation activities, meaning that actively involving in any co-creation activity with other fellow consumers and/or companies; yet, some may only involve in co-creation activity at a very minimal level.

In order to achieve a high level of consumer participation, companies try to manage interfaces where interaction between company and consumers takes place. Previous studies find that interaction has effects both on company and consumer level. At consumer level, Interaction leads to higher level of consumer engagement (Zhang and Chen 2008), positive

consumer experience during usage/consumption (Grönroos and Voima 2013; Ramaswamy 2011), and a higher level of consumer participation in co-creation activities (Nambisan and Baron 2007; Prahalad and Ramaswamy 2004a). For companies, interaction helps companies to have the long- lasting competitive advantage (Rayport and Jaworski 2005) and clarify their knowledge about consumer tastes and preferences (Srinivasan et al. 2002). Companies with a high level of interaction orientation, meaning that those orient themselves to interact with the consumer, have long term competitive advantages which can differentiate themselves from others (Ramani and Kumar 2008). Additionally, those companies manage marketing activities "with" instead of "for" the consumers and consumer-to-consumer linkages strategically (Ramani and Kumar 2008). This indicates that companies oriented to interaction put importance on interaction both with consumers and between consumers. Therefore, companies strive for managing consumer interactions to learn more about the consumers to enhance consumer participation in co-creation activities. Following this rationale, I generalize that:

H_6 *: Higher the level of business-to-consumer (B2C) interaction, higher the level of consumer participation in (a) pre-launch (co-ideation, co-design, co-test, co-finance), and (b) post-launch (co-promotion, co-distribution, co-price, co-maintenance) co-creation activities.*

H_7 *: Higher the level of consumer-to-consumer (C2C) interaction, higher the level of consumer participation in (a) pre-launch (co-ideation, co-design, co-test, co-finance), and (b) post-launch (co-promotion, co-distribution, co-price, co-maintenance) co-creation activities.*

3-5. Effect of B2C interaction on C2C interaction

Dialogical interaction as a method of marketing communication is an essential element for innovation and interactive process of mutual learning (Ballantyne and Varey 2006). B2C interaction, mainly, is vital for companies to deliver information and knowledge as there exists information asymmetry between company and consumers both for pre-launch and for post-launch stages. Especially, in the context of consumer co-creation in pre-launch stage, this asymmetry becomes more significant as companies have greater knowledge and information about products before their launch. Therefore, one of the major topical areas of co-creation in extant literature is on the role of interactions in deriving consumer co-creation experiences (Ramaswamy 2011). The elements of DART reveal the characteristics of the successful co-creation environment which can enhance value co-creation process (Prahalad and Ramaswamy 2004a; 2004b; 2004c). Companies oriented with interactions show a higher level of consumer orientations in many ways. For instance, they tend to conduct marketing activities "with" the consumers instead of "for" the consumers and strategically manage consumer-to-consumer (C2C) linkages (Ramani and Kumar 2008). This implies that companies oriented with B2C interactions also value the importance of C2C interaction, leading to increased efforts in effectively managing C2C as well as B2C interactions. From this rationale, it is hypothesized that:

H_8: *Business-to-consumer (B2C) interaction is positively related to consumer-to-consumer (C2C) interaction.*

3-6. Consequences of Consumer Participation in Co-Creation Activities: *Value-In-Use*

Both companies and consumers are the participatory entities receiving values from consumer co-creation. Value creation process involves three key elements of value: (1) values that company can receive from its consumers, (2) values that company can provide to its consumers, and (3) maximizing consumer life time values (Payne and Frow 2005). Yet, extant work on outcomes of co-creation has more focused on the company related outcomes in terms of profit maximization by improving effectiveness and efficiency. Previous studies find that consumer co-creation improves effectiveness through enhanced level of innovativeness (Fang 2008; Füller et al. 2008), financial performance (Chang and Taylor 2016; Ostrom et al. 2010), and fit with consumer needs (Fang et al. 2008); efficiency through improved speed to the market (Carbonell et al. 2009; Fang 2008), lower operational costs and reduced risks (Prahalad and Ramaswamy 2004b). Yet, consumer-related outcomes of co-creation activities have been relatively less explored compared to the company related outcomes (Hoyer et al. 2010; Verleye 2015).

One of the potential consumer related outcomes is *value-in-use*. This is the last stage of consumer co-creation process as it is based on values driven from consumption or usage stage (Etgar 2008). Any prior experience, in this case consumer participation in diverse types of co-creation activities, plays roles in shaping consumers' co-created value in this stage. Therefore, this research links the consumer participation to *value-in-use*, as consumer outcomes of the co-creation activities.

Experience, as one of the theoretical dimensions of *value-in-use*, is an artifact of company's product or services across behavioral, cognitive, and affective dimension (Edvardsson et al. 2005; Payne et al. 2008; Ranjan and Read 2016). Through cognitive and

affective processes from consumer participation in co-creation activities, consumers shape their experience. As consumer experience through ongoing interaction is a fundamental key for success in co-creation, companies strive to generate better and unique consumer experience (Payne et al. 2008; Ramaswamy 2011).

During consumer participation in co-creation activities, consumers face the co-evolving processes, leading to improved consumer experience. This experience is shaped by unique context of interaction with company and other fellow consumers. It is found that co-creation participation itself can induce pleasures and positive experiences (Fernandes and Remelhe 2015). Therefore, companies put efforts to design around consumer experience through 'multi-sided interactions' (Ramaswamy 2011; Ramaswamy 2009). This in turn indicates that consumer experience largely rely on consumer participation in co-creation activities. These arguments suggest the following:

H_9: *The higher the extent of consumer participation in (a) pre-launch (co-ideation, co-design, co-test, co-finance), and (b) post-launch (co-promotion, co-distribution, co-price, co-maintenance) activities, the more positive is the consumer experience.*

Consumer participation in co-creation activities is highly associated with the nature and the extent of the perceived relationship between the company and the consumer. The cocreation encounters influence the consumer's ability, desire and opportunity to develop a strong relationship with the front-line staff. Consumer participation in co-design, co-testing, and other pre-launch co-creation could potentially strengthen the relationship between the consumer and the company's product development or technology team. Similarly, consumer participation in co-price, co-promotion, or co-distribution could potentially enhance the relationship between the consumer and the company

marketing/sales team. In either case, participation in co-creation activities could make consumers feel close to brand image and identity, and positive influence brand communication and the attitude toward the brand (Payne et al. 2009). This leads to the following hypothesis:

H_{10}: *The higher the extent of consumer participation in (a) pre-launch (co-ideation, co-design, co-test, co-finance), and (b) post-launch (co-promotion, co-distribution, co-price, co-maintenance) activities, the more positive is the perception of customer relationship.*

Another element of *value-in-use* is personalization (Ranjan and Read 2016). Prahalad and Ramaswamy (2004c) argued that companies should escape the firm-centric view and strive to co-create value with customers through personalized interactions between the consumer and the company. As consumers engage in co-creation activities in both pre-launch and post-launch stages, they perceive a greater send of personalization in the products and services they consume. The personalization is frequently in the experience of consumption, and not necessarily in the product itself. Pre- and post-launch co-creation activities can help consumers create an experience environment in which consumers can have active dialogue with the company and co-construct their own unique personalized experiences. Thus:

H_{11}: *The higher the extent of consumer participation in (a) pre-launch (co-ideation, co-design, co-test, co-finance), and (b) post-launch (co-promotion, co-distribution, co-price, co-maintenance) activities, the greater is the perception of personalization.*

Satisfaction, defined as a consumer's cumulative evaluation of the consumption and purchase experience over time (Anderson et al. 1994), has been one of the key

constructs in marketing literature. Extant literature finds the positive link between company's activities and consumer satisfaction as a consumer-level attitudinal outcome. One of such company's activities is manifested in the opportunity for consumers to co-create. The proposed research framework incorporates two types of consumer-mediated co-creation activities. Consumers may participate in pre-launch co-creation (mostly company-led) or post-launch co-creation (mostly consumer-driven) types of co-creation activities. Both pre-launch and post-launch co-creation activities can lead to greater consumer engagement in the co-creation process, and therefore, a higher sense of perceived empowerment and satisfaction. Thus, satisfaction derived from co-creation can transcend company'-initiated efforts and involve consumer-driven post-launch activities as well.

The consumer participation in the co-creation process is demonstrated to have an impact on consumers' perceived empowerment (Füller et al. 2009) and consumers' perceived feelings of being part of the company or company related communities (Grissemann and Stokburger-Sauer 2012). The perceived empowerment makes consumers feel that they are more competent and valued due to their perceived influence on the company as their knowledge and ideas are reflected in co-creation activities, leading to consumer satisfaction (Grissemann and Stokburger-Sauer 2012) and future intention to co-creation participation (Füller et al. 2009). Assuming that the company puts its continuous efforts to make consumers feel that they belong to the company, the higher extent of consumer participation will lead to more positive consumer satisfaction. Hence, it is hypothesized that:

H_{12}: *The higher the extent of consumer participation in (a) pre-launch (co-ideation, co-design, co-test, co-finance), and (b) post-launch (co-promotion, co-distribution, co-price, co-maintenance) activities, the more positive is consumer satisfaction.*

CHAPTER 4: CONSUMER SEGMENTATION IN DIVERSE CO-CREATION ACTIVITIES

As co-creation has become a common form of industry practice, many scholars have attempted to identify different segments of consumers who are likely to participate in co-creation activities: lead-user (von Hippel 1986), innovator (Moore 1991), emergent nature consumer (Hoffman et al. 2010), and market maven (Feick and Price 1987).

Extant amount of the co-creation literature from technology and innovation management perspective relies on user-led innovation, generating novel idea from consumers in new product and service development contexts. Particularly, the lead-user segment has received great support from the literature for radically innovative product and service development.

Lead users are the individuals who first feel the need for a product or service, which will eventually become general in the market place (i.e. capability), and create it for themselves (motivation) (von Hippel 1986). The lead-user concept was first proposed for new product development context in fields for particular product categories with potential rapid change such as high technology product (von Hippel 1986). Lead user identification is an essential method used by companies to identify the newest innovations in their product development, giving them crucial insights on the needs and solutions from their users. Empirical studies have supported the effectiveness of the lead-user method in generating novel ideas for new product or service concept and solution in industrial software product concept development (Urban and von Hippel 1988), computerized information search system used by libraries (Morrison et al. 2000), and electronic home

banking services (von Hippel and Riggs 1997). These types of activities from lead-users are conceptualized as pre-launch co-creation activities in the proposed model.

Although the lead users are valuable assets for the novel product or service development phase, they are also effective in later-commercialized modification and enhancement stages (von Hippel 1986). The effective application of the lead-user method has been supported in some studies. For instance, existing empirical studies find that the user innovation can contribute to the diffusion of innovation such as commercialization in rodeo kayak industry (Hienerth 2006) or distributing the diffusion of innovations as if lead users act as opinion leaders in the social networks among children (Kratzer and Lettl 2009). Yet, co-creation in commercialization and post-launch activities are still at its infancy in the literature (Hienerth 2006; Hoyer et al. 2010). These types co-creation activities that are conducted by the lead-users, conceptualized as the post-launch co-creation activities from my proposed framework, are still scantly examined in the literature.

While the extant literature primarily focuses on lead-users in pre-launch co-creation activities for developing novel ideas and concepts, the existing literature has focused on the outcomes of the breakthrough innovations primarily in technology-specific environment. Since user-led innovation (i.e. co-creation in innovation studies) tends to be linked to certain product characteristics or categorizations where either physical or perceived noticeable differences in product attributes are profound among different items or brands (Etgar 2008), the vast amount of the empirical studies has primarily focused on high-tech or technology-specific environment. However, some studies find that the lead-user approach is also effective in a product category which is relatively low tech type such as pipe hangers (Riggs and von Hippel 1992).

Additionally, culturally-specific context of industries such as video game industry are also found to be relevant for regular user-led co-creation (Aoyama and Izushi 2008). What user-led co-creation is missing is the last phase of industry cycle (discontinuities between different industry lifecycles). The literature has focused on its shifts from an early stage of industry lifecycle (where the importance of the novel product acceptance to lead users is emphasized) to middle stages (where customization and adaptation are emphasized) (Aoyama and Izushi 2008). As fan-based content development is the central successful key for the online video gaming industry, this industry emerges as a very committed and engaged community among fans and hobbyists (Aoyama and Izushi 2008). Hence, this is a very highly appropriate industry to examine diverse types of the co-creation activities conducted by a number of participating actors.

Due to its unique consumer-participatory culture, there are many actors such as regular users, hobbyists, fans, or lead-users who are likely to participate in diverse types of co-creation activities. However, I hypothesize that pre-launch co-creation activities are more suitable for the lead-users because they are at the 'fuzzy front end' who can foresee the trends for the future. Therefore, the pre-launch co-creation activities in the video gaming industry (e.g. participating in game scenario development, providing comments on prototypes/upcoming sequential games, creating add-ons, patches, using tool kits to design customized gaming experience for game players, or creating new tools to customize the game and enhance the user interface) are expected to be led by the lead-users rather than by regular consumers.

Also, lead users are expected to lead in the post-launch co-creation activities in the video gaming industry as they are found to be effective in diffusing the innovation (Kratzer

and Lettl 2009). From this rationale, I expect that lead users are more likely to participate in post-launch co-creation activities (e.g. helping identifying and fixing bugs with patches or promoting company or game related information) than regular users. But, the extent of participation in post-launch activities are expected to be smaller than that in pre-launch because video gaming industry has many engaged actors such as hobbyists or fans who are also willing to participate in such activities. Therefore, it is hypothesized that:

H_{13}: The level of lead and regular user participation in co-creation activities will be different.

CHAPTER 5: METHODOLOGY

5-1. Context for Data Collection

Online video gaming industry is chosen for the data collection context for the following reasons. First, online video gaming industry has the combination of consumer participatory cultural practice along with media technologies development (Green and Jenkins 2009). Consumer co-creation practices are observed much more frequently in such unique culturally-specific context than any other industries (Aoyama and Izushi 2008). Therefore, consumer co-creation is easily observed in this context. Second, this is a great context to assess all ranges of co-creation activities in the proposed model. Consumer co-creation in this context does not limit their boundaries on pre-launch but goes beyond to post-launch activities. Additionally, video gaming industry has short life cycles since new products release happen frequently. Therefore, distinctive differences between pre- and post-launch are well observed (Burmester et al. 2015). Since one of the key criteria to test the proposed model is to have a whole range of diverse types of co-creation happens, incorporating pre- and post-launch, this context is a perfect fit to test the proposed model. Below are description and examples of each co-creation activities adopted for this study in the context of online video gaming industry.

Co-ideation in the online video gaming industry is involving the game users in generating ideas for developing new games or improving/upgrading existing games. Online game players can participate in game scenario development, provide comments and feedback on the upcoming sequential games, or vote/comment on ideas/proposals.

Co-test in the online video gaming industry is involving game players in the testing of the game before it is launched. For example, online game players can participate in open/closed beta or gamma tests to test the quality of the game or provide feedbacks and ideas (e.g. bugs, commenting on game features in need of updating or fixing) pertaining to testing of the game before launched.

Co-design in the online video gaming industry is involving gamer players in dynamics of the design process. Online game players can participate in diverse co-designing process by creating add-ons, or patches, using tool kits to design customized gaming experience for game players, or creating new tools to customize the game and enhance the user interface. Game users are considered as an official designer by participating in the design process initiated by the gaming company.

Co-finance in the online video gaming industry is involving gamer players to invest in game development initiatives of a gaming company. As of August 2015, three of the largest crowd-funding projects at Kickstarter were gaming related projects. In 2014, Star Citizen, a space sim video game for Microsoft Windows and Linux, raised $52 million in total at Kickstarter ($2 million) and independently at developer (Chris Roberts)'s own campaign ($50 million). A total of 34,397 backers (participants) put money on this crowd-funding at Kickstarter. Participants were provided an opportunity to participate in an early trial in return for putting money on the initiatives. As such an example, co-finance is found out to be one of the possible ways to get help from the crowd (including consumers) to launch a product or service.

One of the most common post-launch co-creation activity is co-promotion. Co-promotion in the online video gaming industry refers to the involvement of game players

in communicating any gaming product or service to other (potential) users. The examples may include but are not limited to sharing any company related news on one's social media sites, engaging in word-of-mouth related to the game itself or game company, using game related promotional merchandises (e.g. wearing gaming t-shirt, creating artistic contents such as fan artwork, comic strip style story telling etc.), or hosting gaming events. Game players are considered as an unofficial promoter who support game itself or gaming company.

Co-distribution in the online video gaming industry refers to the involvement of game players in distributing gaming software updates, patches, or downloads through electronic media. Game players may forward a link to download any game related software/patch, or trade gaming items/accessories/game scenarios with other game players. In this way, game players act as an official distributor of the company by sharing and supplying game or gaming company related information/materials.

Another potential role of consumers in post-launch co-creation activities is involving game players in maintaining gaming servers, interface, or communities (i.e. co-maintaining). Game players may participate in co-hosting, maintaining private game servers with other users, or gaming brand communities, scenario development, identification of bugs, or working on mods (modifications) to alter the content of video game to make it operate in a manner different from its original version. This type of activities may be particularly relevant in the video gaming context. One example is World of Warcraft private server maintenance. World of Warcraft, one of the most popular video games owned by Blizzard entertainment, had the biggest private server named Nostalrius with 150,000 active accounts (http://www.polygon.com/2016/4/11/11409436/world-of-

warcraft-nostalrius-shutdown-legac y-servers-final-hours). The private server was forced to shut down on April 10, 2016, as Blizzard claimed that the server violated the company's terms of use. After the decision, there was a petition to restore the private server, which surpassed 240,000 signatures as of 4/28/2016 (http://www.pcgamer.com/nostalrius-petition-passes-200k-signatures-mark-kern-to-deliver-it/). That private server had been owned and ran by a team of volunteers. The maintenance of server (even though it was a private server, not an official server hosted by Blizzard) with some game players is a form of co-maintenance. Even though the Nostalris server maintenance was not fully initiated or collaborated by Blizzard and both sides (company and server maintenance/players) did not go on the same direction in terms of value co-creation, this can be an example of co-maintenance.

Game players can also participate in co-price by participating in price setting initiatives through willingness to pay information for particular features. Game players may help the company to charge an optimal price through price customization such as auctions or name-your-own pricing model. In this way, game players can set up a price either with company or other fellow game players in the process of setting up an optimal price.

5-2. Data Collection and Sampling

The data was collected through survey from two different sources: 1) online video gaming forums on Reddit (social news and media aggregation site with 542 million monthly visitors with 234 million unique users as of February 2018; 4th in the U.S. and 6th

in the world as the most visited website), and 2) offline gaming events in New York City.

Reddit was chosen to recruit online video gamers for the survey due to its high number of registered active users and interactive community activities. To invite qualified participants, advertisements on Reddit were sent out to the potential survey participants, particularly targeting those who indicated their interests as "gaming", whose collections of subreddits included "gaming", or whose registered subreddits were related to online video games. An average of one to three advertisements per week on Reddit was sent out.

The other data collection source was convenient samples from various gaming related events. I attended diverse gaming events such as *PlayCrafting* hosted at Microsoft office in New York City, and *PlayTest Thursday* hosted by New York University Game Center, to recruit online video game players. These gaming events are hosted to provide gamers with opportunities to test independent games among game developers and game major students at New York University, and take classes from design to programming. During these events, participants completed the survey online offsite.

In order to encourage survey responses, each participant was compensated with a $5 e-gift card via email if he/she was qualified for the study. Each participant could take the survey only once and the estimated duration for a subject to complete the survey was 20 minutes. From both sources, a total of 561 samples were used for the final analysis: 479 from online video gaming forums and 82 from offline gaming events. Only those who passed the following requirements were selected for the final sample: 1) those who passed three qualification questions in the survey, and 2) those over 18 years old.

In general, descriptive statistics were similar between the two data collection sources. As expected, the majority of the sample was male (87%), with only 71 females included (13%). About 64% of the participants were between 18 and 24 years old, followed by 22 % whose age was between 25 and 30 years old. About half of the sample (45%) had bachelors' degrees, followed by those who had completed high school/GED (26%). In terms of hours spent in week playing games, 37% of the respondents spent 11+ hours per week, followed by 19% (5-8 hours), 18% (8-11 hours), 17% (2-5 hours) and 8% (less than 2 hours). The majority of the respondents (38%) indicated that they played games for about 5 to 10 years, followed by 32% who indicated 10 to 15 years.

5-3. Measurement, Reliability, and Validity

For the purpose of measurement instrument, existing scales have been used as the basis for each construct to the extent possible. With the exception of customer participation in co-creation activities, the others were borrowed and adapted where necessary for the online video gaming context.

To capture the depth of consumer participation, it was measured by four survey questions: frequency of actual participation (1) with company, (2) with other consumers, and extent of engagement (1) with company, and (2) with other consumers. The same four survey questions were asked in eight different types of co-creation activities, namely four pre-launch (co-ideation, co-test, co-design, co-finance) and four post-launch (co-promotion, co-distribution, co-maintenance, co-price) to capture the breadth of consumer participation.

All scale items are provided in table 2. There are two constructs operationalized as second order constructs: 1) consumer participation in pre-launch co-creation activities and 2) consumer participation in post-launch co-creation activities. Pre-launch co-creation is determined by consumer participation in 1) co-ideation activities, 2) co-test activities, 3) co-design activities, and 4) co-finance activities. Post-launch co-creation is determined by consumer participation in 1) co-promotion activities, 2) co-distribution activities, 3) co-maintenance activities, and co-price activities.

To assess the measurement model, a second-order CFA was conducted. The results of the second-order CFA is provided in table 2. Given the complex nature of the measurement model with second-order constructs, the model provides a good model fit ($\chi^2 = 4011.171$ with 2469 df, CFI=.947, NNFI=.944, NFI=.874, IFI=.947, RMSEA=.033), indicating that the second-order CFA model fits the data sufficiently (Bentler 1995; Bollen 1989).

To assess convergent validity, I examined the significance of the loadings of items on their respective latent variables. The standardized CFA loadings in table 2 shows that all the items are positive, and significantly loaded to their designated factors at the .01 level, indicating an evidence of convergent validity (Anderson 1987). In addition, the standardized loadings of the four first-order factors of pre-launch co-creation and post-launch co-creation are also positive and statistically significant, showing convergent validity at the second-order factor level as well (Anderson 1987). To establish discriminant validity with the second-order constructs, the model fit of a second-order model was compared with another model where both second-order constructs are considered as first-order constructs (Bagozzi et al. 1991). The other model showed ($\chi^2 = 3626.313$ with 2384

df, CFI=.957, NNFI=.953, NFI=.886, IFI=.958, RMSEA=.031) a good model fit as well. Since there is no significant difference in fit indices between the two measurement model and the parsimonious nature of the second-order factor, the second-order factors for Pre-Launch Co-Creation and Post-Launch Co-Creation are preferred (Hull et al. 1991).

To assess discriminant validity, the average variances extracted (AVE) of the constructs were compared with the square of the correlation between all possible pairs of constructs (Fornell and Larcker 1981). Since the square of correlation between any pair of constructs were smaller than AVE of the constructs, discriminant validity is established. Table 3 shows descriptive statistics, AVE, reliabilities, and correlation matrix of all the constructs in the model.

Table 2. Results of the Second Order CFA

Item	Std. loading	t value
Knowledge Sharing		
1. The company provides sufficient illustration/information on the game.	0.757	-
2. The company makes it easy for me to provide my preferences.	0.809	19.343
3. The company is open to my ideas/suggestions on improving or developing the game.	0.765	18.174
4. Other users are open to my ideas/suggestions about customizing or improving the game.	0.832	19.914
5. Gaming platform helps me to gain gaming knowledge from other users.	0.747	17.711
Equity		
1. I share an equal role with other users in helping the company to improve the gaming platform experience.	0.674	-
2. I share a significant role with the company to improve the gaming platform experience.	0.769	14.995
3. The company appreciates my complementary role in the gaming development process.	0.761	14.893
4. Other users consider my role as important as theirs in the gaming platform experience.	0.723	14.334
B2C (Business to Consumer) Interaction		
1. It is easy for me to access the gaming experience when, where, and how I want it (e.g. social media, third party, gaming related events, etc.).	0.785	-
2. The company utilizes the input/ideas provided by the interactions among its game users.	0.799	19.109
3. The company is transparent about how user information it collects is handled and used.	0.734	17.458
4. The company and its users have active dialogue on how to add value to the new game development process.	0.715	16.894
Consumer to Consumer (C2C) Interaction		
1. I expect to communicate with other users on enhancing the gaming experience.	0.788	-
2. The users share with each other many options (e.g. third party, social media, gaming related events, etc.) to access the gaming related experience.	0.840	20.929
3. The company encourages active dialogue among the game users to add value to the gaming experience.	0.869	21.488

Table 2. Continued

Item	Std. loading	t value
Relationship		
1. I feel an attachment or a relationship with the game.	.787	-
2. I feel an attachment or a relationship with other game users.	.701	16.826
3. My relationships with other users help me to derive value from the gaming platform.	.749	18.185
4. I feel I have become a loyal user of the gaming platform.	.856	20.919
Personalization		
1. The company tries to serve my individual needs.	.827	-
2. Different users, depending on their taste, choice, or knowledge, can involve themselves differently in the gaming experience.	.682	16.794
3. My activities on the gaming platform create the benefit or value from the gaming experience.	.877	21.542
Experience		
1. The gaming platform provides a pleasant overall experience, beyond just the game itself.	.666	-
2. Based on my experience with the gaming platform, I feel: unhappy vs. happy.	.814	16.861
3. Based on my experience with the gaming platform, I feel: calm vs. excited.	.889	18.048
4. Based on my experience with the gaming platform, I feel: unfulfilled vs. fulfilled.	.754	15.815
5. Based on my experience with the gaming platform, I feel: guided vs. autonomous.	.782	16.308
6. Based on my experience with the gaming platform, I feel: underpowered vs. empowered.	.582	12.577
Satisfaction		
1. Overall, I am satisfied with the gaming platform.	.790	-
2. I am happy with the efforts the company makes to engage users like me.	.785	19.222
3. I am satisfied with my interaction with other users on the gaming platform.	.830	20.408

Table 2. Continued

Item	Std. loading	t value
Economic Motivation		
1. When I help the company on its various initiatives, I expect an appropriate financial incentive.	.884	-
2. When I help the company on its various initiatives, I expect direct monetary compensation.	.931	27.322
3. When I help the company on its various initiatives, I expect indirect monetary rewards (e.g. special offers).	.711	19.748
Social Motivation		
1. The interests and culture of the gaming forum appeal to me.	.624	-
2. I want to be recognized by other users on the gaming platform.	.774	12.175
3. I expect to get in touch with game company representatives.	.615	10.999
Psychological Motivation		
1. I enjoy keeping up with new ideas on the gaming platform.	.826	-
2. I enjoy experiencing new software/apps/games.	.646	11.713
3. I expect to improve my skills in understanding the game.	.524	10.206

Table 2. Continued

Item	Std. loading	t value
Consumer Participation in Co-Ideation Activities		
1. When given the opportunity, how often have you participated in any co-ideation activity for a game company <u>individually</u>?	.830	-
2. When given the opportunity, how often have you participated in any co-ideation activity for a game company collectively with <u>other users</u>?	.855	21.988
3. For co-ideation activity, to what extent have you engaged with <u>other users</u>?	.748	19.046
4. For co-ideation activity, to what extent have you engaged with <u>a game company</u>?	.661	16.3
Consumer Participation in Co-Test Activities		
1. When given the opportunity, how often have you participated in any co-test activity for a game company <u>individually</u>?	.823	-
2. When given the opportunity, how often have you participated in any co-test activity for a game company collectively with <u>other users</u>?	.865	23.359
3. For co-test activity, to what extent have you engaged with <u>other users</u>?	.804	21.499
4. For co-test activity, to what extent have you engaged with <u>a game company</u>?	.765	19.977
Consumer Participation in Co-Design Activities		
1. When given the opportunity, how often have you participated in any co-design activity for a game company <u>individually</u>?	.918	-
2. When given the opportunity, how often have you participated in any co-design activity for a game company collectively with <u>other users</u>?	.940	38.658
3. For co-design activity, to what extent have you engaged with <u>other users</u>?	.873	32.045
4. For co-design activity, to what extent have you engaged with <u>a game company</u>?	.836	28.9
Consumer Participation in Co-Finance Activities		
1. When given the opportunity, how often have you participated in any co-finance activity for a game company <u>individually</u>?	.895	-
2. When given the opportunity, how often have you participated in any co-finance activity for a game company collectively with <u>other users</u>?	.900	31.805
3. For co-finance activity, to what extent have you engaged with <u>other users</u>?	.879	29.991
4. For co-finance activity, to what extent have you engaged with <u>a game company</u>?	.855	28.045

Table 2. Continued

Item	Std. loading	t value
Consumer Participation in Co-Promotion Activities		
1. When given the opportunity, how often have you participated in any co-promotion activity for a game company individually?	.879	-
2. When given the opportunity, how often have you participated in any co- promotion activity for a game company collectively with other users?	.927	32.024
3. For co-promotion activity, to what extent have you engaged with other users?	.880	28.855
4. For co-promotion activity, to what extent have you engaged with a game company?	.798	24.168
Consumer Participation in Co-Distribution Activities		
1. When given the opportunity, how often have you participated in any co-distribution activity for a game company individually?	.936	-
2. When given the opportunity, how often have you participated in any co-distribution activity for a game company collectively with other users?	.953	45.215
3. For co-distribution activity, to what extent have you engaged with other users?	.912	38.479
4. For co-distribution activity, to what extent have you engaged with a game company?	.844	31.066
Consumer Participation in Co-Maintenance Activities		
1. When given the opportunity, how often have you participated in any co-maintenance activity for a game company individually?	.927	-
2. When given the opportunity, how often have you participated in any co-maintenance activity for a game company collectively with other users?	.946	42.125
3. For co-maintenance activity, to what extent have you engaged with other users?	.899	35.893
4. For co-maintenance activity, to what extent have you engaged with a game company?	.859	31.595
Consumer Participation in Co-Price Activities		
1. When given the opportunity, how often have you participated in any co-price activity for a game company individually (i.e. Name Your Own Model)?	.874	-
2. When given the opportunity, how often have you participated in any co-price activity for a game company collectively with other users (i.e. Auction)?	.922	31.714
3. For co-price activity, to what extent have you engaged with other users?	.889	29.653
4. For co-price activity, to what extent have you engaged with a game company?	.834	26.199

Table 2. Continued

Item	Std. loading	t value
Second order: Consumer Participation in Pre-Launch Co-Creation Activities		
Consumer Participation in Co-Ideation Activities	.612	-
Consumer Participation in Co-Test Activities	.546	8.901
Consumer Participation in Co-Design Activities	.839	11.343
Consumer Participation in Co-Finance Activities	.638	10.113
Second order: Consumer Participation in Post-Launch Co-Creation Activities		
Consumer Participation in Co-Promotion Activities	.776	-
Consumer Participation in Co-Distribution Activities	.877	17.664
Consumer Participation in Co-Maintenance Activities	.795	16.296
Consumer Participation in Co-Price Activities	.800	15.725
Model fit statistics		
Chi-square statistics	4011.171	
Degrees of freedom	2469	
Comparative fit index (CFI)	.947	
Bollen's incremental fit index (IFI)	.947	
Bentler-Bonett nonnormed fit index (NNFI)	.944	
Bentler-Bonett normed fit index (NFI)	.874	
Root mean square error of approximation (RMSEA)	.033	

Notes:
- All items were measured using seven-point scales anchored by 1= "strongly disagree" and 7= "strongly agree" except for consumer participation in co-creation activities.
- The frequency of consumer participation questions were measured using seven-point scales anchored by 1= "never", 2= "rarely", 3= "occasionally", 4= "sometimes", 5= "frequently", 6= "usually", and 7= "every time".
- The extent of engagement of consumer participation questions were measured using seven-point scales anchored by 1= "not at all", 2= "very small extent", 3= "small extent", 4= "moderate extent", 5= "fairly large extent", 6= "large extent", and 7= "very large extent".

Table 3. Descriptive Statistics and Correlations

						Correlation Coefficients							
	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Equity	1.000												
2 Knowledge Sharing	**.481**	1.000											
3 Economic Motivation	.136	.092	1.000										
4 Social Motivation	**.516**	**.405**	**.137**	1.000									
5 Psychological Motivation	**.364**	**.343**	.117	**.464**	1.000								
6 C2C Interaction	**.415**	**.277**	**.296**	**.424**	**.403**	1.000							
7 B2C Interaction	**.373**	**.336**	**.539**	**.316**	**.295**	**.637**	1.000						
8 Personalization	**.280**	**.351**	.156	**.357**	**.326**	**.301**	**.286**	1.000					
9 Satisfaction	**.423**	**.573**	.151	**.373**	**.321**	**.373**	**.378**	**.653**	1.000				
10 Relationship	**.336**	**.340**	.083	**.529**	**.385**	**.347**	**.263**	**.522**	**.597**	1.000			
11 Experience	**.249**	**.375**	.083	**.306**	**.295**	**.252**	**.227**	**.584**	**.710**	**.585**	1.000		
12 Consumer Participation in Pre-Launch Co-Creation	**.342**	**.174**	**.155**	**.296**	**.185**	**.390**	**.394**	**.243**	**.310**	**.264**	**.219**	1.000	
13 Consumer Participation in Post-Launch Co-Creation	**.375**	**.227**	.092	**.318**	**.244**	**.378**	**.211**	**.202**	**.327**	**.301**	**.291**	**.635**	1.000
Mean	4.198	5.277	4.645	4.770	5.973	5.096	4.940	5.232	5.346	5.179	5.259	3.399	3.240
Standard deviation	1.295	1.187	1.307	1.362	.955	1.382	1.129	1.241	1.353	1.305	1.149	1.151	1.535
Composite reliability	.822	.888	.883	.713	.710	.872	.844	.840	.844	.857	.886	.758	.886
Average Variance Extracted	.537	.613	.718	.456	.458	.694	.576	.639	.643	.601	.569	.446	.661

Note: All bold correlations are significant at .05 significance level.

CHAPTER 6: RESULTS OF THE STRUCTURAL PATH MODEL

The flow of co-created values from company-led efforts in co-creation (i.e. *co-production*) to consumers' *value-in-use* were assessed using a full model specification. Figure 5 shows standardized path coefficient and fit statistics of the full model.

6-1. Results

The overall fit statistics of the full model indicate a good model fit ($\chi^2 = 4291.194$ with 2508 *df*, CFI= .939, NNFI= .936, NFI= .865, IFI= .939, RMSEA= .036). The results of hypothesized testing are provided in table 4 and figure 5.

Knowledge sharing had a significant positive effect on B2C interaction ($t = 2.975$, $p < .001$) but not on C2C interaction ($t = -1.435$, $p = .151$). Thus, H_{1a} but not H_{1b} was supported. However, I found support for both H_{2a} and H_{2b} as equity had positive significant effect on both B2C interaction ($t = 3.012$, $p < .01$) and C2C Interaction ($t = 2.430$, $p < .05$).

In terms of hypothesized relationships between consumer motivations and interaction, B2C interaction was only positively impacted by economic motivation ($t = 10.872$, $p < .01$) but not by social motivation ($t = .966$, $p = .334$) and psychological motivation ($t = 1.818$, $p = .069$). Therefore, H_3 was supported but H_{4a} and H_{5a} were rejected. Conversely, C2C interaction was positively affected by social motivation ($t = 2.693$, $p < .01$) and psychological motivation ($t = 3.140$, $p < .01$). Thus, H_{4b} and H_{5b} were supported.

While B2C interaction had a positive significant effect on consumer participation in pre-launch co-creation ($t = 3.576$, $p < .001$) supporting H_{6a}, it had no effect on consumer participation in post-launch co-creation ($t = -.764$, $p = .445$) rejecting H_{6b}. C2C interaction positively influenced consumer participation in both pre-launch co-creation ($t = 3.929$, $p < .001$) and post-launch co-creation ($t = 6.373$, $p < .001$), supporting H_{7a} and H_{7b}. H_8, which predicted that B2C interaction would impact heighted level of C2C interaction, was supported ($t = 10.117$, $p < .001$). Furthermore, mediation analysis was conducted underlying the proposed model to examine the mediation effect of C2C interaction between B2C interaction and consumer participation in pre-launch and post-launch co-creation activities. While C2C interaction fully mediates the effect of B2C interaction on post-launch consumer participation, it partially mediates the relationship between B2C interaction on pre-launch consumer participation.

While consumer participation in pre-launch co-creation resulted in no impact on experience ($t = 1.457$, $p = .145$), consumer participation in post-launch co-creation positively influenced experience ($t = 3.410$, $p < .001$). Thus, H_{9a} was rejected but H_{9b} was supported. Consumer participation in both pre-launch co-creation ($t = 2.357$, $p < .05$) and post-launch co-creation ($t = 2.988$, $p < .01$) positively affected relationship, supporting both H_{10a} and H_{10b}. Personalization was positively influenced by consumer participation in pre-launch co-creation ($t = 3.297$, $p < .001$) but not by consumer participation in post-launch co-creation ($t = .756$, $p = .450$). Hence, H_{11a} was supported but H_{11b} was rejected. The effects of consumer participation in both pre-launch co-creation ($t = 3.349$, $p < .001$) and post-launch co-creation ($t = 2.527$, $p < .05$) on satisfaction were positive and significant, therefore supporting both H_{12a} and H_{12b}.

Table 4. Results of Hypothesis Testing

Proposed Relationship	Std. Estimates	t value	Conclusion
H_{1a} : KS → B2C	.148 **	2.975	Supported
H_{1b} : KS → C2C	-.068	-1.435	Not Supported
H_{2a} : EQ → B2C	.173 **	3.012	Supported
H_{2b} : EQ → C2C	.133 *	2.430	Supported
H_3 : EM → B2C	.476 ***	10.872	Supported
H_{4a} : SM → B2C	.059	.966	Not Supported
H_{4b} : SM → C2C	.160 **	2.693	Supported
H_{5a} : PM → B2C	.098	1.818	Not Supported
H_{5b} : PM → C2C	.163 **	3.140	Supported
H_{6a} : B2C → Pre-Launch	.249 ***	3.576	Supported
H_{6b} : B2C → Post-Launch	-.049	-.764	Not Supported
H_{7a} : C2C → Pre-Launch	.273 ***	3.929	Supported
H_{7b} : C2C → Post-Launch	.431 ***	6.373	Supported
H_8 : B2C → C2C	.506 ***	10.117	Supported
H_{9a} : Pre-Launch → EXP	.101	1.457	Not Supported
H_{9b} : Post-Launch → EXP	.229 ***	3.410	Supported
H_{10a} : Pre-Launch → REL	.168 *	2.357	Supported
H_{10b} : Post-Launch → REL	.202 **	2.988	Supported
H_{11a} : Pre-Launch → PER	.244 ***	3.297	Supported
H_{11b} : Post-Launch → PER	.052	.756	Not Supported
H_{12a} : Pre-Launch → SAT	.244 ***	3.349	Supported
H_{12b} : Post-Launch → SAT	.171 *	2.527	Supported

p < .05, ** *p* < .01, *** *p* < .001

Notes:

KS (Knowledge Sharing); EQ (Equity); B2C (B2C Interaction); C2C (C2C Interaction); EM (Economic Motivation); SM (Social Motivation); PM (Psychological Motivation); Pre-Launch (Consumer Participation in Pre-Launch Co-Creation); Post-Launch (Consumer Participation in Post-Launch Co-Creation) EXP (Experience); REL (Relationship); PER (Personalization); SAT (Satisfaction)

Figure 5. Full Model Estimates – Standardized Parameters
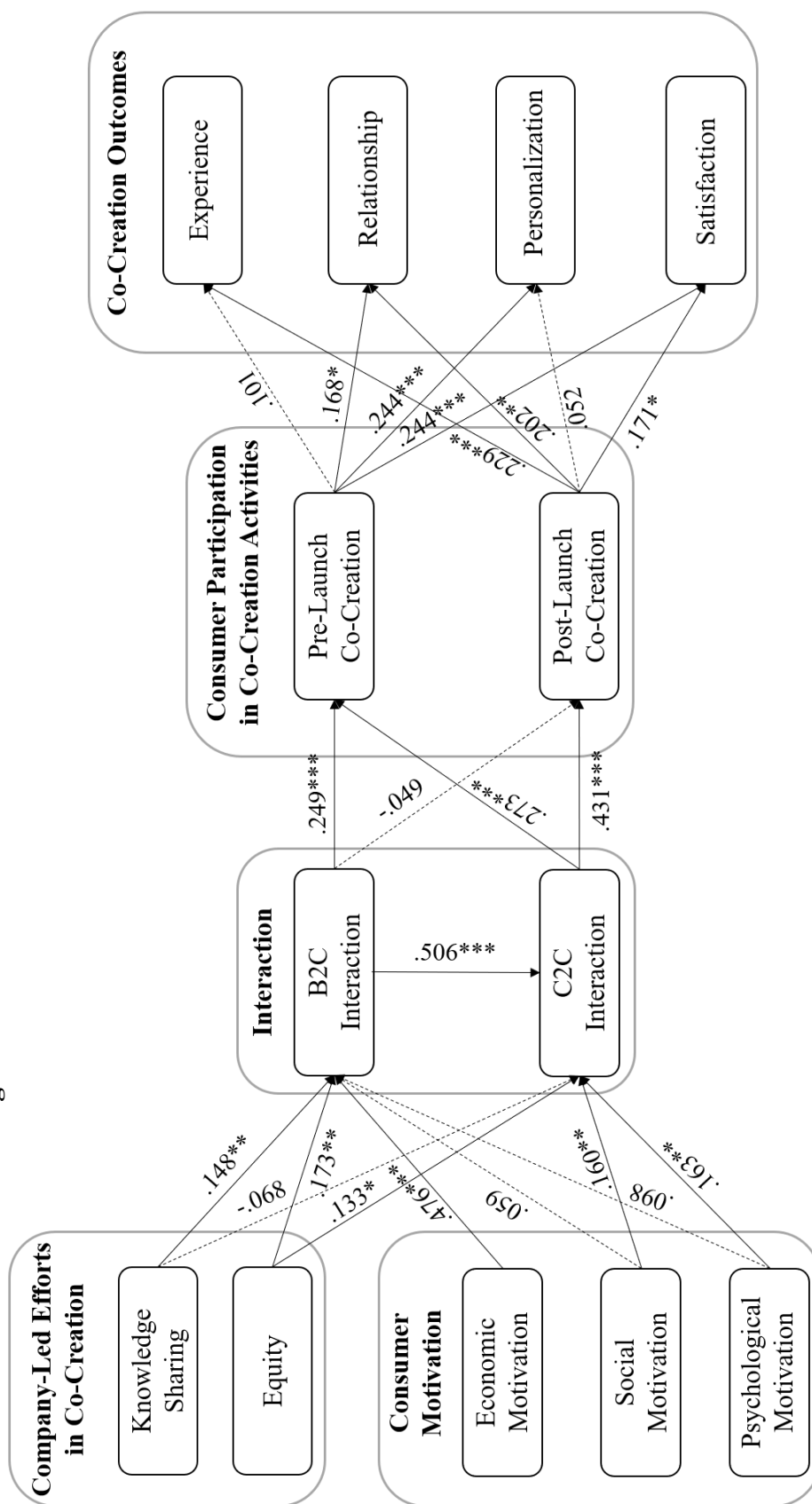
Notes: Solid lines indicate statistically significant effects, while dotted lines indicate statistically insignificant effects.
* $p < .05$, ** $p < .01$, *** $p < .001$

6-2. Results: Consumer Segmentation

To test the H_{13}, consumers were categorized into lead-users and regular users, using median split based on three survey items pertaining to lead user characteristics. A total of 298 were grouped as lead-users, while 263 as regular users. T-test was conducted to compare whether there is any significant differences between two groups for consumer participation in pre- and post-launch co-creation activities. A composite score of pre-launch consumer participation co-creation activities (average of co-ideation, co-test, co-design, and co-finance), and a composite score of post-launch consumer participation co-creation activities (average of co-promotion, co-distribution, co-maintenance, and co-price) were compared for difference in means between the two groups. Table 5 shows t-test results. The results show that there are significant differences in consumer participation in both pre- and post-launch co-creation activities between the two groups. Specifically, lead users significantly participate more in pre-launch co-creation ($t = $ -4.193, $p < .001$) as well as post-launch co-creation ($t = $ -6.754, $p < .001$) than regular users, supporting H_{13}.

Table 5. T-Test Results

	Regular Consumers	Lead Users	Difference t-Statistics (Regular Consumers – Lead Users)	Std. Error Difference
Consumer Participation in *Pre-Launch* Co-Creation	3.185	3.587	-4.193***	0.096
Consumer Participation in *Post-Launch* Co-Creation	2.792	3.636	-6.754***	0.125

*$p < .05$, **$p < .01$, ***$p < .001$

CHAPTER 7: DISCUSSIONS

This research empirically demonstrates how co-created value is processed along the value chain: from company-led efforts in value creation (i.e. *co-production*) to consumer co-created value (i.e. *value-in-use*) through diverse types of co-creation context, conceptualized as pre-launch and post-launch co-creation activities.

Extant studies focus on interaction as a useful communicative approach in co-creation context as it brings opportunities to generate knowledge, and co-created solutions, further leading to experience arises (Ballantyne and Varey 2006; Prahalad and Ramaswamy 2004a; 2004b; 2004c; Ramaswamy 2011). Yet, the current co-creation literature on interaction shows a piece meal approach, either largely skewed on B2C interaction or C2C interaction in another body of literature such as word-of-mouth. This study extends the literature by incorporating dual forms of interaction, namely B2C and C2C interaction, in co-creation context. Results indicate that value co-creation not only refers to *co-production* through the B2C interaction but also through C2C interaction. These two types of interactions, while involving different entities, have complementary roles and react differently with their enablers, such as knowledge sharing and equity, as well as with their consequences, such as consumer participation in pre-launch and post-launch co-creation.

7-1. How Does Company-Led Effort in Co-Creation Affect Interaction?

As for the drivers of interaction, results show that higher level of equity (i.e. shared control) can enhance greater level of B2C and C2C interaction. Thus, companies need to

nourish the environment where consumers feel higher degree of shared control, leading them to feel more empowered and interact more with company and other fellow consumers. When it comes to knowledge sharing, it only enhances B2C interaction but not C2C interaction. In general, companies have more information about their products than their consumers. Although sharing knowledge can happen among consumers through a variety of sources such as online forums or brand communities, this finding implies that sharing knowledge is still more relevant to B2C interaction. In an environment of higher knowledge sharing, consumers are better able to interact with the company. When it comes to knowledge sharing, particular usage experiences of any product or service may change the relationship; yet in terms of product or service such sharing still facilitates mostly interactions between business and consumers.

7-2. How Does Consumer Motivation Affect Interaction?

This study contributes to the literature by examining the role of consumer motivations on interactions. Although consumer motivations in co-creation is well researched, the direct link between consumer motivations incorporating both extrinsic (i.e. economic motivation) and intrinsic (i.e. social and psychological motivation) on dual forms of interactions are not examined in the literature. This study extends the findings of Roberts et al. (2014) who find that consumer motivations vary across different types of co-creation activities. Not only based on types of co-creation activity, consumer motivations varies depending on different types of interactions as well. More specifically, only economic motivation drives consumers to interaction with company, but social and psychological motivations do not have any impact on B2C interaction. When it comes to C2C interaction,

the results indicate opposite effect. Consumers with high level of social or psychological motivation tend to interact more with other consumers. These findings confirms a major body of literature on C2C interaction in online word-of-mouth that consumers motivated by social and self (i.e. psychological) motivations tend to interact more with other consumers (Alexandrov et al. 2013). This in turn indicates the nature of interaction with consumers are mostly driven by intrinsic motivations as typically such C2C interaction does not directly bring any monetary values[8]. When consumer motivations can be understood from expected benefits, these findings also align with three levels of relationship bonding-financial, social, and structural (Berry 1995). Acknowledging the different consumer motivations on interactions, companies can manage B2C interaction oriented to financial benefits while encouraging C2C interaction focused on social and psychological motivations.

7-3. How Does Interaction Affect Consumer Participation in Co-Creation Activities?

When it comes to the consequences of the two types of interactions, results indicate interesting findings. While C2C interaction enhances consumer participation in co-creation activities, regardless of the types (both pre-and post-launch), B2C interaction only enhances consumer participation in pre-launch co-creation activities. This means that C2C interaction fully mediates the relationship between B2C interaction and consumer participation in pre-launch co-creation activities. Given the fact that pre- and post-launch distinction is more prevalent for industries where diverse types of new products are

---

[8] There are some exceptions exist. For instance, consumers may be likely to refer other consumers to become company-initiated rewards programs in order to get some monetary benefits.

introduced at fast pace (e.g. movie, video gamers, books, music or new technological devices) (Burmester et al. 2015), the distinction of consumer participation between pre-launch and post-launch co-creation activities is more appropriate for the context of this study. Pre-launch is a stage where any product or service is introduced in the market place. This is the stage where company has greater information than any other consumers. Therefore, the higher B2C interaction may be expected for higher level of consumer participation in pre-launch co-creation activities. This finding supports the previous literature on B2C interaction on consumer participation activities (Prahalad and Ramaswamy 2004a; 2002). When it comes to post-launch co-creation activities, this is the stage where consumers possibly get more reliable information about products or services since they were already introduced to the market place. Therefore, B2C interaction may not be a necessary condition for consumers to participate in post-launch co-creation activities. Yet, there are existing studies supporting the influence of B2C interaction on C2C interaction (Adjei et al. 2010). It has become a prolific digital marketing strategy for companies to identify seeding consumers who has great influence power over other consumers, which can drive profit from positive word of mouth (Kumar et al. 2013). This finding confirms such B2C interaction on C2C interaction.

7-4. How Does Consumer Participation in Co-Creation Activities Affect *Value-In-Use*?

In addition, this study identifies impactful drivers on consumers' *value-in-use*. Consumer participation in pre-launch and post-launch can improve consumers' perceived level of satisfaction, and relationship. Yet, consumer participation in post-launch co-creation activities can only enhance positive consumer experience while perceived level of

personalization is heightened by post-launch co-creation participation. This is a very interesting finding as previous studies find that higher level of consumer participation can bring positive experience as they feel more empowered through participation. Yet, what this finding suggests is that the impact of consumer participation on experience may vary depending on pre- or post-launch stage of the co-creation activities. One way to explain such findings is based on consumers frequently attributing their participation in pre-launch, primarily to the benefit of company while post-launch participation is seen as benefiting self and other consumers.

CHAPTER 8: IMPLICATIONS

8-1. Academic Implications

The academic implications of this study to the marketing literature are threefold. First, this study incorporates two major streams of co-creation literature, namely technology and innovation management perspective and service sciences perspective. Specifically, this study incorporates two theoretical pillars of consumer value co-creation, *co-production* and *value-in-use*, and all sub-dimensions of each pillar into the proposed model. The primary focus of technology and innovation management perspective is *co-production* while that of service science is *value-in-use*. In this way, this study speaks the same language, value co-creation, which can be accepted to both streams of literature. In return this study address innovation-related aspects in service science perspective in our conceptualization, which can help to elevate the innovation as a central theme of underlying S-D logic (Wilden et al. 2017). This study also stresses that value co-creation is not monolithic, but has a various shades such as technology and innovation management, service science, pre-launch and post-launch co-creation. Second, this study extends the spectrums of value co-creation contexts by categorizing pre-launch and post-launch co-creation activities. While the current literature is largely concentrated on certain contexts, particularly in pre-launch new product development, this study extends the breadth and depth of the co-creation activities. To date, this is the first empirical study incorporating the entire spectrums of value co-creation activities with fully completing all the theoretical dimensions of value co-creation activities. Lastly, this study fully incorporates the dual forms of interaction, B2C and C2C interactions. Value co-creation between companies and

consumers through interaction is the fundamental structural of S-D logic since its formative years of S-D logic. As value co-creation goes beyond the interactions between company and consumers but with other stakeholders such as consumer-to-consumer interaction, this study contributes the literature by incorporating dual forms of interactions.

8-2. Managerial Implications

This study provides managerial implications in shaping interaction strategies. How do companies need to manage interactions which can lead to successful consumer experience through co-creation? Interaction, as an enabler of enhancing consumer participation in co-creation, has been one of the important topics both for academics and practitioners. Among various ways examined in the previous literature on interacting with consumers, this study provides another insight that consumer participation in co-creation activities varies depending on the product launch status. The direct interaction with consumer has an impact on pre-launch stage to enhance co-creation participation. If marketers want consumer participation in post-launch stage such as word-of-mouth or blogging etc., they can initiate interactions with consumers who have greater influence on others such as brand ambassador. My dissertation helps companies to conceptualize co-creation in terms of launch stages and tailor strategies for each type of co-creation accordingly. Since the antecedents and consequences are different for each type of co-creation activities, companies need to highlight attenuate the significant predictors while mitigating insignificant ones.

CHAPTER 9: LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Although this study contributes to the marketing literature, it has some limitations. First, data collection was conducted in one industry, online video gaming, thus it may not be generalizable across other industries. Although online video gaming industry was a novel context to examine co-creation activities due to consumer participatory cultural practice, someone might argue that this industry is comprised of more involved consumers. Further research can be conducted to re-test the model in another industry. Second, this study examines how co-created value is processed from only one side, consumer perspective. Another perspective such as company in reviewing these relationships can provide richer understanding in co-created values, which can be left for future research. Other stakeholders beyond company and consumers would also be a fruitful area for future research. Future research can also be based on actual co-creation behavior other than attitudinal measures.

REFERENCES

Agrawal, Amit Kumar and Zillur Rahman (2015), "Roles and Resource Contributions of Customers in Value Co-Creation," *International Strategic Management Review*, 3 (1-2), 144-60.

Adjei, Mavis T., Stephanie M. Noble, and Charles H. Noble (2010), "The Influence of C2C Communications in Online Brand Communities on Customer Purchase Behavior," *Journal of the Academy of Marketing Science*, 38 (5), 634-53.

Albinsson, Pia A., B. Yasanthi Perera, and Pookie Truly Sautter (2016), "DART Scale Development: Diagnosing a Firm's Readiness for Strategic Value Co-Creation," *Journal of Marketing Theory and Practice*, 24 (1), 42-58.

Alexandrov, Aliosha, Bryan Lilly, and Emin Babakus (2013), "The Effects of Social- And Self-Motives on the Intentions to Share Positive and Negative Word of Mouth," *Journal of the Academy of Marketing Science*, 41(5), 531-46.

Alves, Helena, Cristina Fernandes, and Mário Raposo (2016), "Value Co-Creation: Concept and Contexts of Application and Study," *Journal of Business Research*, 69 (5), 1626-33.

Anderson, James C. (1987), "An Approach for Confirmatory Measurement and Structural Equation Modeling of Organizational Properties," *Management Science*, 33 (4), 525-41.

Anderson, Eugene W., Claes Fornell, and Donald R. Lehmann (1994), "Customer Satisfaction, Market Share, and Profitability: Findings from Sweden," *Journal of Marketing*, 58 (3), 53-66.

Anderson, Wilton Thomas, Goutam N Challagalla, and Richard G McFarland (1999), "Anatomy of Exchange," *Journal of Marketing Theory and Practice*, 7 (4), 8-19.

Aoyama, Yuko and Hiro Izushi (2008), "User-Led Innovation and the Video Game Industry," IRP Conference, London.

Bagozzi, Richard P., Youjae Yi, and Lynn W. Phillips (1991), "Assessing Construct Validity in Organizational ResearchL," *Administrative Science Quarterly*, 36 (3), 421-458.

Ballantyne, David, Pennie Frow, Richard J. Varey, and Adrian Payne (2011), "Value Propositions as Communication Practice: Taking a Wider View," *Industrial Marketing Management*, 40 (2), 202-10.

Ballantyne, David and Richard J. Varey (2006), "Creating Value-in-Use Through Marketing Interaction: The Exchange Logic of Relating, Communicating and Knowing," *Marketing Theory*, 6 (3), 335-48.

Bandura, Albert (1997), Self-Efficacy: The Exercise of Control: Macmillan.

Bentler, Peter M. (2007), "On Tests and Indices for Evaluating Structural Models," *Personality and Individual Differences*, 42 (5), 825-29.

Berger, Peter L. and Thomas Luckmann (1996), The Social Construction of Reality: A Treatise in the Sociology of Knowledge: Double and Company.

Berry, Leonard L. (1995), "Relationship Marketing of Services-Growing Interest, Emerging Perspectives." *Journal of the Academy of Marketing Science*, 23 (4), 236-45.

Bertini, Marco and John T. Gourville (2012), "Pricing to Create Shared Value," *Harvard Business Review*, 90 (6).

Bitner, Mary Jo, Stephen W. Brown, and Matthew L. Meuter (2000), "Technology Infusion in Service Encounters," *Journal of the Academy of Marketing Science*, 28 (1), 138-49.

Bollen, Kenneth A. (1989), "A New Incremental Fit Index for General Structural Equation ModelsL," *Sociological Methods & Research*, 17 (3), 303-16.

Brodie, Roderick J., Ana Ilic, Biljana Juric, and Linda Hollebeek (2013), "Consumer Engagement in a Virtual Brand Community: An Exploratory Analysis," *Journal of Business Research*, 66 (1), 105-14.

Burmester, Alexa B., Jan U. Becker, Harald J. van Heerde, and Michel Clement (2015), "The Impact of Pre- And Post-Launch Publicity and Advertising on New Product Sales," *International Journal of Research in Marketing*, 32 (4), 408-17.

Carbonell, Pilar, Ana I. Rodríguez Escudero, and Devashish Pujari (2009), "Customer Involvement in New Service Development: An Examination of Antecedents and Outcomes," *Journal of Product Innovation Management*, 26 (5), 536-50.

Chandler, Jennifer D. and Stephen L. Vargo (2011), "Contextualization and Value-in-Context: How Context Frames Exchange," *Marketing Theory*, 11 (1), 35-49.

Chang, Woojung and Steven A. Taylor (2016), "The Effectiveness of Customer Participation in New Product Development: A Meta-Analysis," *Journal of Marketing*, 80 (1), 47-64.

Claffey, Ethel, and Mairead Brady (2017), "Examining Consumers' Motivations to Engage in Firm-Hosted Virtual Communities," *Psychology & Marketing*, 34 (4), 356-75.

Crawford, Charles Merle and C. Anthony Di Benedetto (2008), New Products Management: McGraw-Hill Education.

Deci, Edward L. and Richard M. Ryan (2002), Handbook of Self-Determination Research: University Rochester Press.

Edvardsson, Bo, Anders Gustafsson, and Inger Roos (2005), "Service Portraits in Service Research: A Critical Review," *International Journal of Service Industry Management*, 16 (1), 107-21.

Edvardsson, Bo, Bard Tronvoll, and Thorsten Gruber (2011), "Expanding Understanding of Service Exchange and Value Co-Creation: A Social Construction Approach," *Journal of the Academy of Marketing Science*, 39 (2), 327-39.

Etgar, Michael (2008), "A Descriptive Model of the Consumer Co-Production Process," *Journal of the Academy of Marketing Science*, 36 (1), 97-108.

Fang, Eric (2008), "Customer Participation and the Trade-Off Between New Product Innovativeness and Speed to Market," *Journal of Marketing*, 72 (4), 90-104.

Fang, Eric, Robert W. Palmatier, and Kenneth R. Evans (2008), "Influence of Customer Participation on Creating and Sharing of New Product Value," *Journal of the Academy of Marketing Science*, 36 (3), 322-36.

Feick, Lawrence and Linda Price (1987), "The Market Maven: A Diffuser of Marketplace Information," *Journal of Marketing*, 51 (1), 83-97.

Fernandes, Teresa and Pedro Remelhe (2015), "How to Engage Customers in Co-Creation: Customers' Motivations for Collaborative Innovation," *Journal of Strategic Marketing*, 24 (3-4), 311-26.

Fisher, Dan and Scott Smith (2011), "Cocreation is Chaotic: What It Means for Marketing When No One Has Control," *Marketing Theory*, 11 (3), 325-50.

Franke, Nikolaus, Eric Von Hippel, and Martin Schreier (2006), "Finding Commercially Attractive User Innovations: A Test of Lead User Theory," *Journal of Product Innovation Management*, 23 (4), 301-15.

Fornell, Claes, and David F. Larcker (1981), "Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics," *Journal of Marketing Research*, 18 (3), 382-88.

Frey, Karsten, Christian Lüthje, and Simon Haag (2011), "Whom Should Firms Attract to Open Innovation Platforms? The Role of Knowledge Diversity and Motivation," *Long Range Planning*, 44 (5-6), 397-420.

Frow, Pennie, Suvi Nenonen, Adrian Payne, and Kaj Storbacka (2015), "Managing Co-creation Design: A Strategic Approach to Innovation," *British Journal of Management*, 26 (3), 463-83.

Füller, Johann, Kurt Matzler, and Melanie Hoppe (2008), "Brand Community Members as a Source of Innovation," *Journal of Product Innovation Management*, 25 (6), 608-19.

Füller, Johann, Hans Mühlbacher, Kurt Matzler, and Gregor Jawecki (2009), "Consumer Empowerment Through Internet-Based Co-Creation," *Journal of Management Information Systems*, 26 (3), 71-102.

Galvagno, Marco and Daniele Dalli (2014), "Theory of Value Co-Creation: A Systematic Literature Review," *Managing Service Quality: An International Journal*, 24 (6), 643-83.

Gentile, Chiara, Nicola Spiller, and Giuliano Noci (2007), "How to Sustain the Customer Experience: An Overview of Experience Components that Co-Create Value with the Customer," *European Management Journal*, 25 (5), 395-410.

Green, Joshua and Henry Jenkins (2009), "The Moral Economy of Web 2.0: Audience Research and Convergence Culture," *Media Industries: History, Theory, and Method*, 213-25.

Grissemann, Ursula S. and Nicola E. Stokburger-Sauer (2012), "Customer Co-Creation of Travel Services: The Role of Company Support and Customer Satisfaction with the Co-Creation Performance," *Tourism Management*, 33 (6), 1483-92.

Gronroos, Christian (1990), "Relationship Approach to Marketing in Service Contexts: The Marketing and Organizational Behavior Interface," *Journal of Business Research*, 20 (1), 3-11.

Grönroos, Christian (2006), "Adopting a Service Logic for Marketing," *Marketing Theory*, 6 (3), 317-33.

---- (2011), "Value Co-Creation in Service Logic: A Critical Analysis," *Marketing Theory*, 11 (3), 279-301.

Grönroos, Christian and Päivi Voima (2013), "Critical Service Logic: Making Sense of Value Creation and Co-Creation," *Journal of the Academy of Marketing Science*, 41 (2), 133-50.

Grover, Varun and Rajiv Kohli (2012), "Cocreating IT Value: New Capabilities and Metrics for Multifirm Environments," *MIS Quarterly*, 36 (1), 225-32.

Heinonen, Kristina and Tore Strandvik (2015), "Customer-Dominant Logic: Foundations and Implications," *Journal of Services Marketing*, 29 (6/7), 472-84.

Heinonen, Kristina, Tore Strandvik, and Päivi Voima (2013), "Customer Dominant Value Formation in Service," *European Business Review*, 25 (2), 104-23.

Hennig-Thurau, Thorsten, Kevin P. Gwinner, Gianfranco Walsh, and Dwayne D. Gremler (2004), "Electronic Word-of-Mouth Via Consumer-Opinion Platforms: What Motivates Consumers to Articulate Themselves on the Internet?," *Journal of Interactive Marketing*, 18 (1), 38-52.

Hienerth, Christoph (2006), "The Commercialization of User Innovations: The Development of the Rodeo Kayak Industry," *R&D Management*, 36 (3), 273-94.

Hoffman, Donna L., Praveen K. Kopalle, and Thomas P. Novak (2010), "The "Right" Consumers for Better Concepts: Identifying Consumers High in Emergent Nature to Develop New Product Concepts," *Journal of Marketing Research*, 47 (5), 854-65.

Hoffman, Donna L. and Thomas P. Novak (1996), "Marketing in Hypermedia Computer-Mediated Environments: Conceptual Foundations," *Journal of Marketing*, 60 (3), 50-68.

Houston, Franklin S., Jule B. Gassenheimer, and James M. Maskulka (1992), Marketing Exchange Transactions and Relationships: Quorum Books.

Hoyer, Wayne D., Rajesh Chandy, Matilda Dorotic, Manfred Krafft and Siddharth S. Singh (2010), "Consumer Cocreation in New Product Development," *Journal of Service Research*, 13 (3), 283-96.

Hull, Jay G., Judith C. Tedlie and Daniel A. Lehn (1995), "Modeling the Relation of Personality Variables to Symptom Complaints: The Unique Role of Negative Affectivity," In R. H. Hoyle, ed. *Structural Equation Modeling: Concepts, Issues, and Applications*. Thousand Oaks, CA, US: Sage Publications, Inc.

Jaworski, Bernie and Ajay K. Kohli (2006), "Co-Creating the Voice of the Customer," in *The Service Dominant Logic of Marketing: Dialog, Debate and Directions*, Robert F. Lusch and Stephen L. Vargo, eds. Armonk, NY: M.E. Sharpe.

Kratzer, Jan and Christopher Lettl (2009), "Distinctive Roles of Lead Users and Opinion Leaders in the Social Networks of Schoolchildren," *Journal of Consumer Research*, 36 (4), 646-59.

Kristensson, Per, Anders Gustafsson, and Trevor Archer (2004), "Harnessing the Creative Potential among Users," *Journal of Product Innovation Management*, 21 (1), 4-14.

Kumar, V., Vikram Bhaskaran, Rohan Mirchandani, and Milap Shah (2013), "Practice Prize Winner—Creating a Measurable Social Media Marketing Strategy: Increasing the Value and ROI of Intangibles and Tangibles for Hokey Pokey," *Marketing Science*, 32 (2), 194-212.

Leavy, Brian and Deependra Moitra (2006), "The Practice of Co-Creating Unique Value with Customers: An Interview with C.K. Prahalad," *Strategy & Leadership*, 34 (2), 4-9.

Libai, Barak, Ruth Bolton, Marnix S. Bügel, Ko De Ruyter, Oliver Götz, Hans Risselada, and Andrew T. Stephen (2010), "Customer-to-Customer Interactions: Broadening the Scope of Word of Mouth Research," *Journal of Service Research*, 13 (3), 267-82.

Lusch, Robert F. and Stephen L. Vargo (2006a), The Service-Dominant Logic of Marketing: Dialog, Debate, and Directions. Armonk, NY: M.E. Sharpe.

---- (2006b), "Service-Dominant Logic: Reactions, Reflections and Refinements," *Marketing Theory*, 6 (3), 281-88.

Melton, Horace and Michael D. Hartline (2015), "Customer and Employee Co-Creation of Radical Service Innovations," *Journal of Services Marketing*, 29 (2), 112-23.

Metz, Rachel (2016), "How Pebble Is Killing It on Kickstarter," *MIT Technology Review*. Millán, Carmen Llinares, Dolores Garzon, and Susana Navarro (2016), "C2C Interactions Creating Value in the Route of Santiago," *Journal of Business Research*, 69 (11), 5448-55.

Mills, Peter K., Richard B. Chase, and Newton Margulies (1983), "Motivating the Client/Employee System as a Service Production Strategy," *Academy of Management Review*, 8 (2), 301-10.

Moore, Geoffrey (1991), Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers. New York, NY: Harper Business Essentials.

Morrison, Pamela D., John H. Roberts, and Eric Von Hippel (2000), "Determinants of User Innovation and Innovation Sharing in a Local Market," *Management Science*, 46 (12), 1513-27.

Nakatsu, Robbie T., Elissa B. Grossman, and Charalambos L. Iacovou (2014), "A Taxonomy of Crowdsourcing Based on Task Complexity," *Journal of Information Science*, 40 (6), 823-34.

Nambisan, Satish and Robert A. Baron (2007), "Interactions in Virtual Customer Environments: Implications for Product Support and Customer Relationship Management," *Journal of Interactive Marketing*, 21 (2), 42-62.

---- (2009), "Virtual Customer Environments: Testing a Model of Voluntary Participation in Value Co-creation Activities," *Journal of Product Innovation Management*, 26 (4), 388-406.

Normann, Richard (2001), Reframing Business: When the Map Changes the Landscape: John Wiley & Sons.

O'Cass, Aron and Liem Viet Ngo (2012), "Creating Superior Cstomer Value for B2B Firms Through Supplier Firm Capabilities," *Industrial Marketing Management*, 41 (1), 125-35.

OHern, Matthew S and Aric Rindfleisch (2010), "Customer Co-Creation: Typology and Research Agenda," in *Review of Marketing Research*: Emerald Group Publishing Limited.

Ostrom, Amy L., Mary Jo Bitner, Stephen W. Brown, Kevin A. Burkhard, Michael Goul, Vicki Smith-Daniels, Haluk Demirkan, and Elliot Rabinovich (2010), "Moving Forward and Making a Difference: Research Priorities for the Science of Service," *Journal of Service Research*, 13 (1), 4-36.

Payne, Adrian F., Kaj Storbacka, and Pennie Frow (2008), "Managing the Co-Creation of Value," *Journal of the Academy of Marketing Science*, 36 (1), 83-96.

Payne, Adrian and Pennie Frow (2005), "A Strategic Framework for Cucstomer Relationship Management," *Journal of Marketing*, 69 (4), 167-76.

Payne, Adrian, Kaj Storbacka, Pennie Frow, and Simon Knox (2009), "Co-Creating Brands: Diagnosing and Designing the Relationship Experience," *Journal of Business Research*, 62 (3), 379-89.

Pinho, Nelson, Edvardsson Bo, Professor Professor Anders, Gabriela Beirão, Lia Patrício, and Raymond P. Fisk (2014), "Understanding Value Co-creation in Complex Services with Many Actors," *Journal of Service Management*, 25 (4), 470-93.

Porter, Michael E. (1985), Competitive Advantage: Creating and Sustaining Superior Performance: The Free Press.

Prahalad, C.K., and Venkatram Ramaswamy (2000), "Co-Opting Customer Ccompetence," *Harvard Business Review*, 78 (1), 79-90.

Prahalad, C.K. and Venkat Ramaswamy (2004a), "Co-Creation Experiences: The Next Practice in Value Creation," *Journal of Interactive Marketing*, 18 (3), 5-14.

---- (2004b), "CoCreating Unique Value with Customers," *Strategy & Leadership*, 32 (3), 4-9.

---- (2004c), "The Future of Competition," *Harvard Business School Press,* Boston, MA.

Prahalad, C.K. and Venkatram Ramaswamy (2002), "The Co-Creation Connection," *Strategy and Business*, 50-61.

Ramani, Girish, and Vipin Kumar (2008), "Interaction Orientation and Firm Performance," *Journal of Marketing*, 72 (1), 27-45.

Ramaswamy, Venkat (2011), "It's About Human Experiences… and Beyond, to Co-Creation," *Industrial Marketing Management*, 40 (2), 195-96.

Ranjan, Kumar Rakesh and Stuart Read (2016), "Value Co-Creation: Concept and Measurement," *Journal of the Academy of Marketing Science*, 44 (3), 290-315.

Rayport, Jeffrey F., and Bernard J. Jaworski (2005), Best Face Forward: Why Companies Must Improve Their Service Interfaces with Customers: Harvard Business Press.

Riggs, William M and Eric von Hippel (1992), "The Impact of Scientific and Commercial Values on the Sources of Scientific Instrument Innovation."

Roberts, Deborah, Mathew Hughes, and Kia Kertbo (2014), "Exploring Consumers' Motivations to Engage in Innovation Through Co-Creation Activities," *European Journal of Marketing*, 48 (1/2), 147-69.

Russo-Spena, Tiziana and Cristina Mele (2012), ""Five Co-s" in Innovating: A Practice-Based View," *Journal of Service Management*, 23 (4), 527-53.

Ryan, Richard M., and Edward L. Deci (2000), "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," *American Psychologist*, 55 (1), 68.

Saarijärvi, Hannu (2012), "The Mechanisms of Value Co-Creation," *Journal of Strategic Marketing*, 20 (5), 381-91.

Sandström, Sara, Bo Edvardsson, Per Kristensson, and Peter Magnusson (2008), "Value in Use Through Service Experience," *Managing Service Quality: An International Journal*, 18 (2), 112-26.

Sawhney, Mohanbir, Gianmario Verona, and Emanuela Prandelli (2005), "Collaborating to Create: The Internet as a Platform for Customer Engagement in Product Innovation," *Journal of Interactive Marketing*, 19 (4), 4-17.

Sheth, Jagdish N., David Morgan Gardner, and Dennis E. Garrett (1988), Marketing Theory: Evolution and Evaluation: John Wiley & Sons Inc.

Porter, Michael E. (1985), Competitive Advantage: Creating and Sustaining Superior Performance: The Free Press.

Sheth, Jagdish N. and Can Uslay (2007), "Implications of the Revised Definition of Marketing: From Exchange to Value Creation," *Journal of Public Policy & Marketing*, 26 (2), 302-07.

Simonson, Itamar (2005), "Determinants of Customers' Responses to Customized Offers: Conceptual Framework and Research Propositions," *Journal of Marketing*, 69 (1), 32-45.

Srinivasan, Srini S., Rolph Anderson, and Kishore Ponnavolu (2002), "Customer Loyalty in E-Commerce: An Exploration of Its Antecedents and Consequences," *Journal of Retailing*, 78 (1), 41-50.

Svensson, Göran and Christian Grönroos (2008), "Service Logic Revisited: Who Creates Value? And Who Co-Creates?," *European Business Review*, 20 (4), 298-314.

Tynan, Caroline, Sally McKechnie, and Stephanie Hartley (2014), "Interpreting Value in the Customer Service Experience Using Customer-Dominant Logic," *Journal of Marketing Management*, 30 (9-10), 1058-81.

Urban, Glen L and Eric Von Hippel (1988), "Lead User Analyses for the Development of New Industrial Products," *Management Science*, 34 (5), 569-82.

van Veen, Saskia, Joske Bunders, and Barbara Regeer (2013), "Mutual Learning for Knowledge Co-Creation About Disability Inclusive Development Programmes and Practice," *Knowledge Management for Development Journal*, 9 (2), 102-22.

Vargo, Stephen L. (2008), "Customer Integration and Value Creation: Paradigmatic Traps and Persectives," *Journal of Service Research*, 11 (2), 211-15.

Vargo, Stephen L. and Robert F. Lusch (2004), "Evolving to a New Dominant Logic for Marketing," *Journal of Marketing*, 68 (1), 1-17.

---- (2016), "Institutions and Axioms: An Extension and Update of Service-Dominant Logic," *Journal of the Academy of Marketing Science*, 44 (1), 5-23.

---- (2008), "Service-Dominant Logic: Continuing the Evolution," *Journal of the Academy of Marketing Science*, 36 (1), 1-10.

Vargo, Stephen L., Paul P. Maglio, and Melissa Archpru Akaka (2008), "On Value and Value Co-Creation: A Service Systems and Service Logic Perspective," *European Management Journal*, 26 (3), 145-52.

Verleye, Katrien (2015), "The Co-Creation Experience from the Customer Perspective: Its Measurement and Determinants," *Journal of Service Management*, 26 (2), 321-42.

von Hippel, Eric (1986), "Lead users: A Source of Novel Product Concepts," *Management Science*, 32 (7), 791-805.

von Hippel, Eric (2005), Democratizing Innovation: MIT press.

von Hippel, Eric and William Riggs (1997), A Lead User Study of Electronic Home Banking Services: Lessons from the Learning Curve: Slogan School of Management, Massachesetts Institue of Technology.

Wilden, Ralf, Melissa Archpru Akaka, Ingo O. Karpen, and Jan Hohberger (2017), "The Evolution and Prospects of Service-Dominant Logic: An Investigation of Past, Present, and Future Research," *Journal of Service Research*, 20 (4), 345-61.

Yi, Youjae and Taeshik Gong (2013), "Customer Value Co-creation Behavior: Scale Development and Validation," *Journal of Business Research*, 66 (9), 1279-84.

Zhang, Le, Hangjun Tong, H. Onan Demirel, Vincent G. Duffy, Yuehwern Yih, and Balmatee Bidassie (2015), "A Practical Model of Value Co-creation in Healthcare Service," *Procedia Manufacturing*, 3, 200-07.

Zhang, Xiang and Rongqiu Chen (2008), "Examining the mechanism of the value co-creation with customers," *International Journal of Production Economics*, 116 (2), 242-50.

Zwass, Vladimir (2010), "Co-Creation: Toward a Taxonomy and an Integrated Research Perspective," *International Journal of Electronic Commerce*, 15 (1), 11-48.