A Success-oriented Framework To Enable Co-created e-Services

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DEDICATION

The author wishes to dedicate this work to his mother, Betty McCormick, because he was fortunate enough to inherit her patience and drive to enable him to complete this work. The author also wishes to dedicate this work to his father, Thomas McCormick, who has been a constant source of inspiration and encouragement throughout his life.

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ABSTRACT OF DISSERTATION

"A Success-oriented Framework To Enable Co-created e-Services"

This dissertation establishes a novel framework and the implementation steps necessary to guide the acceleration of economic growth through the transformation from a product-based orientation to co-created e-Services. Co-creation promotes the sharing of innovation in the development and delivery of services in a close partnership between end users and service providers. This partnership has been bolstered by the effective use of information and communication technologies to create new forums for interactions which facilitate the value co-creation process.

Prior case study and empirical research in the fields of co-creation, services transformation and e-Services have been synthesized in a framework to support organizations which recognize the potential value of transforming to a co-created e-Services approach and are seeking to develop a transformational strategy and implementation plan. The framework also serves as a guide for follow-on case study and empirical research in co-created e-Services.

The framework and the associated implementation steps provide a basis to select an appropriate strategy. Measures of effectiveness, such as development time and customer satisfation, should be gathered and compared against existing benchmarks and documented in accordance with standard case study methodologies. Once a significant body of case studies that encompass a wide array of industries and geographic areas is available, empirical data can be gathered to obtain quantitative measures which can be used to validate and enhance the conceptual framework presented in this dissertation.

Key Words: E-Services, Co-creation, Information Technology Strategies, Transformational Framework

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CHAPTER 1 – INTRODUCTION

A new revolution is transforming the world market. Similar to the agricultural and industrial revolutions of the past, the revolution in services is transforming the global economy. This service revolution can be further facilitated by a shift from a products-based focus to co-created e-Services. Co-creation is the sharing of innovation and development in a close partnership between end-users and service providers for the purpose of creating mutual value.[1] Ramaswamy and Gouillart state that "the art of co-creation lies in simultaneously identifying innovative ideas and the people willing to mobilize themselves around them, both inside and outside the company. The faster the company can scale up this process, the more likely it is to get a truly transformational result."[2] The effective partnership between users and service providers is seen as fundamentally essential to the formulation of innovative ideas. This partnership has been highly enabled by the rapid integration of information and communications technology to establish interfaces and facilitate the interaction required for the effective co-creation of value.

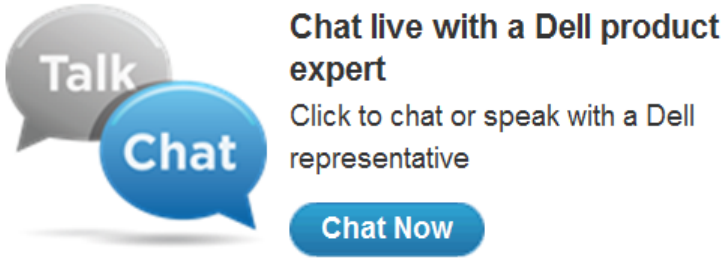
1.1 The Context for Co-created e-Services

As technology enables more users to fulfill their needs online, organizations must react to remain profitable and leverage new sources of economic growth and development. e-Services offer the potential for organizations to improve customer relations and communications, lower service delivery costs and open up new markets.[3] Lusch et al. define service as simply "applied knowledge for another party's benefit."[4] This definition demonstrates the intangible nature of service as compared to the manufacturing of goods which have dominated thought throughout the industrial era. Kelleher and Peppard state that "e-Service can be more specifically defined as deeds, efforts or performances whose delivery is mediated by information technology."[5] They further state that organizations and customers use information technology to "co-create a better service experience" via "Internet-based or electronic systems."[6] In essence, co-created e-Services involve the use of information and communication technology to facilitate the interaction between end-users and service experience providers to jointly create value.

The interaction between end-user and service providers can be accomplished in a number of ways. Currently, this interaction enables end-users to more conveniently purchase existing goods and services online. Increasingly users are demanding a more customized offering. In order to satisfy this demand, service providers are beginning to leverage software applications that enable end-users to precisely define individual elements of the product or service offering. For example, Dell's website enables end-users to specify such options such as the processor speed, amount of memory, battery life, type of monitor and even the color of their laptop computers online.[7] So rather than

driving to a store or multiple stores to find a laptop computer that partially meets their needs, users can more precisely fulfill their needs online and have it delivered to their door. While this early form of co-created e-Services demonstrates an improvement in service delivery, it merely scratches the surface of the possibilities enabled by co-created e-Services.

More recently many firms have added the capabilities to provide customized help in the form of live chat with an expert. Software applications have been designed with the capability to recognize patterns of behavior that present opportunities to help users in the process of making customization decisions by using a pop-up that asks "would you like to talk to our experts?" By clicking the "chat now" button, users are instantly connected to an online chat room staffed with company experts as well as other users.[8]



Extrapolating still further on these ideas, one can envision a future where service providers use sophisticated applications which integrate voice, video, chat and self-service capabilities in order to maximize the utility of service provider resources in support of a wide variety of end-users in developing and utilizing services that very closely match their individual requirements whenever and wherever they need it.

1.2 Problem Statement

The essential elements that create the conditions for successful organizational transformation are varied and complex. In the midst of this complexity, technological innovations are continuously introduced into the marketplace. These exogenous developments are often not well understood by the organizations being impacted by new technological capabilities. Consequently, these organizations may be slow to react, thus losing market share or failing altogether.

Traditional product development firms are finding it increasingly difficult to compete with service oriented firms which have incorporated the latest technologies into their business models and processes. Technologies such as the Internet to enable worldwide connectivity and mobile communication to stay in constant contact with customers needing highly customized services on demand, have been the primary enabler for new e-Services.

Yet, no comprehensive framework to support the transformation from a product orientation to a co-created e-Services model exists. Therefore, additional research is needed to develop a success-oriented framework for co-created e-Services. Additionally, the steps to guide an effective transformation are also required.

1.3 Purpose

This dissertation contributes to a greater understanding of systems engineering and management by establishing and documenting a framework for successfully transforming from a product-based focus to co-created e-Services. The framework and its associated seven steps presented herein are intended to support organizations and project teams which recognize the value of transforming from a product orientation to co-created e-Service and are seeking to understand and develop an approach for a successful implementation. This framework also serves as a guide for future case studies and empirical research in this newly created field of study.

1.4 Significance

Frans Johansson states that "in the intersection of different fields there's an abundance of extraordinary new ideas to be explored."[9] This research brings the fields of co-creation, service transformation and e-Services together for the first time. The synthesis method is used to create an entirely new field of research: co-created e-Services. Based on the synthesis of prior case studies and empirical research in these three fields, a novel framework is created with implementation steps to assist product organizations to transform using a co-created e-Services approach, thereby increasing competitive advantage as well as creating new opportunities for economic growth and development.

1.5 Scope and Limitations

There are two aspects of scope that require explanation. First is the scope of the research conducted to synthesize the study findings. Second, the scope of the findings resulting from this research. The limitations delineated below are applicable to the results and conclusions contained herein.

1.5.1 The Scope of Research

The scope of this research included prior case studies and empirical data in the fields of co-creation, service transformation and e-Services. A total of 155 references have been used to develop our proposed framework. Additionally, four appendices containing additional references are included which demonstrate the depth and breadth of prior research performed in related research areas.

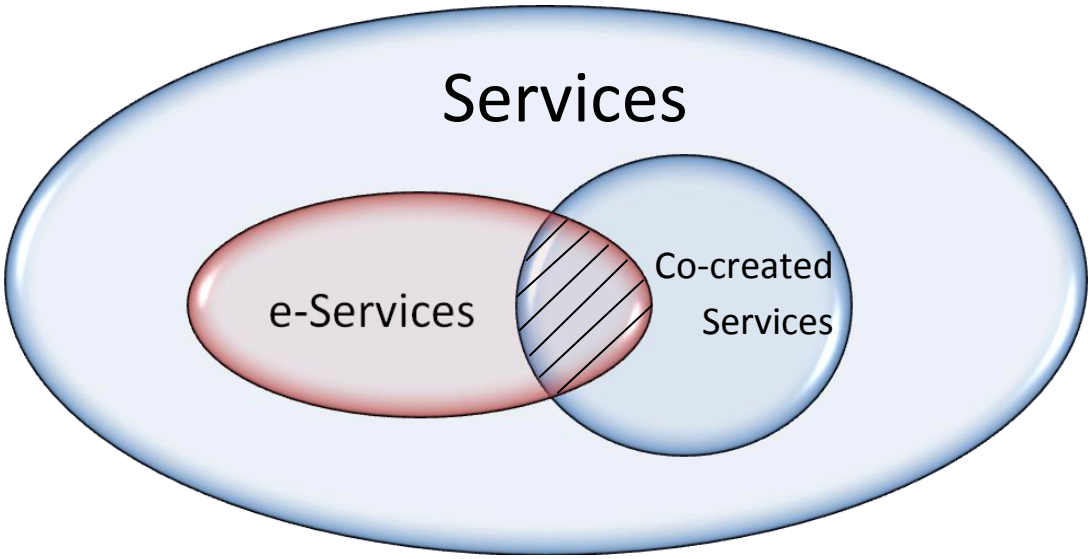
1.5.2 The Scope of Study Findings

The scope of our proposed framework and the associated transformational steps is limited to e-Services. E-Services are services which are delivered via electronic means, and are therefore of lesser scope than the broader field of services. Many firms have achieved greater profitability through the addition of services to an existing product business. Adding repair services to complement the sale of a product is a prime example. However, this approach to services is thoroughly covered in extant literature. For this reason, a broader treatment of service transformation has been excluded in our proposed framework.

E-Services that do not include the customers or end-users in the design and delivery of services have also been excluded from the scope of our proposed framework. For example, all forms of online shopping cart services for purchasing products or services and all forms of self-service technologies have not been addressed in our framework. Although, research in these areas of the services field have been analyzed and synthesized where appropriate in the creation of our conceptual framework for co-created e-Services.

The framework proposed herein only applies to a subset of services which are e-Services and co-created services jointly. The following Venn diagram illustrates the scope of the findings of our research.

Figure 1-1: Co-created e-Services



The overlapping portion of the diagram, represented by the hashed marks, illustrates the scope of our conceptual framework. However, the scope of our research encompasses the entire diagram and the broader fields of co-creation and service transformation.

1.5.3 Research Limitations

A principal limitation of our research is the conceptual nature of the output of the synthesis methodology. The efficacy of our proposed framework and its associated implementation steps has yet to be proven. This limitation is a consequence of the establishment of a new field of study. Thus, our framework serves as a guide for future case and empirical research efforts which seek to examine successful transformations to co-created e-Services.

1.6 Organization

In Chapter One of this dissertation we begin by setting the context for co-created e-Services. We describe the current state of e-Services and a postulated evolution from the current state to a future state were e-Services are co-created based upon increasing customer involvement through multiple channels. Next, we describe the problem of increasing complexity and the need to utilize co-created e-Services as a valuable source of competitive advantage. We then describe our purpose to establish a framework and the associated implementation steps to enable co-created e-Services. We also describe the significance of this new field and its resulting limitations.

Chapter Two provides a comprehensive literature review in the three fields of study that were used to synthesize the field of co-created e-Services. We begin with co-creation as the basis for increased value. We also examine the relationship between co-creation and Service-dominant Logic. Next, we examine the revolution in services and how product companies have transformed to achieve increased economic growth and development. Finally, we outline the opportunities presented by e-Services and examine the unique aspects of the online user experience.

Our research methodology is documented in Chapter Three. We described how the synthesis method is used to create a framework for co-created e-Services based upon prior research in the fields of co-creation, service transformation and e-Services. We provide specific examples of case study and empirical research synthesis to develop critical aspects of our proposed framework and the associated steps for successful implementation of co-created e-Services.

In Chapter Four we provide the results of our study. We provide a graphical depiction of our proposed framework and describe the rationale for its construction. We also justify the introduction of our seven steps which include, (1) develop a co-creation mindset, (2) understand users and what motivates them to co-create, (3) build a co-creation strategy, (4) leverage technology to establish interfaces to enable the strategy, (5) identify lead users to co-create ideas, (6) remove barriers and resistance, and (7) continuously evolve.

Chapter Five documents our conclusions with respect to the application of the synthesis methodology and its usefulness to develop our proposed framework and the seven steps to co-created e-Services. Next, we articulate our conclusions with respect to the broader context of systems engineering. Finally, we offer our suggested areas for further research in this newly created field.

CHAPTER 2 – LITERATURE REVIEW

A comprehensive literature review has been conducted in three distinct fields of study. The first field of study, co-creation, is reviewed from its inception in 2000. The review identifies the building blocks for co-creation as well as its advantages for both companies and consumers. We conclude with the dependent relationship between co-creation and Service-dominant Logic which serves as a bridge to the second field of study – service transformation. Here we examine the growth of the service sector in the global economy. We also review the ways in which successful firms have transitioned from products to services. The third field of study is e-Services which deals with services that are developed and delivered electronically. This research focuses on the customer experience and the global reach that can be derived from an e-Services implementation.

2.1 Co-creation Research

Henk Pretorius states that "the term co-creation was popularized by C.K. Prahalad and Venkat Ramaswamy in their 2004 book entitled, The Future of Competition: Co-creating Unique Value with Customers."[10] He further states that "co-creation is the process of collaboration between companies and customers in order to define and create the value of product and service offerings."[11] Jason Schoeman writes that "co-creation should not be confused with the transfer or outsourcing of activities to customers, or the marginal customization of goods and services. Rather, co-creation is a value creation process in which suppliers and customers engage in interactions to exchange knowledge and resources in order to co-create value."[12] For the purpose of this research, co-creation is the sharing of innovation and development in a close partnership between end-users and service providers.

Carolyn Tang, in her article entitled Co-creation Theory, writes that "the co-creation concept came to light when C.K. Prahalad and Venkat Ramaswamy published a Harvard Business Review article that explained how the Internet altered the relationship between individuals and institutions. Later they expanded on the topic in their book, The Future of Competition. "[13] In this seminal work, Prahalad and Ramaswamy explain that companies are moving away from the traditional system of "company-centric" products to "consumer-centric" products and services.[14] Consequently, company managers can no longer focus solely on the cost, speed, or efficiency of a product. Additionally, they must focus on innovation and creativity that will better fit the needs of the individual users of products and services. The following table illustrates the migration from traditional exchange to the co-creation experience.

Table 2-1: Migrating to Co-Creation Experiences[15]

	Traditional Exchange	Co-creation Experience
Goal of Interaction	Extraction of economic value	Co-creation of value through compelling co-creation experiences, as well as extraction of economic value
Locus of Interaction	Once at the end of the value chain	Repeatedly, anywhere, and anytime in the system
Company-Consumer Relationship	Transaction-based	Set of interactions and transactions focused on a series of co-creation experiences
View of Choice	Variety of products and services, features and functionalities, product performance, and operating procedures	Co-creation experience based on interactions across multiple channels, options, transactions, and the price-experience relationship
Pattern of Interaction Between Company and Consumer	Passive, firm-initiated, one-on-one	Active, initiated by either company or consumer, one-on-one or one-to-many
Focus of Quality	Quality of internal processes and company offerings	Quality of consumer-company interactions and co-creation experiences

The table above demonstrates how the focus of value creation is shifting from the firm's internal activities to a continuous two-way dialogue with consumers to co-create mutual value.

2.1.1 Consumer Changes

Consumers have gone from "isolated to connected, from unaware to informed, from passive to active."[16] The change in consumer attitude and behavior can be analyzed in terms of five distinct manifestations.

The first manifestation is Information Access. Consumers are now able to make more complete and informed decisions about the products they are purchasing with information and knowledge readily available via the Internet, consumers are able to research a wide variety of topics. For example, information available online about health and diseases enables consumers to research their symptoms before discussing their illness with their doctor.

The second manifestation is the Global View of Consumers. Consumers are able to gain information on products, technologies, prices, and consumer reviews from all around the world. Before the Internet, consumers were only able obtain what was locally available. Today, consumers can determine what is most desirable on the global market, even if it is not locally available. Furthermore, consumers can articulate their thoughts and criticisms on the Internet where many individuals can access these thoughts. Additionally, global information makes it difficult for companies to vary the prices and quality of their products in different locations.

Consumer Networking is the third manifestation which has yielded significant impact on the marketplace. Consumers are naturally inclined to talk with other consumers who share similar interests, needs, and experiences.[17] With the advancements in networking technology, communication among consumers has greatly increased. Consumers have established forums which allow individuals to share thoughts and ideas that have revolutionized established markets and opened entirely new ones. For example, in the pharmaceutical industry, word of mouth about a new drug has a significant effect on whether the patient will agree or disagree to take a certain drug their doctor prescribes. If the reviews are negative, the consumer may ask the doctor to prescribe a different drug.

Thus, consumer networking "inverts the traditional top-down pattern" of communications.[18] It therefore behooves companies to monitor and actively engage in the networking process to be both informed and to help shape outcomes which affect the company.

The fourth manifestation is Experimentation with products via the Internet. Experimentation has resulted in products such as Linux or the Apache web server.[19] Experimentation is not only limited to digital products; consumers share all types of information over the Internet. Different information such as tips on cooking, exchanging information about animal care and the best cleaning supplies are commonly shared among consumers. Learning from the experiences of other consumers helps to develop a more informed consumer base.

When consumers become more informed and use this information to make better choices, they can use their networking and experimentation to speak out and persuade others to act. Thus, the fifth and final manifestation is Activism. Consumers are providing a steady stream of information to companies and to other consumers, sparking further discussion and debate. The Internet has become a very powerful tool used by groups who focus on issues and wish to inform other consumers.[20]

With these five manifestations of the changing consumer, "companies can no longer act autonomously, designing products, developing production processes, crafting marketing messages, and controlling sales channels with little or no interference from consumers."[21] Consumers can influence every aspect of the global marketplace. If a consumer is dissatisfied with the available options of a certain products, the Internet

provides a mechanism to work with companies in order to obtain a tailored solution that best meets their individual needs.

2.1.2 The Building Blocks of Co-Creation

The previous section demonstrates how consumer activities have changed the relationship between consumers and the companies that have historically developed products in isolation. Moreover, firm/consumer interactions are increasing due to the proliferation of the Internet. These interactions have become the focal point for the co-creation of value. Prahalad and Ramaswamy have coined the acronym DART, which stands for Dialogue, Access, Risk-assessment, and Transparency, which are considered to be the building blocks of co-creation.[22]

Dialogue is defined as "interactivity, deep engagement and a propensity to act- on both sides."[23] Dialogue is not just listening to the consumers but requires understanding gained by experiencing what consumer's experience, and being able to see the emotional, cultural and social context of the consumer's experiences. Dialogue involves sharing learned information and communicating that information as equal partners. Prahalad & Ramaswamy state that the co-creation dialogue has the following features:

- It focuses on issues that interest both the consumer and the company.
- It requires a forum in which dialogue can occur.
- It also requires rules of engagement (explicit or implicit) that make for orderly, productive interaction.[24]

It is no coincidence that the acronym DART begins with dialogue. Dialogue must be the first step in the co-creation process. Without effective and meaningful dialogue between organizations and end-users there is no possibility to co-create mutual value or transform to co-created e-Services.

Access involves on-demand availability of tools and information. Access removes the idea that consumers can experience value only through ownership. By changing this idea of ownership, companies can focus on different interactions that consumers have with products and services. Access also opens up new opportunities in emerging markets. Internet cafes and bookshops are making the Internet accessible to anyone at a very low fee. Thus, the digital divide is now no longer relevant, giving the poor an equal opportunity to access the same information as the wealthy. Access also allows for new forms of publishing. Books, for example, can be published online for a fraction of the cost of using a publishing company.[25]

The ability to accurately assess the risks involved in co-creation is becoming increasingly important. Prahalad & Ramaswamy state that risk is the "probability of harm to the consumer."[26] Companies have historically focused on informing the consumer of the benefits while ignoring the risks. Today there is a growing debate about risk and the trade-off between risks and benefits. The question of responsibility arises when customers co-create with the firm. Prahalad & Ramaswamy predict that consumers will increasingly engage in co-creation and will not give up their right to choose.[27] They will, however, demand that companies inform them of all risks concerning a product. The benefit of disclosing the risks and having a dialogue with the consumer is the formulation of trust between the consumer and the company. When the risks of products are disclosed to consumers, they are able to make informed risk-benefit trade-offs and decide if the product is worth the risk.

Transparency of information is also needed to create trust between the consumer and the company. The information asymmetry that has traditionally benefited companies

is quickly disappearing. Companies are no longer able to hide the prices, costs, and profits from the consumers. As information about products and technologies become more readily available to consumers, a new level of Transparency is introduced, which is highly desired by consumers.[28]

When all of the building blocks of co-creation are simultaneously enabled, firms are better able to form lasting partnerships with customers. Transparency allows more meaningful dialogue with consumers to occur. By combining access and transparency, the consumer has the ability to make an informed choice. The combining of access and dialogue enables the creation of user communities which share similar interests. Transparency and Risk-assessment combine to develop trust. Consumers are more likely to trust the company that has transparently provided all risks involved.[29]

2.1.3 The Benefits of Co-Creation

Co-creation can be simultaneously beneficial to both the firm and the consumer. In a case study of Summerset boats, Prahalad and Ramaswamy concluded that Summerset's customers benefited in the following ways as a result of the co-creation experience.

- The co-creation process gives the consumer a greater level of knowledge and expertise about the product and also gives them a greater degree of self-esteem.
- Dialogue with company employees and keeping track of the progress of the product being made creates a sense of emotional bonding with the product and the company.

- The company's transparency and willingness to dialogue enhances the consumer's readiness to trust the company and believe in the quality of the product.
- Access to the community of the company's customers increases the consumer's enjoyment of the product.[30]

The case study results demonstrate that the quality of the co-creation experience is significantly different from the way traditional products are purchased. Co-creation allows the consumer to interact with company resources to produce a product that will best fit the needs of the consumer.

Not only are there benefits to the consumer, but to the company as well. The company and its employees are able to learn about the consumers and gain new ideas for design and manufacturing. Prahalad & Ramaswamy state that the company's employees can more deeply understand consumer aspirations, desires, motivations, behaviors, and agreeable trade-offs regarding features and functions.[31]

2.1.4 The Co-Creation Experience Environment

Experience environments encompass a wide range of experiences for many different individuals. An experience environment makes it possible to have a total experience which is tailored to the needs of each individual customer. When designing an experience environment, Prahalad and Ramaswamy list several requirements.[32] Experience environments should:

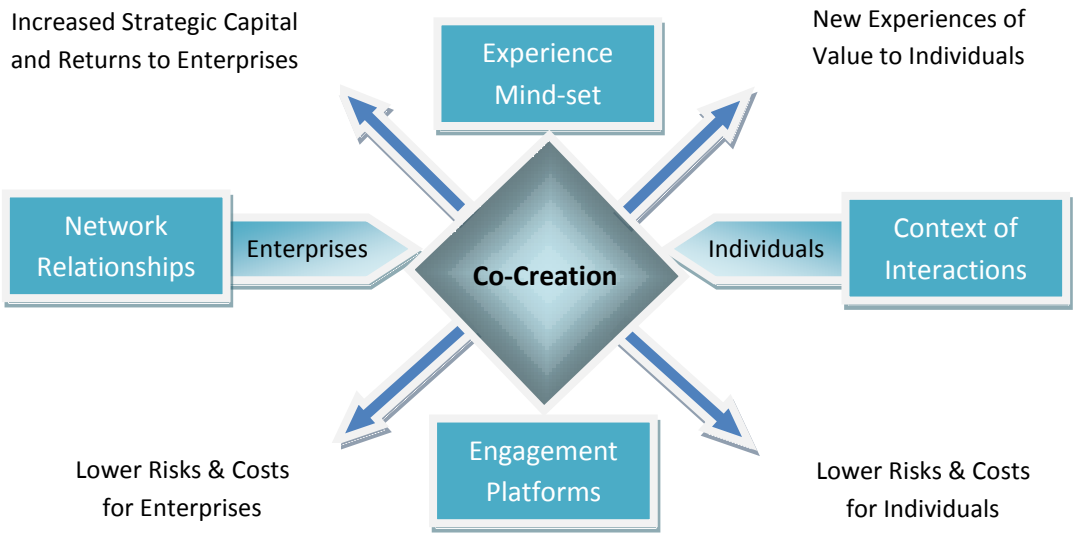
- Provide opportunities for consumers to co-create their own experiences on demand
- Be highly responsive to each individual while accommodating many simultaneous co-creation experiences
- Recognize that every consumer does not always want to co-create; sometimes they just want to consume passively
- Facilitate the integration of emerging technologies to create new opportunities
- Accommodate the active involvement of entire consumer communities
- Stimulate consumers emotionally and intellectually
- Explicitly recognize both the social motivations and the technical aspects of co-creation experiences[33]

Traditionally, companies have focused on the in-house innovation of products and services. Co-creation requires that companies focus on the innovation of experience environments because it is the experience environment that enables superior innovation for sustained competitive advantage.

2.1.5 The Co-creation Principle

Ramaswamy and Gouillat, co-authors of The Power of Co-Creation, state that the "core principle underlying the transformation of enterprises toward co-creation is this: engaging people to create valuable experiences together while enhancing network economics."[34] Network economics refers to the enterprise need to drive cost efficiencies by leveraging economies-of-scale in the design of engagement platforms. Ramaswamy and Gouillat developed the following diagram to illustrate the co-creation principle:

Figure 2-1: The Core Principle of Co-creation[35]



Starting at the top of the diagram, the experience mindset requires the acceptance of the fundamental premise that the customer experience is "central to enterprise value creation, innovation, strategy, and executive leadership."[36] Value is created jointly with the customer, not by the firm acting in isolation. Thus, value is based on human experiences rather than product features or processes. It is the interactions with people that enable learning and innovation. This view of value creation is a significant departure from the traditional product-oriented mindset.

Moving clockwise in the diagram, the context of interaction is intended to recognize that customer experience is highly variable. The differences between individual customers and other stakeholders in the value creation process must be fully taken into account when orchestrating co-creation experiences. The goal is to leverage the knowledge and skills of all participants in a way that mutually creates value in the context of each interaction.

Engagement platforms are mechanisms by which all of the stakeholders in the co-creation process interact to co-create mutual value while simultaneously lowering costs and risks. An example of an engagement platform is a multi-channel website. The multiple channels allow each stakeholder to cost effectively engage in their preferred manner, whether it is simply browsing the website or engaging in a live design chat room. An important aspect of the engagement platform is that it should be designed to evolve over time.[37] Additionally, the platform should enable transparency to support individuals to conduct a risk assessment.

Network relationships include the company managers and employees, suppliers and other stakeholders of the enterprise working with, not on behalf of, customers, end-users and user communities. These relationships need to be nurtured to develop long-term partnerships that are based on mutual trust and transparency. In a traditional enterprise relationship, customers are researched, and then segmented for marketing purposes with the hope of profiting from their purchases of a product. A co-creation relationship, in contrast, involves a meaningful interaction with customers on their terms during the entire lifecycle of a product or service.

At the center of the diagram is co-creation. Co-creation is depicted as the glue that holds the experiences, interactions, engagements and relationship together. The output of the co-creation process is depicted as higher profits and greater opportunities for companies and greatly enhanced experiences at lower cost and risk for customers. The co-creation paradigm stands in sharp contrast to the traditional firm-centric and product-oriented mentality that is "rapidly becoming obsolete."[38]

2.1.6 Co-creation and Service-dominant Logic

Lusch and Vargo have distinguished Service-dominant (S-D) from Goods-dominant (G-D) logic. They argue that S-D logic is the new dominant logic replacing G-D logic which has been the dominant logic throughout the industrial era. They have constructed the following table to illustrate the differences between the two logics:

Table 2-2: Transition to Service-dominant Logic[39]

Goods-dominant Logic	Transitional	Service-dominant Logic
Goods	Services	Service
Products	Offerings	Experiences
Feature/attribute	Benefit	Solution
Value-added	Co-production	Co-creation of value
Profit maximization	Financial engineering	Financial feedback/learning
Price	Value delivery	Value proposition
Equilibrium systems	Dynamic systems	Complex adaptive systems
Supply chain	Value-chain	Value-creation network/constellation
Promotion	Integrated marketing communications	Dialogue
To Market Product orientation	Market to Market orientation	Market with Service orientation

An examination of this table reveals an evolution in the way firms view themselves and their competitive environment. G-D logic places the firm at the center of value creation whereas S-D logic emphasized the relationship between the firm and its partners as the

locus of value. Additionally, the table implies the transformational necessity of providing a service in lieu of the unilateral development of products which are marketed to potential customers. Thus, S-D logic provides a foundation upon which a firm can build an effective strategy for transforming from a product-based focus to co-created e-Services.

More recently, Lusch and Vargo have articulated nine foundational premises in support of S-D logic. The following table summarizes the foundational premise and their rationale:

Table 2-3: Summary and Rationale of Foundational Premises[40]

Foundational Premise	Rationale
FP1. The application of specialized skills and knowledge is the fundamental unit of exchange	Service – applied knowledge for another party's benefit – is exchanged for service
FP2. Indirect exchange masks the fundamental unit of exchange	Micro-specialization, organizations, networks, goods, and money obscure the service-for-service nature of exchange
FP3. Goods are distribution mechanisms for service provision	Goods are appliances that are used to render service
FP4. Knowledge is the fundamental source of competitive advantage	Operant resources, especially "know-how," are the essential components of differentiation
FP5. All economies are service economies	Service is only now becoming more apparent with increased specialization and outsourcing; it has always been what is exchanged
FP6. The customer is always a co-creator of value	There is no value until an offering is used – experience and perception are essential to value determination
FP7. The enterprise can only make value propositions	Since value is always co-created with the customer (value-in-use), it cannot be embedded in the manufacturing process

FP8. A service-centered view is customer oriented and relational	Operant resources being used for the benefit of the customer inherently places the customer in the center of value creation and therefore implies relationship
FP9. Organizations exist to integrate and transform micro-specialized competences into complex services that are demanded in the marketplace	The organization exist to serve society and themselves through the integration and application of resources

For the purposes of this dissertation research, FP4 and FP6 are considered to be essential elements in the understanding of co-creation and its role in transforming from a product-based focus to co-created e-Services. FP4 highlights the need for greater knowledge to maximize competitive advantage. Co-creation enables firms to cost effectively gain new knowledge by interfacing with end-users in order to obtain their thoughts and ideas relative to firm offerings. The proliferation of the Internet has facilitated a continuous dialogue with a vast array of users in a timely and cost effective manner. FP6 is also fundamentally essential because of the linkage that is inferred between co-creation and an effective service orientation. Furthermore, the customer/user is inseparable from the value co-creation process. Taken together, FP4 and FP6 dictate that the customer/end-user must be fully integrated into the full life-cycle of any service in order to realize the competitive advantages that are inherent in a transformation to co-created e-Services.

In addition to the foundational premises, Lusch and Vargo also developed nine propositions which support S-D logic. The propositions are as follows:

Table 2-4: Summary and Rationale of Derivative Propositions[41]

Proposition	Rationale
Competitive advantage is a function of how one firm applies its operant resources to meet the needs of the customer relative to how another firm applies its operant resources	Since applied operant resources are what are exchanged in the market (FP1), they are the source of competitive advantage (FP4)
Collaborative competence is a primary determinant of a firm's acquiring the knowledge for competitive advantage	The ability to integrate (FP9) operant resources (FP4) between organizations increases ability to gain competitive advantage through innovation
The continued ascendance of information technology with associated decrease in communication and computation costs, provides forms opportunities for increased competitive advantage through innovative collaboration	Reduced barriers to technology utilization combined with the trends of open standards, specialization, connectivity, and network ubiquity increase the likelihood of collaboration with firms and customers (FP6, FP8)
Firms gain competitive advantage by engaging customers and value network partners in co-creation and co-production activities	Because the customer is always a co-creator of value (FP6), and the firm is a resource integrator (FP9), competitive advantage is enhanced by proactively engaging both customers and value-network partners
Understanding how the customer uniquely integrates and experiences service-related resources (both private and public) is a source of competitive advantage through innovation	Since value is co-created (FP6) comprehending how customers combine resources (FP8, FP9) provides insight into competitive advantage
Providing service co-production opportunities and resources consistent with the customer's desired level of involvement leads to improved competitive advantage through enhanced customer experience	Expertise, control, physical capital, risk taking, psychic benefits, and economic benefits influence customers' motivation, desire, and amount of participation (FP6, FP9) in service provision through collaboration (FP8)

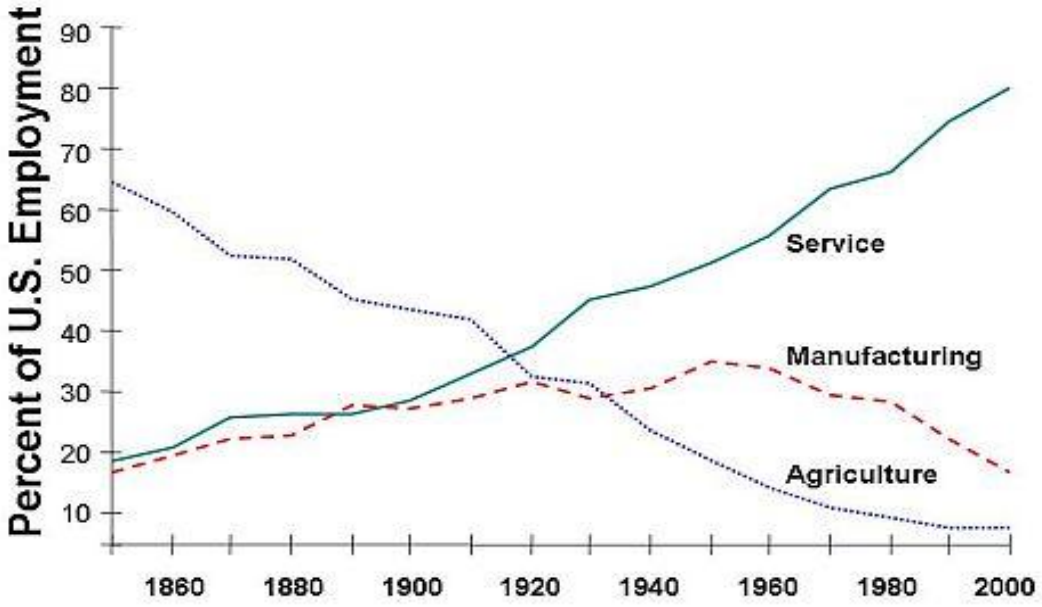
Firms can compete more effectively through the adoption of collaboratively developed, risk-based pricing value propositions a. The value network member that is the prime integrator is in a stronger competitive position b. The retailer is generally in the best position to become the prime integrator	Appropriately shifting the economic risk of either firm or customer through co-created (FP6) value propositions (FP7) increase competitive advantage The ability to effectively combine micro-specialized competences into complex services (FP9) provides knowledge (FP1) for increased competitive advantage (FP4)
Firms that treat their employees as operant resources will be able to develop more innovative knowledge and skills and thus gain competitive advantage	Since competitive advantage comes from the knowledge and skills (FP4) of the employees, it can be enhanced by servant leadership and continual renewal

While all these propositions and the associated supporting rationale are relevant to this dissertation research, Proposition 4 is particularly important. This proposition ties back to FP6 which states that the customer is always a co-creator of value. Proposition 4 provides the rationale for transforming using co-creation as the driver for competitive advantage. Likewise, Proposition 5 also leverages FP6 as rationale for understanding how customers experience co-created services. This understanding leads directly to Proposition 6 which again leverages FP6 to provide interaction opportunities consistent with the customer's interests and motivations. Thus, the fundamental premises and the propositions that have been articulated by the pioneers of S-D logic are used synergistically to form the backbone of a persuasive argument to harness the power of co-creation in developing a successful approach to transforming from a product-orientation to co-created e-Services.

2.2 Service Transformation

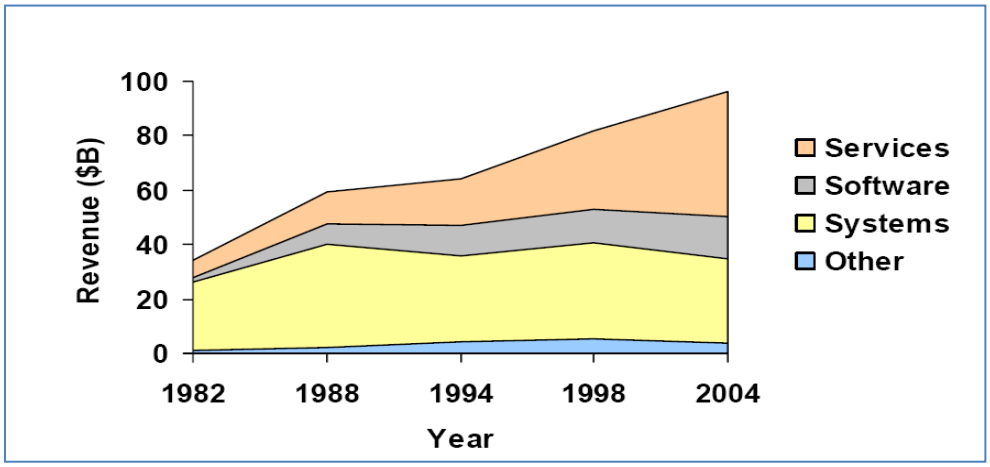
Figure 2-2 below shows the growth of U.S. employment in the service sector since the mid 1800s. The large growth curve in services demonstrates a massive shift in the U.S. economy away from occupations involving manufacturing and agriculture. A similar trend is noted globally based on statistics compiled by The International Labour Office, particularly in the developed countries throughout Western Europe, North America and the Far East.[42] Additionally, Spohrer and Maglio state that the Bureau of Labor Statistics projects that U.S. job growth "will be based entirely on service sector jobs and will grow most for high value professional and business service jobs."[43] Clearly, this projection necessitates a closer look at service-based approaches.

Figure 2-2: Growth of the Service Sector[44]



One of the most notable cases of a successful transformation to a service-based approach is IBM. While many still think of IBM as a computer manufacturing company, the statistics demonstrate otherwise. Figure 2-3 below shows the revenue growth in IBM's service sector as compared with systems and software:

Figure 2-3: Service Revenue of IBM[45]



Note that IBM revenues from system development have dramatically declined since 1998. Currently, IBM generates the majority of its revenues from services. Spohrer and Maglio from IBM's Almaden Research Center state that IBM transitioned "from a company specializing in systems and software to a company specializing in combining services with systems and software to co-create the transformation of client businesses."[46] This dramatic example serves to illustrate the significant impact a transformation from a product-based orientation to co-created services can have on a firm's earnings.

Yet, in spite of the worldwide shift to service-based economies, the characteristics of successful new service development are not well understood.[47] Further, Menor et al. state that new service development is "among the least studied and understood topics in service-related literature."[48] This lack of understanding and gaps in the literature

complicate the transformation from products-based to service-based development activities. Therefore, a framework to guide successful transformation and future empirical research is required. Furthermore, the application of information and communication technologies to the field of service transformation to accelerate economic growth and development needs exploration.

2.2.1 Growing Service Opportunities

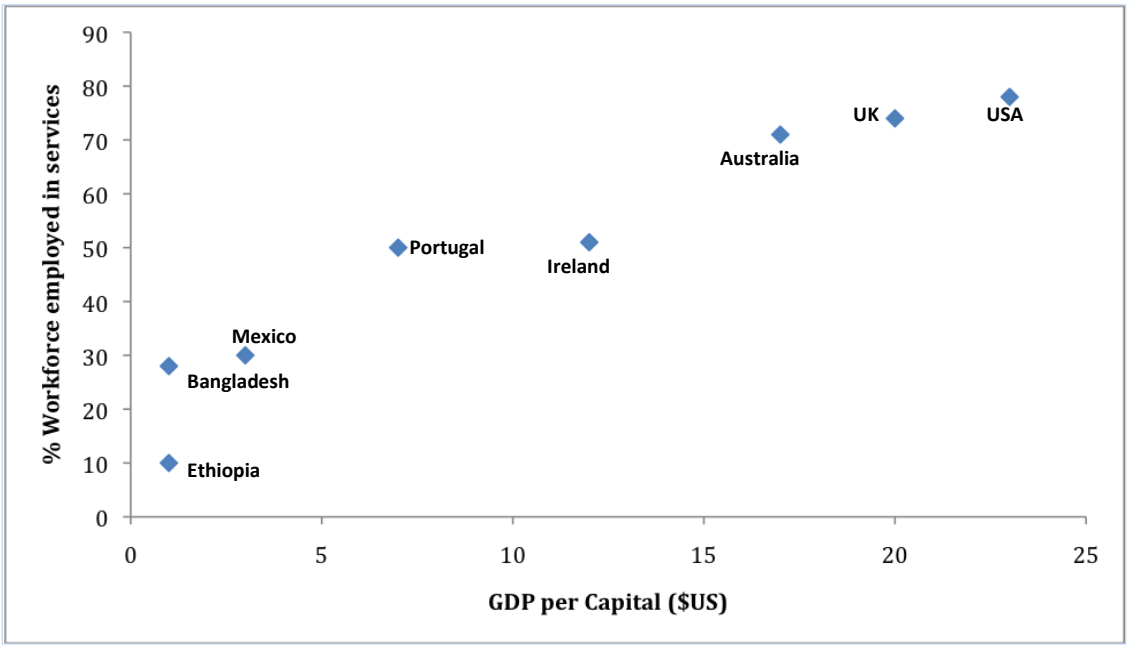
As previously stated, advanced market economies have experienced dramatic growth in services. Economic growth fosters additional services that provide for improved lifestyles. People want "more education, better housing, improved healthcare, more restaurants, bars, car dealerships and shops which carry goods far beyond the mere basic amenities of life. Increasing prosperity unleashes a creative explosion in new service concepts."[49] Services also arise out of social trends. Laurie Young, author of From Products to Services, postulates that the "range of new service businesses appears to be limited only by the power of human creativity."[50]

A review of service literature also reveals that government policy affects the types of service businesses that arise in modern society. Privatization has had a substantial impact on services that were once government controlled services such as airlines, water, gas, and telecoms. These industries have at times grown substantially as a result of changes brought about by privatization and deregulation.[51] The practice of outsourcing has also caused a growth in services. For example, companies such as IBM used to run all aspects of their company. When IBM needed dining facilities they hired employees and operated the restaurant themselves. Now, IBM outsources the work to food service companies that have more expertise in this specialized area.[52]

2.2.2 Service in Developing Countries

The size of a nation's service sector is a function of its economic development and general wealth.[53] The figure below, developed by Professor Adrian Palmer, shows the relationship of GDP per capita to employment in the service sector of selected countries. It indicates that, as economies develop, service sector employment becomes more dominant.

Figure 2-4: GDP per Capita to Employment in the Service Sector[54]



From 2003-2005, the service sector in China escalated from 9% to 45%. The Chinese service sector rapidly became similar to that of developed countries - large, varied and well rounded. As the living standards in China continue to improve, the demand for services is expected to expand to a variety of service areas.[55]

2.2.3 Service Differentiation in Mature Product Markets

As product markets mature, sales decline as consumers buy replacements at a much lower volume. Companies and suppliers respond with product improvements and create new services to be offered with the sale of products. Young states that a mature product market "causes management teams to consider a move into service business" and lists seven signs of a mature product market."[56]

- Informed and demanding buyers.
- Most buyers have made their original purchase, which means that suppliers have to concentrate on repeat business rather than new opportunities.
- Price pressure and slowing growth.
- Rationalization and consolidation in the market.
- The rise of niche suppliers.
- New laws and regulations.
- The appearance of truly differentiated offers.[57]

Market maturity can affect service transformation decisions because service offerings allow product manufacturers to enhance sales through the establishment of service after the sale in order to differentiate a product.[58]

2.2.4 Creation of Service Organization in Product Companies

Many companies have achieved highly profitable service organizations. For example, car dealership service departments often have higher profit margins than the sales department. In electronics, the service organization is often also the most profitable. Furthermore, service organizations in product companies have "repeatedly made the difference between profit and loss in tight markets."[59] A case study involving 370 product companies in twenty nine different countries revealed that services generated a 50% higher gross margin than their associated product lines, some as high as 60%.[60] The

promise of higher returns have been "combined with a demand from Western societies for greater respect for the individual" to motivate product companies to "be more responsive and service orientated."[61]

2.2.5 Methods for Transforming from Products to Services

Changing business models from a products business to a service business is a major undertaking for most companies. This change often produces significant resistance from company employees. To overcome these challenges, Young identifies three different approaches that companies have used to successfully transform from products to services.

The first approach is top-down direction. In this approach, top management visibly shows support for the change. This sends an important message to both the company as well as the market. Top management develops a message designed to "create dissatisfaction with the status quo, a vision of the benefits from the intended destination and a clear message of the way to get there."[62]

The second approach is the radical business unit leader method. In this approach a senior business leader appoints "a driven, ambitious, and determined leader."[63] This person will lead the way to changing from products to services. Lou Gerstner of IBM and Jack Welch of GE started their service change with this approach. A respected and powerful leader is often necessary to successfully create a new business unit.

When top management is unable or unwilling to see the opportunities of having a service business, middle management can "create a shielded program aimed at starting the momentum."[64] For example, one former vice president of a sales dominated technology company hired a consultant to specifically work on changing people's

opinion about the service approach.[65] This is often done in response to customer demand for service assistance.[66]

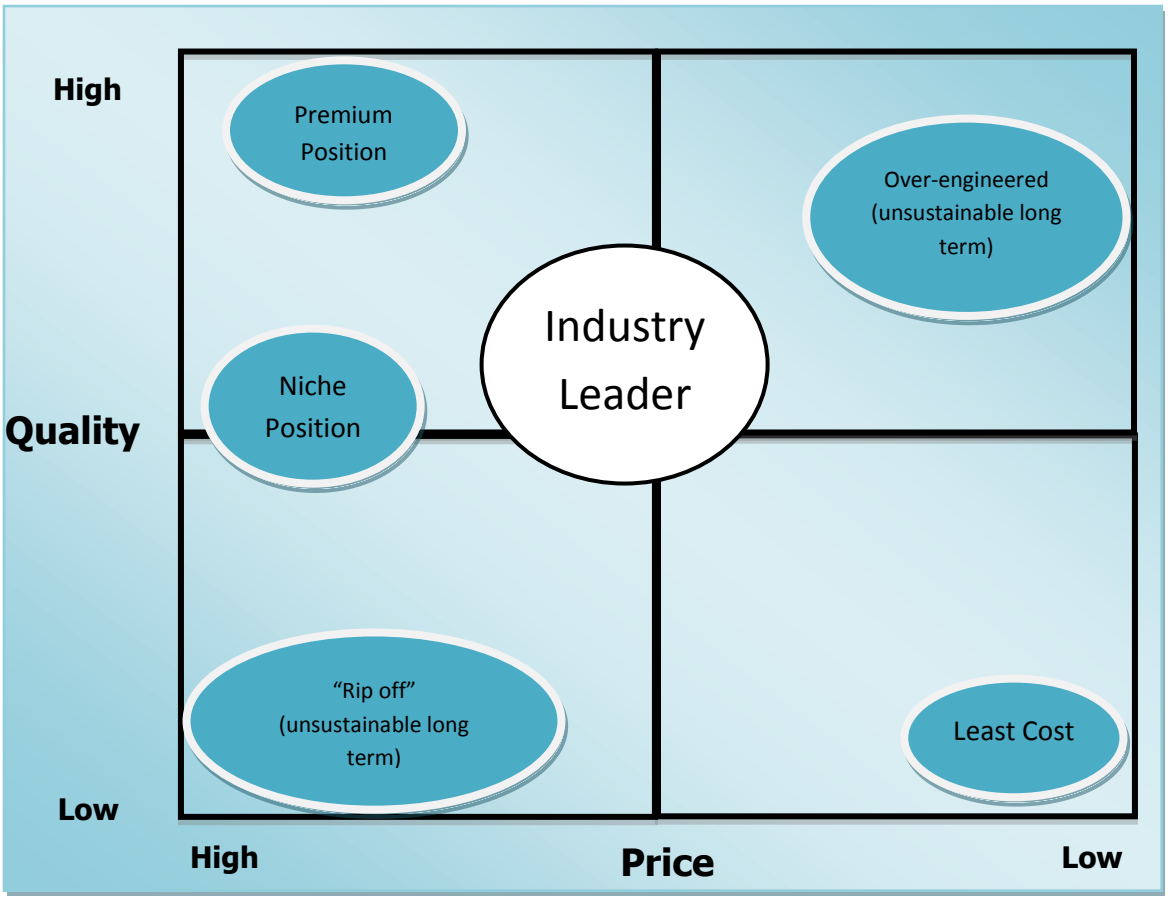
The final approach mentioned by Young is acquisition. Acquisition can be used to build the momentum of a service program.[67] Additionally, acquisition can support the strategic aim of obtaining a new organizational competence, to stop a competitor from gaining a foothold in a service market, to enter a new market or to consolidate a position in an existing market.[68]

The method of service transformation selected requires an understanding of the phase of market maturity. Young states that "if leaders understand what phase the intended market is in, they can set strategic direction for their firm."[69] The first phase is the introductory phase. In this phase of a market, costs are high and profits are minimal. Therefore, Young advises "any product firms wanting to enter a service market at this stage of development to wait for upstarts to burn investment and establish the concept."[70] The next phase is the growth phase, characterized by a strong demand. Entry into these markets can be done in a low risk way. The last phase is the mature market. In a mature market companies must focus on the development of new products and services to attract customers. Young advised that "leaders of potential service firms must take a view of when the intended market, however they define it, has reached in its maturity. From this they can deduce strategic options which can form part of their ultimate business and market entry plans."[71]

The position of a company in a market is based on the consumer's view of the value of their offer. By having a clear position in a market, a company can maximize

their margins.[72] The following figure is the 'perceptual/positioning map', which shows the position that different companies can take in their market.

Figure 2-5: Perceptual/Positioning Map[73]



Knowledge about the standard of after care service quality in a market is essential. A perceptual map can be used to decide the style and quality of after care service. Many companies strive to produce the best quality product in their market. Young says that this is a costly mistake to "offer the same bland after care service as all other suppliers. The style of support must match the competitive position and strategic intent of the

company."[74] Many companies fail to thoroughly think through their service business; the programs are often imprecise and vague which causes the company to lose any advantage that they may have had. In the 1980s, British Airways (BA) grew for nearly two decades while other international airlines declined. BA took determined action to meet the service expectations of customers when others in their industry did not. Because of this, they attracted new customers and gained competitive advantage.[75] The BA example highlights the need to have focused management attention when transforming to a service-oriented business model.

2.3 e-Services

Since the public introduction of the World Wide Web in 1991, the Internet has been continuously evolving.[76] Evanschitzky and Iyer state that "while the earlier era of the Internet placed an overt stress on digitization and marketing of products that were readily digitized, the new era is centered on the user rather than the product or the marketer."[77] The Internet can be a powerful medium for services. The improved and evolved Internet "has the potential to fundamentally transform the ways in which services are conceptualized and delivered."[78] The service relationship between the user and the company is no longer dependent on the location of the services. Also, services do not have to be done by live company personnel. With the growing use of technology in service innovation , e-Services offer a tremendous opportunity for economic expansion.

2.3.1 e-Services Defined

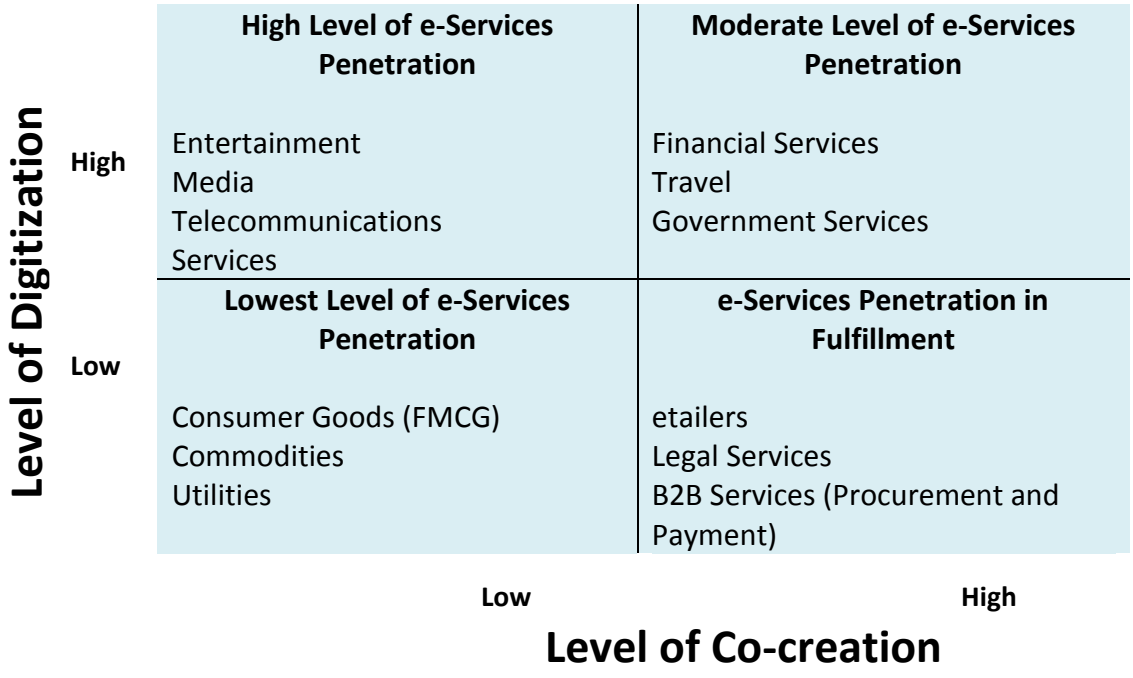
There are many definitions that have been espoused in the e-Services literature. Javalgi et al. define e-Services as "those services that can be delivered electronically."[79] Similarly, Rust and Kannan define e-Services as "provision of services over electronic networks."[80] Boyer et al. use the definition "interactive services that are delivered on the Internet using advanced telecommunications, information, and multimedia technologies."[81] Hofacker et al. further define e-Services as "an act or performance that creates value and provides benefits for customers through a process that is stored as an algorithm and typically implemented by networked software."[82] The authors focus on the distinction between "service production (a stored algorithm delivered by software) and service outcome (the desired benefit received by consumers)."[83] As stated in Chapter

One, the definition of e-Services used in this dissertation is "deeds, efforts or performance whose delivery is mediated by information technology."[84] This definition is used because it simultaneously defines what we mean by service (deeds, efforts or performance) and e-Service. We use a broad definition of e-Services to include not only e-Services over the Internet but e-Services that are delivered via any type of information technology. For example, our definition also includes e-Services delivered via messaging systems which utilize personal wireless communications.

2.3.2 A Framework for e-Services

Sheth and Sharma developed a two-dimensional framework for e-Services. The first dimension is the level of digitalization that can be achieved. The second dimension is the level of co-creation of the product or service.[85] The figure below illustrates their framework.

Figure 2-6: Two Dimensional Framework for e-Services[86]



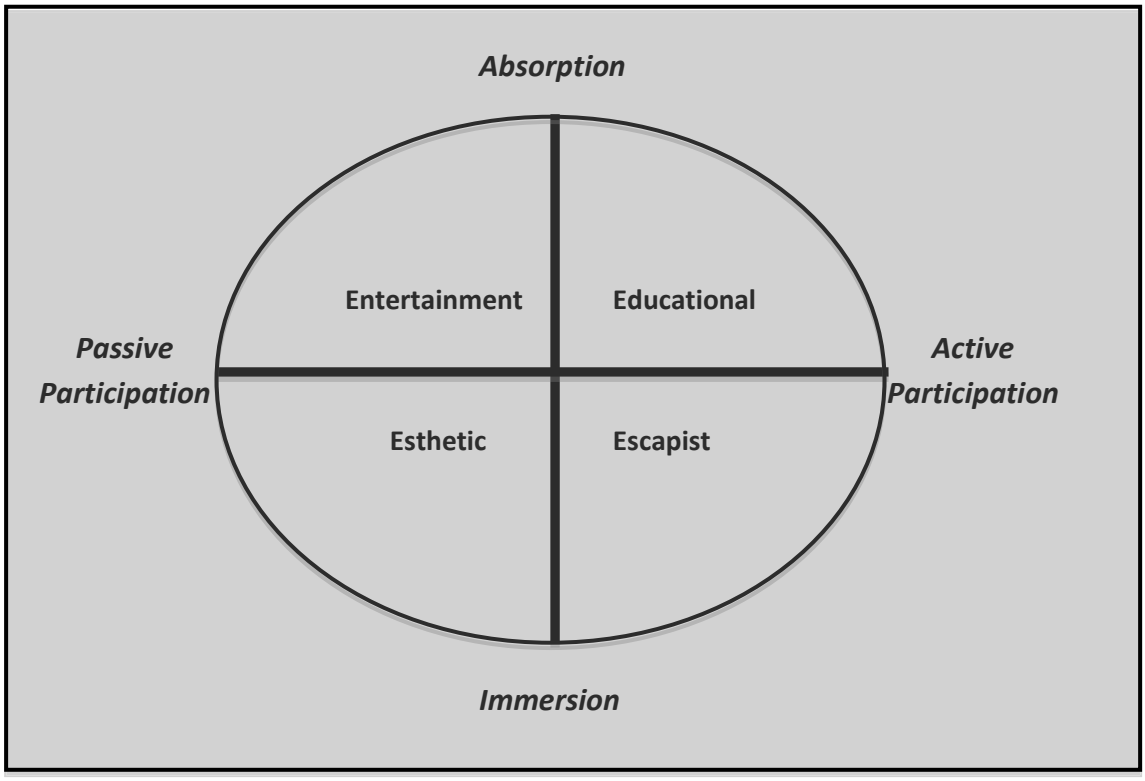
When there are low levels of co-creation and high levels of digitalization, the framework predicts that e-Services will be have the highest market penetration. The authors also predict that the media and entertainment industry will be the most affected by the development of e-Services.

A principal example used by the authors to illustrate a digitized service is iTunes, which provides the capability to conveniently download music for a relatively low cost. By contrast, products such as shoes are not able to be digitized. However, the processes surrounding shoes can be digitized (e.g. ordering shoes, viewing shoe options, measuring). The second dimension of the framework involves the company and the customer "interacting in aspects of design, production and consumption of the product or service."[87] Some companies offer low levels of co-creation such as online payments. Products and services that exhibit moderate levels of co-creation are airline websites that allow the customer to choose certain features, such as their seat. High levels of co-creation include such services as customized electronic retailing and legal services.

2.3.3 The e-Services Customer Experience

The significance of 'customer experience' on the Internet has been increasingly emphasized by practitioners and scholars over the past decade.[88] However, the phrase 'customer experience' has not been given a concrete definition and has been used in many different ways with very little agreement about what the phrase truly means. Pine and Gilmore defined four broad categories of customer experience: entertainment, education, estheticism, and escape, and constructed the following diagram to illustrate the interrelationship of the categories.[89]

Figure 2-7: The Four Realms of an Experience[90]



2.3.3.1 The Entertainment Dimension

Entertainment is defined as the "passive aspect of an experience- the elements of the experience are simply absorbed through senses."[91] In contrast, Karat et al. state that Internet entertainment is highly interactive and participatory.[92] Nevertheless, some users are content with simply seeking enjoyment through performances that they can watch or listen to. This set of users watch streamed audio and video broadcasts on the Internet. "Arbitrol/Edison Media Research estimate that the U.S. Internet broadcast audience is 30 million viewers weekly, which is approximately 13% of all Americans."[93] However, even with this growing trend, entertainment is still more of an exception than the rule for e-Services. At present, e-Services primarily utilize websites to provide convenient online

shopping. Streaming media are generally used for improved display of product offerings. However, user satisfaction is often a function of hedonic pleasure. Therefore, e-Service companies should consider providing more than "conventional enticements such as broad merchandise selection, low prices, and just-in-time deliveries to attract today's online shoppers."[94] Broadband entertainment options offer the potential for companies to differentiate themselves from their competition. Research suggests that companies that integrate technology faster than their rivals will be able to "garner first-mover advantage."[95] Therefore, companies desiring to transform to co-created e-Services should consider the entertainment value that can be derived from the e-Service.

2.3.3.2 The Educational Dimension

The educational dimension of a customer experience involves active participation from the customer. From this experience the user will gain or increase skills and/or knowledge. For the customer to "truly gain knowledge or skills, the customer's mind (for intellectual education) or body (for physical training) must be actively engaged in education events."[96] The online communication between the consumer and the company helps the customer learn how to reduce search costs as well as increase shopping efficiency.[97] For example, Circuit City's 'click and learn' helps TV shoppers determine the style, brand, and size that will best fit them.[98] Another important aspect of the educational category is the Internet users concerns over the security of their personal information.[99] Thus, e-Service websites should display information about security policies and the customer's rights and responsibilities in a transparent manner.

2.3.3.3 The Esthetic Dimension

The esthetic dimension involves passive participation from the user as they immerse themselves in an event or environment of which they have little or no control. In this dimension the user leaves the environment un-touched at the conclusion (e.g. visiting an art exhibit).[100] Online esthetic factors include attractive sound and color combinations that can generate positive reactions from the customer. Childers et al. coined the term webmospherics to represent the virtual environment counterpart to physical atmospherics. The elements of webmospherics include: 1) structural design attributes (e.g. frames, pop up windows, search engine configuration, hypertext links), 2) media dimensions (e.g. graphics, text, audio, color, streaming video) and 3) site layout dimensions (e.g. organization and grouping of merchandise).[101] Webmospheric dimensions are an important part of web design which can combine with the online shopping experience to either enhance or detract from a customer's esthetic immersion.[102]

Although a website is esthetically appealing, service failures may occur because of:

- Confusing navigation
- Use of features that work only for customers with high-speed Internet access
- Pop-up windows that appear at inopportune moments
- Animations or images that cause computers to crash
- Ineffective search mechanisms that cause customer frustration[103]

When designing an esthetic online experience, there must be some variation in the sensory intensity of the experience. This design principle should be a consideration in the construction of co-created e-Services in order to maintain user interest.

2.3.3.4 The Escapist Dimension

The escapist experience can provide learning similar to the educational experiences, and amuse like the entertainment; however, it involves a higher level of immersion than the other dimensions.[104] "When people are involved in an escapist experience, they are totally immersed in it and nothing else matters while engaged in the experience … they eventually become a part of the experience by actively participating in the immersive environment."[105] As user participation lessens the user transitions to the esthetic dimension. Some examples of escapist environments are Massively Multiplayer Online Role-Playing Games (MMORPG) and virtual communities for social purposes such as Internet Relay Chat (IRC).[106]

2.3.4 e-Services Opportunities

Opportunities exist for companies to develop and improve the functionality of e-Services in order to effectively deliver products and services. "E-Services use information technology as a platform that enables firms to adapt to the needs of customers, reduces transaction costs, and allows customers to move from time- and location- based behaviors towards non-temporal and non-locational behaviors."[107] E-Services are capable of shifting business and consumer behavior if the companies correctly use e-Services to effectively serve their customers.[108]

E-Services often employ technology to reduce human interaction, thereby reducing the costs of labor. In this case, e-Services result in customers interacting with computers instead of employees. Sharma defines three categories which can be used by companies to improve the efficiency of service delivery:

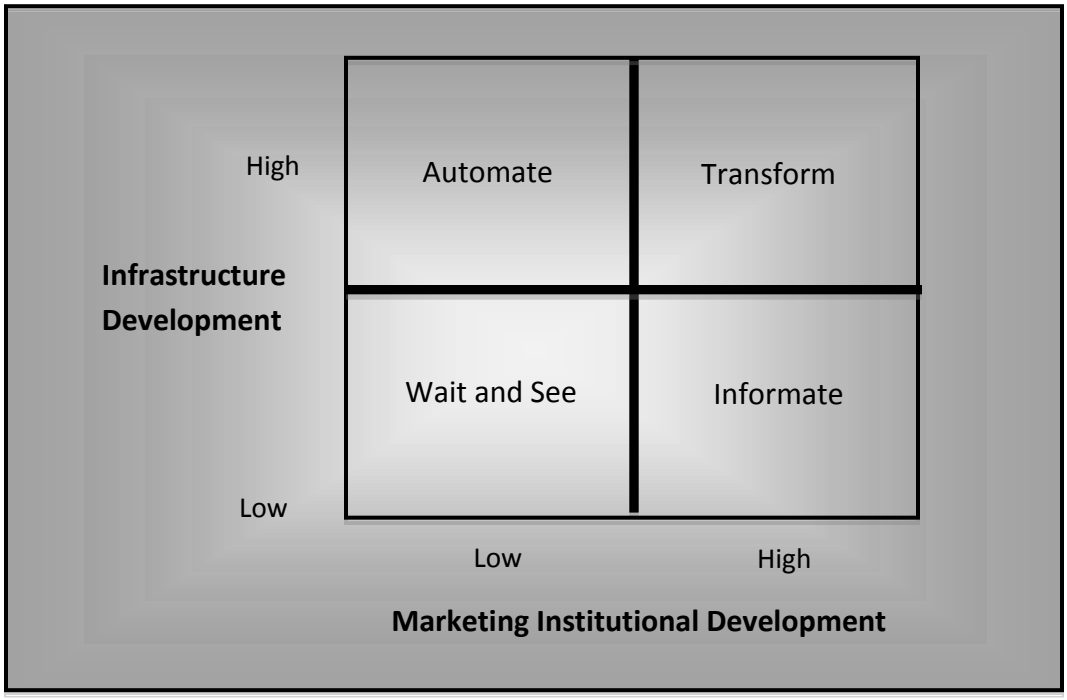
Table 2-5: Domain of e-Services[109]

Category	Scope	Exemplars
Automate	Replace human interaction with e-interaction (reduce costs and enhance efficiency)	Information access, order entry, invoicing, receivables
Informate	Provide customers with higher levels of data on product and service information and processes	Customized recommendations (Amazon.com), order tracking
Transform	Change the structure of customer relationships, market, and competition	Online airline booking, online banking

The first category, automate, suggests that activities that once required human intervention are transitioned to automatic processes using information technology. "One of the major forms of automation in e-Services is product and service specification, and information provided to customers."[110] Moreover, many companies maintain Internet sites in order to provide product/service information and specifications to their customers. These Internet sites generally provide more detail about their products and services than sales personnel can provide.[111] The second category, informate, states that companies can provide their customers with a higher level of information on services and interaction. For example, when information is very complex, information technology can provide companies an effective mechanism to search, find, and graphically display relevant information.[112] The third category, transform, is the "use of information technology to change the structure of customer relationships, market, and competition."[113] For example, information technology has transformed airline ticketing from a travel agency point-of-sale to online purchasing sites.

The application of these categories is dependent on conditions which are present in a given area. These conditions include the levels of infrastructure and institutional development. Sharma developed the following framework to delineate the effective utilization of the three categories.

Figure 2-8: e-Service Strategies[114]



The strategy selected by companies should be consistent with and appropriate for the conditions of maturity of infrastructure and institutional development. When both conditions are immature, Sharma suggests that companies should not engage. Rather they should wait for conditions to improve before acting. Highly developed infrastructure and low institutional development suggest the services can be automated. Whereas immature infrastructure coupled with high institutional development implies an informate strategy. Thus, the type of e-Service strategy selected should match the environmental conditions.

2.3.4.1 e-Services Advantages

E-Services offer advantages for both organizations and end-users. Some advantages for organizations include "reducing costs, enhancing reach, increasing competitive advantage, and even transforming markets."[115] E-Service platforms typically have higher initial cost and lower operating costs than other platforms such as sales personnel, retailers or distributors. The establishment of an e-Services platform allows companies to reach customers who may not otherwise have access due to temporal and locational limitations of existing distribution channels.[116] E-Services can also enhance customer relationships by providing a means to make decisions from any location, at any time, using as much time as necessary to make purchasing decisions.[117]

There are also advantages for customers when using e-Services. First, customers can obtain significant information about companies to aid in decision-making. Sheth and Sharma state that "the amount of and access to information in e-Services platforms are greater than any other form of contact because information technologies allow firms to increase the amount of information that can be provided to customers."[118] Second, outcomes can be customized thus allowing customers to design products and services that meet their specific requirements. For example, flight selection, check-in, and seat assignments can be accomplished online.[119] Third, e-Services platforms allow transactions between the customer and the company to occur without human intervention, which many customers prefer.[120] Finally, e-Services can change the market in such a way that e-Services become the customer-preferred platform of interaction.[121]

2.3.4.2 e-Services Challenges

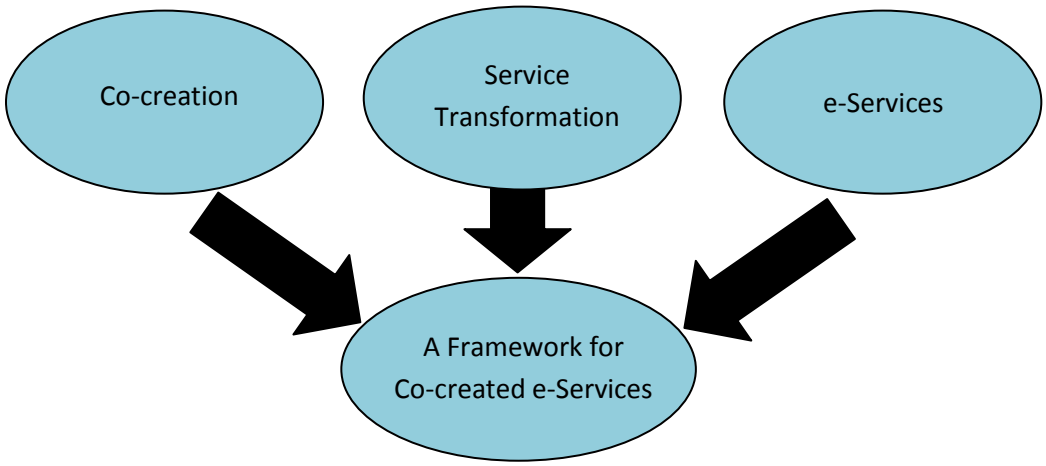
Evanschitzky and Iyer also discuss several challenges in establishing e-Services. In developing countries, access to the Internet is sometimes limited and the speed of the Internet is often slower than those in developed countries.[122] These limitations pose serious challenges for companies attempting to open up new markets in certain parts of the world.

Other challenges include user perceptions about security and privacy. Internet fraud and the possible loss of privacy data have proven to decrease the use of the Internet for e-Services.[123] Consequently, product companies need to address these concerns in a transparent fashion to both gain user trust and responsibly protect the integrity of Internet transactions.

CHAPTER 3 – RESEARCH METHODOLOGY

The research methodology used in this dissertation involves the synthesis of prior case study and empirical data in the research fields of co-creation, service transformation and e-Services. The synthesis methodology is derived from the systems approach as articulated by Howard Eisner.[124] As a student of Howard Eisner, I came to understand that synthesis is the logical combining of disparate pieces of information into a cohesive whole. This is consistent with Webster's definition 1a. "the composition or combination of part or elements as to form a whole" and 1c. "the combining of often diverse conception into a coherent whole."[125] This research combines prior case study and empirical research to form a cohesive framework for the transformation from a product orientation to co-created e-Services. The model below graphically illustrates this concept.

Figure 3-1: The Synthesis of Co-Created e-Services



Although a significant body of information exists concerning the individual fields of research in co-creation, service transformation, and e-Services, as discussed in Chapter Two. However, no prior research has been conducted concerning co-created e-Services. This new research field is the result of synthesizing the conclusions of case studies with empirical results for the three fields of study. The two sections which follow are illustrative in showing the reader specifically how the synthesis of prior case studies and empirical research were used to develop the conceptual framework and the associated seven steps which support the transformation from a product orientation to a co-created e-Services approach.

3.1 Case Studies

Case studies provide a foundation upon which a concept or theory can be developed. Furthermore, case studies enable researchers to "better understand the mechanics of how businesses might be affected by a variety of factors."[126] Neil Salkind states that "there is simply no way to get a richer account of what is occurring than through a case study."[127] This dissertation synthesizes a multitude of case studies from three distinct fields to conduct a detailed examination of how co-creation can enable organizations to successfully transform from a product-oriented approach to a co-created e-Services business orientation.

The use of case studies in the development of our framework is justified on two principle grounds. First, a review of the extant literature in chapter two revealed that the fields of co-creation, service transformation and e-Services are relatively new fields of research. Thus, qualitative methods are needed to develop a framework for further testing. Second, a deeper understanding of the synthesis of these three fields is required. The depth and detail of case analysis enables a closer and more complete examination of the factors which can enable organizations to successfully transform to co-created e-Services.

Kristensson et al. state that "there is a lack of firm theoretical foundation on which to base understanding of the strategies (e.g. antecedents and critical processes) which are required for success during the co-creation of services."[128] Consequently, they use a case study as the primary means to add to the body of knowledge in this under-investigated area. They state that "case studies are especially useful for exploring topics in which there is a relative lack of strong theory."[129] Their research was conducted at two

Swedish telecommunications services companies, Ericsson and TeliaSonera. These companies were selected because company managers were dissatisfied with the input they received from the traditional methods of user focus groups and surveys. They wished to obtain a deeper understanding of the success factors for user involvement when implementing "co-creation as a practice."[130] The case study involved 38 participants which generated 106 new ideas for future mobile phone services. A discussion of these ideas during the case study workshops revealed that similar ideas could not have been generated by company developers because they were "removed from the context and needs of ordinary users."[131] The case study researchers concluded "the real benefit of a user involvement project is the generation of solutions to practical problems in the context of the user's real-life experience."[132] This conclusion was enabled by an aspect of the case methodology which allowed users to conduct audio and video recording of situations in which user ideas were generated. Thus, this case study facilitated a deeper understanding of the value of user ideas to co-create new services.

One of the limitations of the above case study is that the findings are limited to two Swedish companies in the telecommunication industry. In order to be of significant benefit to our framework, we looked for similar findings from case research conducted by other researchers. For example, Matthing et al. did a field experiment at TeliaSonera involving 86 end-users of mobile phone services. The results showed that high scoring unique ideas were "triggered by a sudden experience."[133] This finding is judged to be consistent with the findings by Kristensson et al. which postulates that users generate ideas "in the context of the users real life experience."[134] This is an important finding for two reasons. First, it supports the notion that a transformational framework for co-

created e-Services should focus on innovations that are conceived by end-users. Secondly, it supports the co-creation strategy of enabling a firm/user interface, which allows end-users to develop ideas in the context of their own environment. Furthermore, the principle finding of the experiment conducted by Matthing et al. is that "user service ideas are found to be more innovative, in terms of originality and user value, than those of professional service developers."[135] This revelation appears to be similar to conclusions recorded during the analysis of the 106 new ideas generated during the case study conducted by Kristensson et al. wherein researchers concluded that ideas generated by users were not only more original, but feasible and valuable.[136] Thus, the synthesis of these two case studies conducted by different researchers in the same setting and industry provide evidence to support a preliminary conclusion that end-users provide a valuable source of innovation based on the context of actual experiences.

Next, we focused attention on case research in other settings and industries. Bartley et al. performed benchmarking case analysis on New Zealand companies in the finance, manufacturing and service industries. They found that case study organizations which engaged customers to determine "how their services added value" and actively solicited new ideas from customers, achieved superior performance results.[137] In examining the case of customer innovation in the custom semi-conductor chip industry, Thomke and von Hippel found that "customers know what they need better than the manufacturers do."[138] For this reason, a U.S. manufacturer was able to reduce cycle time and rework rate, lower cost per chip, and increase customer satisfaction and competitive advantage by enabling co-creation of semi-conductor chips with their customers. Franke and von Hippel found that in the case of Apache security software, users that utilized

customized features of the software had "significantly higher satisfaction levels" than those that did not.[139] These cases provide additional evidence in different settings and industries that support the findings of Kristensson et al.

von Hippel wrote that developers need "context-of-use information (generated by users)" in order to be successful.[140] This is because "users generally have a more accurate and detailed model of their needs than manufacturers." In examining the case of scientific instruments, "users tended to develop innovations that enabled the instruments to do qualitatively new types of things for the first time."[141] Conversely, manufacturers tend to enable users to do things "more conveniently or reliably."[142]

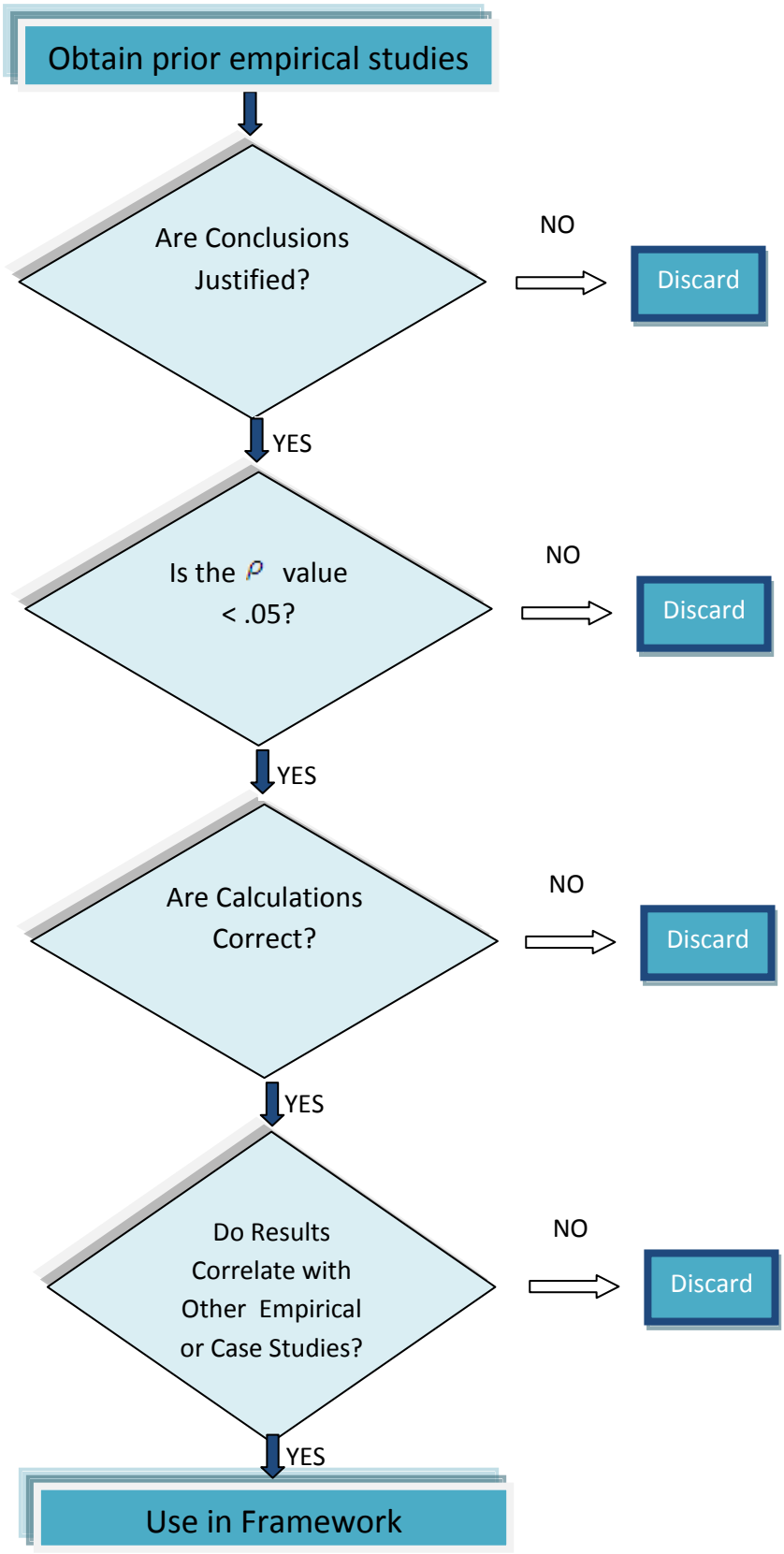
Alam and Perry conducted case study research involving 12 firms in the financial services industry. A principle finding of this case study is that customer involvement was necessary for developing a superior and differentiated service with better value for customers.[143] In this case study a total of 36 interviews of managers and decision makers were conducted. All participating managers were closely involved in new service development from idea to launch. These managers obtained user input from customer meetings, customer observations and in-depth interviews. The findings indicate that customer input may be decisive in the "success or failure of a new service." This finding, though not conclusive in and of itself, is consistent with the conclusion that user generated ideas offer value not otherwise obtainable with company resources alone as proposed by Kristensson et al.[144] This consistency provides the basis to justify the incorporation of these findings into our proposed framework for co-created e-Services. Thus, the value of individual case studies is only found throughout the synthesis of the results with other case studies producing consistent results.

3.2 Empirical Research

This type of research provided valuable input to the development of the proposed conceptual framework for co-created e-Services. However, before the conclusions presented in prior empirical studies were utilized in the construction of the framework, the data were analyzed and validated against a defined and rigorous standard of integrity. Once an empirical study was determined to have relevance to this research, the research findings were reviewed to determine if the conclusions reached were adequately justified based on the analysis of data. Next, the ρ value was determined for all relevant findings. If the ρ value was greater than .05, the findings were rejected regardless of documented conclusions drawn by the researchers. The ρ value of .05 or less was selected to ensure that our framework is based upon stringent standards of validity.

All calculations leading to the determination of ρ value were also checked for accuracy. If the ρ values were correct and were .05 or less, we then compared the study findings with the conclusions from case studies and other empirical studies in order to determine if the study findings were consistent. Findings that were judged to be inconsistent with a significant body of evidence to the contrary were rejected. In cases where there were significant differences between empirical study conclusions, we did not incorporate any of the conclusions. The following flow chart shows the methodology used to validate empirical input to the framework and associate implementation steps.

Figure 3-2: Validation Methodology



3.2.1 Validation of Prior Empirical Studies: An Example

In the International Journal of Electronic Business, Volume 7, Number 2, published in 2009, Dr. Kristina Heinonen published a twenty-four page article entitled: *The influence of customer activity on e-Service value-in-use*. This article is relevant to this research because one of the primary purposes of transforming to co-created e-Service is to increase value. Her empirical study concluded that "customer activity level positively influenced value-in-use."[145] Customer activity is considered to be high in cases where the customer co-creates the service with the provider. Medium customer activity is defined to be activity whereby customer input is used to customize a standard service. Low customer activity is defined by the customer participating while the firm provides a standard service.

The study results were based on analysis of 3,328 responses to an online questionnaire. Four dimensions of value were used including functional, temporal, spatial and technical with a total of 15 sub-dimensions. These dimensions were based on sound prior research. The large number of responses and multi-dimensional nature of the findings contribute to an overall judgment that her empirical study is both thorough and complete. Additionally, prior case studies conducted by Bendapudi and Leone found that high user involvement in service development and delivery resulted in higher overall satisfaction.[146] These earlier findings are judged to be consistent with the empirical findings that increased user activity positively influences value-in-use. Referring back to Figure 3-2, we conclude that Dr. Heinonen's findings are justified.

Next, we examined the reliability of findings. An ANOVA analysis was used to compare the mean responses between the three classes of activity across the four dimensions with their associated sub-dimensions as follows:

Table 3-1: Service Value Based on Degree of End-user Involvement[147]

		Low Activity	*Moderate Activity*	*High Activity*	*Mean*
Technical Dimension (what)	Content	0.66	1.17	1.79	1.14
	Tangibles	0.95	1.57	1.92	1.51
	Price	0.44	0.75	1.47	0.74
	Average	**0.62**	**1.06**	**1.67**	**1.03**
Functional Dimension (how)	Process ease/functionality	0.73	1.22	2.01	1.19
	Security	0.94	1.43	1.94	1.39
	Entertainment	0.42	0.83	1.38	0.82
	Decision support	0.64	1.25	1.78	1.19
	Dependability	0.75	1.32	1.83	1.27
	Average	**0.71**	**1.22**	**1.80**	**1.19**
Temporal Dimension (when)	Temporal efficiency/ usefulness	0.75	1.49	1.85	1.42
	Speed	0.91	1.58	2.00	1.52
	Temporal latitude	1.02	1.86	2.51	1.78
	Average	**0.89**	**1.65**	**2.14**	**1.58**
Spatial Dimension (where)	Spatial latitude	0.95	1.68	2.46	1.63
	Visual layout	0.76	1.35	1.89	1.30
	Channel functionality	0.59	1.16	1.89	1.12
	Navigation	0.77	1.27	2.01	1.24
	Average	**0.77**	**1.36**	**2.06**	**1.33**
	TOTAL	**2.96**	**5.24**	**7.59**	**5.26**

The table shows that end-user involvement has a significant impact on service value (ρ < .05). We thus conclude that Dr. Heinonen's findings are reliable.

To verify the accuracy of these results, a two-by-two test was performed on all 15 sub-dimensions. All but 4 sub-dimensions produced a significant difference (ρ < .05). At the aggregate level those differences did not prove significant. We therefore concluded that the calculations accurately support the finding that high end-user involvement (i.e. co-creation) produced the highest value-in-use for the customer.

As previously mentioned, the results correlate with prior case study research by Bendapudi and Leone which used a seven point scale to measure satisfaction.[148] Additionally, Kristensson et al. collected empirical data during case study research in the telecommunication industries which also indicated that co-creation with users increases value over traditional firm-based innovation.[149]

Thus, Dr. Heinonen's research conclusions correlate very well with other empirical and case study results. These results to synthesize the concept that a transformation from a product orientation to co-created e-Service should first focus on co-creation. A product orientation is focused on the firm and its internal resources as the source of value creating activity. In contrast, co-created e-Services focuses on external competence and the means by which a meaningful exchange takes place between customer/users and the service provider. Dr. Heinonen has effectively demonstrated that as this meaningful exchange is increased so does the value-in-use. Therefore, in order to maximize value, our framework depicts the co-creation quadrant as the focus of transformational activity. Furthermore, in the development of our seven steps, we again leverage the findings of her empirical research. In order to build a co-creation strategy,

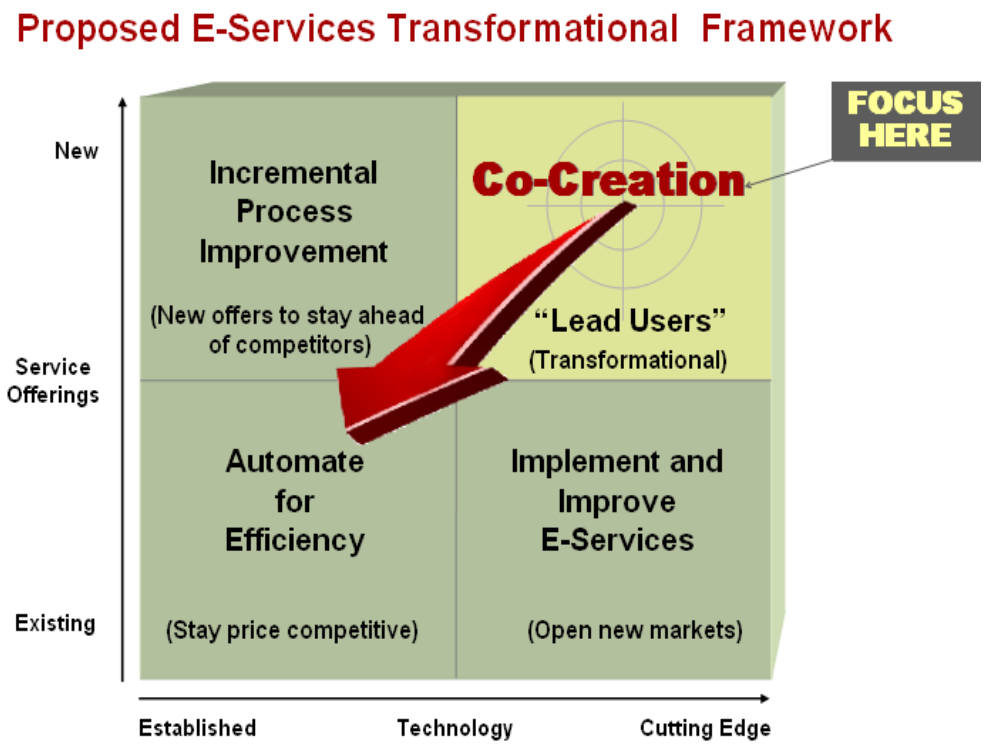
firms must find an effective mechanism to establish and/or enhance interactivity and dialogue with customers. Thus, Dr. Heinonen's findings provide supporting rationale for our framework and an important associated step (build a co-creation strategy) in transforming from a product orientation to co-created e-Services.

CHAPTER 4 – RESULTS

4.1 A Framework for Co-created e-Services

Our proposed framework has two dimensions (See Figure 4-1). The first dimension is the service offering itself. Obviously, a new entrant into the service-based realm will not have established service offerings. However, an effective strategic plan must include this eventually. Existing service offerings are the cash cows that fuel new service development. The future of service organizations is dependent upon a steady stream of new service offering that are a direct result of innovative service ideas.[150]

Figure 4-1: Proposed Framework



The second dimension of the proposed framework is technology. The technology employed to bolster new service development encompasses a broad spectrum from well

established to cutting edge. Technology enables greater networking, the gathering and sharing of information, and improves the speed of delivery of new services.[151] It can also be used to "drive new, more advanced services and solutions."[152] Thus, the type of technology employed should be consistent with the overall transformational objectives.

Within the context of these two dimensions, four quadrants emerge that define the strategies necessary for successful transformation from a product-based focus to co-created e-Services. Of primary interest is the upper right quadrant. This quadrant must be the focus of any transformation to service-based activities. Chen et al. state "value co-creation must be the guiding principle of all service system activities."[153] The elements that comprise this quadrant are the principle focus of this dissertation.

Co-creation leverages the skills, knowledge and talents of users to transform from a product-based strategy to co-created e-Services. A product-based approach generally depends on the core capabilities of the organization to create products for the end-users. Conversely, co-creation requires organizations to integrate users into all aspects of the service development and delivery processes. Lead users, by definition, are ahead of the general set of users in understanding and adapting to the technologies which drive new market trends.[154] Thus, incorporating lead users into the new service development process can significantly enhance the value of the service to all users.

The lower right quadrant focuses on the application of new technologies to open new markets by implementing or improving e-Services. The focus here is on enabling interfaces that expand the customer base and open up the two-way exchange with users.

The top-left quadrant addresses new service offerings through established technologies. This strategy does not leverage new technology breakthroughs. Instead, incremental process improvements are enacted to develop new offerings to stay ahead of the competition.

The bottom-left quadrant represents existing service offerings that can be enhanced with the application of proven technology. The strategy is to lower cost to remain price competitive. The focus is on automating services and improving the efficiency of service delivery.

The large arrow in the framework diagram emphasizes the need to quickly automate, commoditize, and standardize services thereby lowering cost to remain competitive. Without the ability to move from the top-right to the lower-left quadrant, newly co-created services will not provide the expected return on investment as competitors copy and exploit the newly created opportunity. Thus, a successful strategic plan must incorporate the need to effectively balance innovation and creativity with structure and rapid scaling through standardization. Kowalski and Brehmer state that "finding a balance between automation and interaction and between efficiency and effectiveness is needed in order to produce and create value."[155] Further, de Jong et al. state that "service managers face the challenge to find a good balance between organization and freedom."[156] Thus, finding the right balance across all four quadrants of the framework is a key transformational success factor which will be further amplified throughout this dissertation.

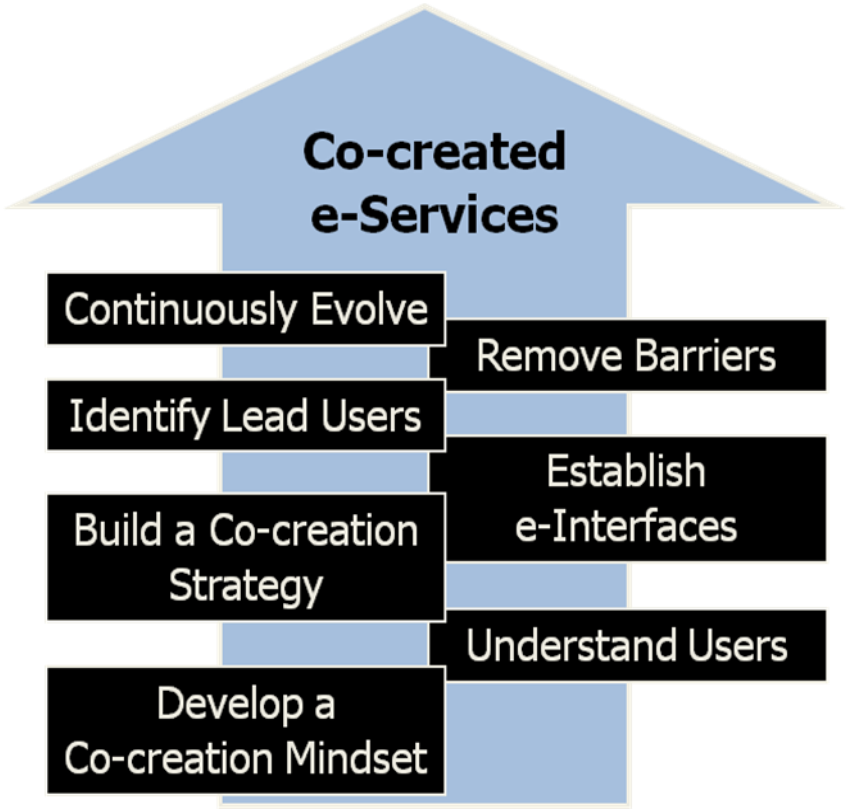
Finally, and most importantly, the FOCUS HERE label emphasizes the need for management to recognize that a successful transformation to a service-based strategy

begins with co-creation. A co-creation "mindset is a necessary condition to long term services system health."[157] Co-creation is the collaboration with customers or end users to achieve innovative solutions.[158] Kristensson et al. state that "all innovation begins with creative ideas" and based on an experimental study, they concluded that "customers generate ideas that are more original than the ones generated by the company."[159] This finding highlights the need to fully integrate customers in the new service development process. As Matthing, et al. state, "findings from recent empirical research about company's intensified interaction with customers show that involving customers will improve the effectiveness of new service development."[160] Yet, as Boudreau and Lakhani point out, "many executives have little idea how to motivate and manage outside innovation."[161] Here, outside innovation refers to harnessing ideas that are external to the company. They further state that "when technology, design and innovation approaches have yet to be established or when customer needs are highly varied or not yet fully understood, then opening up the innovations to the external world can have considerable advantages."[162] In our proposed framework, these conditions exist in the upper-right quadrant. In this quadrant both the technology employed and the service offerings are new. Since customers offer potentially greater innovative ideas that are necessary for obtaining and sustaining competitive advantage, it stands to reason that co-creation should be the focus of a transformation from a product orientation to a services orientation.

4.2 Seven Steps to Successful Co-creation of Value in e-Services

Based on a review of the empirical data and documented case studies, the following steps have been synthesized as outlined in Figure 4-2 below.

Figure 4-2: Seven Steps to Co-created e-Services

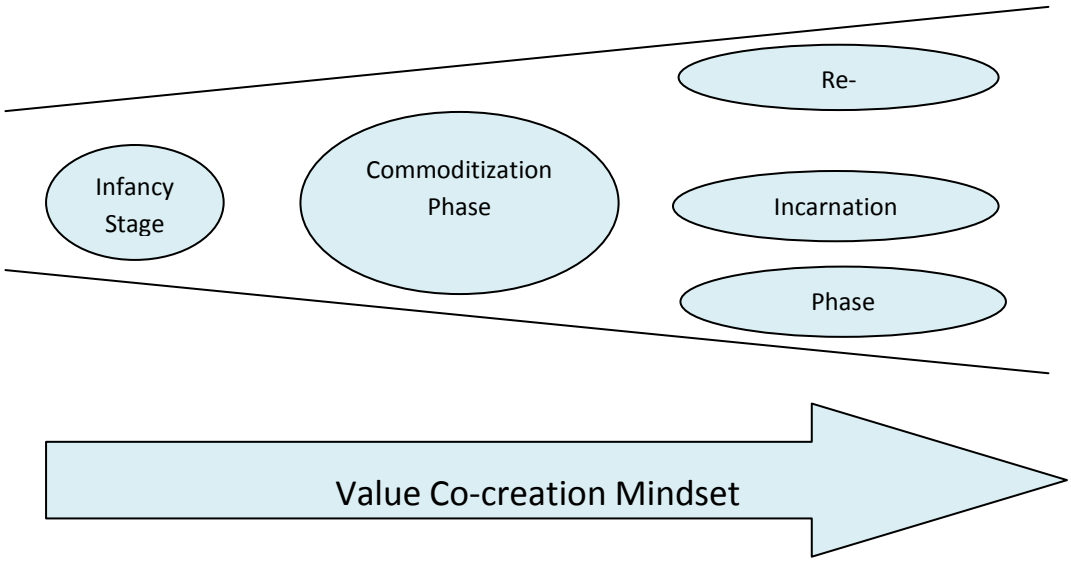


These seven steps provide a means for successfully applying our proposed framework to transform from a product-based approach to co-created e-Services.

4.2.1 Develop a Co-creation Mindset

Hsu and Spohrer of IBM's research center conducted six years of case study research before identifying the life cycle characteristics of service systems. They developed the following diagram to illustrate their findings.

Figure 4-3: Value Co-Creation Mindset[163]



The co-creation mindset is depicted across the entire life cycle of a service system. They emphatically state that the co-creation mindset "must not only be the guiding principle, but also be practiced rigorously throughout the service system life cycle."[164] Given that this mindset must be maintained continuously, time spent understanding this mindset and its ramifications are well worth the investment. The co-creation mindset spans people, process, technology, and the network that ties them together to mutually create value. Prahalad and Ramaswamy found that co-creation networks overcome social and

geographic boundaries by enabling an unprecedented level of information-sharing that is revolutionizing and transforming the global marketplace.[165] The importance of co-creation networks is further articulated by Chen et al., "in order to grow and sustain outstanding services business, one must understand this value co-creation network of entities well."[166] This statement implies that it is no longer sufficient to know one's business. Additionally, one must understand the customers and partners, their communities and what motivates them. Furthermore, one must understand the processes and technology used to link, share and exchange information in the co-creation network. Venkat Ramaswamy used case study examples to demonstrate that "becoming a co-creative organization requires enabling organizational linkages between employee/internal co-creation, customer/community co-creation, and partner/network co-creation."[167] Additionally, he emphasized that top management must invest in the development of the capacity to co-create mutual value with customers.[168] Therefore, the first step in a transformation to the successful co-creation of value in e-Services is the development of a co-creation mindset.

4.2.2 Understand Users and What Motivates Them to Co-create

As stated previously, user integration is an essential component of the co-creation process. Users provide an excellent source of ideas to foster creativity and innovation.[169] Thus, an understanding of the motivations of users is essential to a successful strategy aimed at harnessing user creativity and innovation. While firms typically rely on monetary compensation and other rewards to motivate employees, users are often motivated by less tangible benefits. Case study research in the video gaming industry revealed that many user-co-creators did not want monetary compensation, believing that

to take payment would imply a responsibility and possibly turn a fun hobby into real work.[170] In these cases, the user's motivation to participate is derived from the anticipated satisfaction that comes from creating something of value. Eric von Hippel states that a motivating factor that encourages users to innovate with developers stems from the pure enjoyment of problem solving. He has conducted extensive research going back over 30 years in the "systematic study of innovation by end users." He recalls that users innovate principally as a result of the enjoyment that they derive from the experience. Using the software industry as an example, von Hippel points to studies conducted by Hertel et al. and Lakhani and Wolf which conclude that the joy and learning experiences by volunteer contributors of code to popular software programs is mainly what motivated them to participate.[171]

Similarly, Michael Etgar found that users participate due to the psychological benefits gained from participating and performing relevant tasks independently from the service that is provided.[172] He used a wealth of prior research to demonstrate that enjoyment and deviation from routine are significant motivators for users. Additionally, Franke and Piller conclude that users benefit psychologically from the active role of designing.[173] Thus, a synthesis of prior research leads to the logical conclusion that users are principally intrinsically motivated to co-create by such factors as enjoyment, learning, and creative expression.

Furthermore, users can be motivated by group participation. Henk Pretorius points to the social aspects gained by interacting and contributing in a partnership with other group members.[174] Similarly, Baldwin and von Hippel found that users are motivated by a desire to learn, enjoy themselves and earn a good reputation while

participating in collaborative projects.[175] Humphreys and Grayson have also argued that users benefit by the sheer enjoyment they experience as part of a community involved in co-creation.[176] It therefore behooves organizations wishing to transform from a product-based orientation to co-created services to ensure that users are made to feel part of a larger community of users to take full advantage of the inherent motivators that come from group involvement.

Boudreau and Lakhani list eight intrinsic user motivations including; (1) fun and enjoyment, (2) professional and personal identity, (3) autonomy, (4) status, (5) reputation, (6) reciprocity, (7) learning and skill development, and (8) intellectual challenge.[177] Note that this list includes both motivations that can occur for a single user such as fun, enjoyment learning, skill development, autonomy and intellectual challenges and those that occur in communities of users like status, reputation and identity. Thus, creating an environment that simultaneously balances all of these factors for users is a primary objective of a strategy for harnessing user creativity and innovation.

4.2.3 Build a Co-creation Strategy

Building a co-creation strategy is essential in transforming to co-created e-Services. However, case study research has demonstrated that user-led co-creation practices "are not easily or seamlessly incorporated by existing business or employment practices."[178] Furthermore, Eric von Hippel concluded that the shift to user-centered innovation requires organizations to make significant changes to their business model.[179] Tapping into customer innovation requires that organizations completely revise both their mindset as well as their business model.[180] Therefore, organizations transitioning from a

products-based orientation to co-created e-Services must first recognize that such a change will not be easy and that an entirely new business model will need to be adopted.

Baldwin and von Hippel point to Joseph Schumpeter, who in the 1930s "placed producers at the center" of innovation. Since then, the conditions for innovation have undergone radical change and innovation is increasingly being led by users rather than producers or developers.[181] Case study research involving technology-based service companies revealed that technical product developers lacked a complete understanding of the context in which users operate.[182] Thus, truly competitive innovation requires significant user involvement in the innovation process. Zhang and Chen also found that competition is being driven by the need to leverage external competence rather than the customary focus on internal efficiency, which was the dominant mindset during the industrial era.[183] This trend is also expressed by Ziemer and Long who state that in "today's dynamic and challenging global economy, where change is continuous and new business models emerge rapidly, the need to be entrepreneurial and innovative in order to compete will only continue to grow."[184] As previously stated, users offer a significant source of innovation that must be appropriately factored into a successful co-creation strategy to enable e-Services.

Effective integration of users into all aspects of the co-creation of e-Services is the cornerstone of a success-oriented strategy. As Dr. Kristina Heinonen points out "it is well known that e-Services improve customer-firm, interactivity and dialogue."[185] In order to maximize this interaction, Kristensson et al. identify seven strategies for the successful involvement of customers in the co-creation of new technology-based services. The seven strategies are:

1) users identifying needs in their own setting of use
2) users identifying needs in their various roles
3) providing users with analytical tools
4) motivating users via the apparent benefit to be gained from their involvement
5) non-reliance on brainstorming when generating ideas
6) users not having too much knowledge of technology
7) the involvement of a heterogeneous group of users to ensure that a diversity of ideas is provided for future services[186]

These findings were based on empirical data gathered during case research in the telecommunication industry and are deemed to have broad applicability. Strategies one, two and three ensure that creative ideas are maximized by creating scenarios and using tools that enable users to generate ideas. The research indicates that simply asking users for ideas is insufficient. Users need an environment that allows them to be creative. Thomke and von Hippel provide an excellent example of strategy three. Examining the case of the custom computer chip industry, they found that R&D engineers at large semiconductor companies used sophisticated tools in their design. By integrating and simplifying the graphical user interface of design tools and making them available to online users, they enabled users to design custom chips that could then be manufactured by the company, thereby saving time and reducing cost for their customers. Strategy four addresses the issue of motivating users. As previously stated, users are primarily intrinsically motivated. Therefore, organizations should not attempt to incentivize users like employees. Instead, organizations should simultaneously appeal to both their individual and social motivations by providing a mechanism that facilitates these intrinsic motivations. Strategies five and six identify the conditions and methods that maximize the number of potential useful ideas generated. The research conclusions indicate that the best ideas come from "real-life situations" and not from brainstorming. Additionally, knowing a great deal about technology can limit creativity. "Research has shown that the

more familiarity an individual has with a particular domain, the more difficult it will be to generate creative solutions that lie outside this domain."[187] Strategy seven ensures that a broad spectrum of users is selected to ensure that new service offerings will appeal to mass markets.

In addition to the pioneering work of Kristensson et al., other researchers have suggested useful strategies that are applicable to transforming from a product-based orientation to co-created e-Services. Based on an empirical study conducted in the airline travel service industry, Kristina Heinonen recommends enabling users to do routine activities thus allowing company resources to be redirected "towards more value-increasing activities, such as creating experiences for consumers."[188] Alam and Perry stress that successful new services require the development of long-term relationships wherein users are proactively treated as partners.[189] Moreover, Ziemer and Long state that company managers need to foster an organizational climate that is innovation-centric to create an environment which is conducive to the development of technological innovation. Recognizing that new innovations are largely the result of company collaboration with users, they suggest establishing "a platform for exchange and discourse that can assist in identifying and sorting out emergent strategies."[190] In essence, the strategies that are employed by organizations to transform from a product-based orientation to co-created e-Services will need to be tailored to the organization's goals and objectives and have the ability to dynamically adjust to changing environmental conditions including the increasing demands and expectations of users/consumers.

Franke and Piller state "the idea of integrating users into the design and production process is a promising strategy for companies being forced to react to the growing individualization of demand."[191] Sabine Moeller found user integration to be essential in implementing new services.[192] Additionally, Lusch et al. state that collaboration with users is vital to value-creation for both parties.[193] Furthermore, Panesar and Markeset used survey data and interviews to conclude that "the process for creation of new/improved services requires careful planning and thorough understanding of the customer's needs, wants and preferences."[194] Thus, the integration of users into the life-cycle processes of services is a critical aspect of a transformational strategy to co-created e-Services.

Based upon prior research, Alam and Perry conclude that a successful service strategy implies greater user involvement, closer relationships, and longer commitments than product-based strategies. They further conclude that a customer oriented development process yields a superior innovation and a greater new product/service success.[195] Banks and Humphreys also conclude that a co-created service approach provides a "more effective, efficient and sustainable strategy than a product-oriented strategy based on internally focused innovation."[196] Given that successful new services are the key to long-term sustainment, a strategy aimed at transforming to co-created services necessarily includes a close and continuous relationship with users where commitment is a two-way street. Adegoke Oke draws on empirical evidence to conclude that "successful firms had more tangible and visible signs of management commitment."[197] One important sign of an organization's commitment is responsiveness to user needs. Banks and Humphrey used the results of case study analysis to conclude

that users judge responsiveness. Responsiveness implies that the organizations provide a mechanism to receive customer inputs and a process to act on the inputs in a timely manner. There must also be a mechanism to provide feedback to customers on actions taken by the firm. Customers then make a value judgment with regard to the fullness of the response and adequacy of response timeliness. Customers will only stay in a co-creation relationship when an organization can "prove that they are responding to customer suggestions."[198]

Kowalkowski and Brehmer suggest a balanced services portfolio wherein the focus is on creating "closer, reciprocal customer relationships" while simultaneously "formalizing and standardizing services processes" in order to be cost-competitive.[199] Auguste et al. recommend careful planning when transitioning from a product-based strategy to services in order to avoid common traps. They conclude that one of the primary reasons transitions fail is that companies "strive for growth in services with a business model designed to protect or enhance a core product position, thus setting up a conflict between the product and service businesses."[200] To avoid such conflicts, Matthing et al. suggest that companies abandon comfortable and familiar methods in order to discover a new mindset to enable innovation sharing with users.[201] Co-creation provides an avenue to discover new knowledge that can be leveraged in building a balanced services portfolio. Kowalkowski and Brehmer reveal that the co-creation process can enable new competencies that lead to the re-use of standardized offerings for a broad user base.[202] Referring back to our proposed framework (Figure 4-1), the reuse of codified knowledge from the co-creation process is a key element of the depicted arrow which is intended to show the migration from the 'co-creation' quadrant to the

'automate for efficiency' quadrant in order to stay price competitive. Note that this can be aided by process improvements and/or the application of improved technology via e-Services. Thus, the balancing of the four quadrants of the framework forms the basis of an effective co-creation strategy.

4.2.4 Leverage Technology to Establish Interfaces to Enable Your Strategy

Technology is the primary enabler of an effective transformational strategy. It forms the foundational axis for our proposed framework. Matthing et al. have argued that the rapid advancement of technology has yielded tremendous opportunities for the development of new innovative services.[203] They further state that "traditional service provision is undergoing major transformations due to the infusion of technology into service encounters."[204] Indeed, Kowalkowski and Brehmer have demonstrated that advances in information and communication technologies have been used to both improve existing service offerings and create entirely new service offerings.[205] Likewise, Banks and Humphreys conclude that user innovation has been enabled by the "rapid diffusion and widespread availability of information communications technologies."[206] Similarly, Eric von Hippel found that continuous improvements in computer hardware and software coupled with low cost communication to gain access to a wide range of capabilities and expertise have radically altered the innovation process.[207] More recently, Baldwin and von Hippel have concluded that "we are in the midst of a major paradigm shift: technological trends are causing a change in the way innovation gets done in advanced market economies."[208] They point to exogenous developments such as powerful personal computers and low-cost communication via the Internet as key enablers for collaborative innovation.

Additionally, web application software can significantly enhance the interface between users and service providers. As Henk Pretorius states that "web 2.0 platforms have supplied the stage and tools for co-creation on a significant scale."[209] Many web applications are specifically designed for collaboration thus establishing what Ziemer and Long refer to as "collaborative networks" which are used to "facilitate an innovation-centric organizational climate and fertile environment for the development of new technological innovations" thus "accelerating technology based economic development."[210] Lusch et al. also found that information technology "has a dramatic effect on the ability of all entities in the value-creation network to collaborate."[211] Thus, collaborative networks provide the mechanism by which organizations co-create innovative service solutions. Web technologies combined with powerful personal computer and communications are used synergistically to foster collaboration.

Fabrizio Pini identified the "Internet as the key channel for interaction" with co-creative users. He recommends developing interfaces "to generate engagement with the most innovative part of the customer base."[212] His research showed a strong correlation between the number of user touch points with the organization and the willingness of users to co-create. Many organizations focus on the delivery of final solutions, whereas Pini concludes that organizations should instead focus on preparing the conditions for successful co-creation. He states that the service offering "should allow a space for co-creation and adaptation from customers, becoming more a platform to work on than a closed project." He concludes that the "design of the touch points and their integration … is crucial to the success of any kind of co-creation activity."[213] Therefore, organizations

should consider both the number of interface touch points and the quality of the interaction they enable when planning a co-creation strategy.

Venkat Ramaswamy states that co-creation must be "enabled and supported by interaction-centric capabilities."[214] Information and communication technologies are the key enablers of radical transformation that render traditional user interfaces obsolete.[215] Based upon a series of interviews with experts from leading pioneering companies, Franke and Piller conclude that "the interface between manufacture and customer is crucial" and "a premier success factor."[216] Based on case study research in three different service contexts, researchers have recommended that organizations facilitate opportunities for interaction with users via the Internet.[217] Additionally, collaborative interfaces create powerful synergies that can expedite new technological innovations and create commercialization activity to enhance economic growth and development.[218]

Arcot Narasimhalu suggests that organizations must "first define its business strategy." An organization's business strategy should drive investments in the "different type of technologies, the type of technology infrastructure it will set up and the firm's positioning with respect to emerging technology."[219] In our proposed framework (Figure 4-1) we start with co-creation and leverage cutting edge technology such as high bandwidth communications, servers and storage devices with Web 2.0 social software to enable robust interaction with end users. This ensures an innovation engine to generate, process and store ideas. Because Kristensson et al. point out that "all innovation begins with creative ideas" and demonstrate that "interaction between customers and manufacturers improved the level of creativity," organizations should initially focus on co-creating new service offerings with customers.[220] Technology investments can then

be leveraged to implement and expand e-Services to a wide user base. Established technological capabilities are further used to rapidly automate and improve service offerings. Simultaneously, cutting-edge technological investments are made to generate new services while existing offerings provide the revenue required for these investments.

4.2.5 Identify Lead Users to Co-create Ideas

Technology investment alone will not guarantee a successful strategy. Alam and Perry found a high failure rate for firms offering new services. The reasons for failure were found to be related to inadequate user involvement and orientation. In order to offer superior and differentiated services, organizations require significant user integration. Alam and Perry predict that "those service firms that adopt (a) customer-oriented New Service Development (NSD) process will be those that will lead their industries in the twenty-first century." [221] Industry leaders recognize that users represent a significant source for innovative ideas. Eric von Hippel concludes that a "growing body of empirical work shows that users are the first to develop many and perhaps most new industrial and consumer products." [222] He also found that users developed 80% of the most important innovations in the areas of scientific instrument and semiconductor development. The high value of user-centric innovation highlights the need for organizations to successfully incorporate the considerable capabilities of users in co-creating e-Services.

However, firms often fail to consider the needs of end users in their business models. A failure to fully leverage end-user innovations can result in the loss of significant competitive advantage. To remedy this "consumers, especially those identified as lead users, should be in the innovation process of new services."[223] Baldwin

and von Hippel state that "empirical studies have shown that most single user innovation is done by a subset of all users called 'lead users' that are ahead of the bulk of the market with respect to an important trend and also have a high incentive to innovate to solve needs they encounter at the leading edge." Furthermore, Kristensson et al. found that lead users provide an excellent source of domain knowledge and expertise and are generally highly motivated to develop innovative solutions.[224] Kaisa Koskela also found that lead users provide high value in new service development because they are trendsetters in their field of expertise.[225] Thus, organizations should seek to identify and incorporate lead users into the process for new service development.

Often lead users develop innovations to overcome the shortcomings of existing offerings.[226] Subsequently, these innovations are seen as desirable by a growing population of users. Developers can then capitalize on the increasing demand. Additionally, Baldwin and von Hippel found that the incorporation of innovations developed by lead users enabled firms not only to improve their offerings but also reduce cost and increase the probability of market success.[227] The probability of success is enhanced because users have a superior understanding of the context in which the service is performed. As Thomke and von Hippel state, "customers know what they need better than the manufacturers do."[228] Moreover, the innovation of users was determined to be more functionally novel due to a better understanding of the context and use factors involved. Conversely, innovations developed in-house by manufacturers are generally improvements to pre-existing needs.[229] Kristensson et al. conducted an experimental study of user involvement in new service development. They found that users assess innovative ideas differently and generate more original ideas than the company's service

developers.[230] Additionally, a field experiment with end users in the mobile phone service industry revealed that "consumers' service ideas are found to be more innovative, in terms of originality and user value, than those of professional service developers."[231] The findings from these studies demonstrate a clear competitive advantage for firms willing to incorporate lead users in their new service development processes.

Panesar and Markeset used survey data and interviews to conclude that "feedback from customers is the most important activity to encourage service innovations."[232] However, user feedback is best obtained in the course of actual use. Matthing et al. found that user's best ideas are triggered by situations that occur unexpectedly. They therefore suggest creating interactions with users that are designed to facilitate user learning to generate innovative ideas for new services.[233] Alam and Perry used empirical analysis to conclude that "idea generation is the most important stage" in the development of new services.[234] Adegoke Oke found that idea generation was not only most important but also the most frequently used step in new service development.[235] Given the importance that these researchers place on idea generation by users, organizations should include a methodology to facilitate idea generation with users as a fundamental part of the new service development process.

Kaisa Koskela states that "most of the innovation activity of users is concentrated among lead users" and that lead users can be identified by their "adoption and usage of technology intensive services."[236] Our proposed transformational framework (Figure 4-1) utilizes lead users as a fundamental part of the co-creation process. Therefore, a methodology is required for the identification of lead users to participate in the co-creation of e-Services. Lead users can be identified by their characteristics. Eric von

Hippel states "the higher the intensity of lead user characteristics displayed by an innovator, the greater the commercial attractiveness of the innovation that the lead user develops."[237] This statement implies a need to determine lead user characteristics in order to identify lead users who are capable of supporting innovation activities with an organization.

One method of identifying lead users by their characteristics involves testing users to obtain their Technology Readiness Index (TRI). Matthing et al. found that the identification of lead users is a significant challenge for organizations who are seeking to improve the probability of new service success. TRI helps to identify a user's "overall predisposition toward new technologies" and, it is "appropriate for identifying lead users who are likely to be most effective and helpful in the process of developing new technology-based services."[238] Furthermore, lead users, as identified by the highest TRI scores, exhibited behaviors that were deemed to be strongly conducive to generating a broad spectrum of diverse and novel ideas for new services. The test for TRI can be administered as an on-line survey and thus provides a useful way of identifying lead users. Additionally, Matthing et al. recommend starting the co-creation of new services with 10-20 lead users as identified by the highest TRI scores.[239]

Eric von Hippel has suggested that organizations seek out lead user developed innovation as a way of improving competitive advantage. He claims that most organizations focus on finding and filling needs instead of finding existing lead user developed innovation and capitalizing on it. Yet, von Hippel found that organizations often reject lead user innovation because these innovations are seen as outliers that are of no interest. Still, other organizations do capitalize on lead user innovations. For

example, an experiment conducted by 3M resulted in lead user ideas generating eight times the sales when compared to 3M's traditional method.[240] Harnessing lead user ideas thus provides significant competitive advantage and is of vital importance to a successful transformation from a products-based orientation to co-created e-Services.

4.2.6 Remove Barriers and Resistance

Resistance is an issue often experienced by organizations when transforming to user-centric innovation.[241] New technology-based service development, in particular, has been found to be difficult due to unforeseen barriers that inevitably exist in organizations.[242] Furthermore, Fang et al. caution that "transitioning to services may create internal confusion, tension and even outright conflict."[243] As a particular example of the barriers and resistance that can occur in the co-creation of a new service, Matthing et al. cite their experience in the mobile phone service industry. They found that company "structures, processes and culture prevented them from (effective) customer involvement." [244] The company engineers often viewed user innovation as outlandish, too simplistic or too difficult to achieve. Additionally, the engineers preferred to speak in technical terms that lead users were unfamiliar with. As a result, company engineers felt that it was more prestigious to exclude lead users from the innovation process. The barriers to effective communication and the negative attitude of company engineers made it very difficult to involve lead users.[245] Frequently, company developers do not think outside the current capabilities of technology primarily because they do not operate within the same environment as their customers.[246]

A significant challenge for product oriented companies is the determination of strategies to change the mindset of company employees. Employees should be

encouraged to embrace the co-creation of value in order to provide superior customer experiences.[247] Thomke and von Hippel also found that senior management should develop "specific incentives to induce employees to support the transformation."[248] Specific incentives are needed for company staff to continuously involve end users rather than rely on purely internal development methods. Researchers found that once the engineers were incentivized to work with users, the ideas that engineers originally perceived as outlandish were in reality very well conceived given the context and an understanding of the user environment. The engineers were then able to leverage the user ideas in successful new service development.[249] Thus, a successful transformation from a product-based orientation to co-created e-Services will not be effectively sustained without incentives for company employees to continuously co-create mutual value.

4.2.7 Continuously Evolve

In order to achieve and maintain competitive advantage, organizations must continuously adapt to a marketplace which has been characterized as both complex and extremely dynamic.[250] Surveys and interviews of best practice organizations conducted by Bartley et al. resulted in the development of two notable best practices:

1. Customer-focused strategies and approach are continuously reviewed for further improvement.
2. Key processes that impact the customer are continuously monitored and improved.[251]

These two best practices are captured in the upper quadrants of our proposed transformational framework. In the upper right quadrant, co-creation provides the necessary customer focus with continuous user engagements for improved e-Services.

Incremental process improvement involves constant monitoring for opportunities to improve service offerings in order to stay ahead of the competition.

Adaptive competence is defined as "the ability of an organization to adjust to changing circumstances." Organizations must continuously evolve and improve their adaptive competence in reaction to turbulent environment change.[252] Boudreau and Lakhani state that the "crucial thing to remember is that a company's innovation strategy does not have to be cast in stone."[253] Yet, many organizations develop a well structured initial strategy but do not adapt it even when faced with environmental changes that are inconsistent with the original assumptions and market projections. The failure to adjust to changing environmental conditions inevitably leads to service offerings which do not compete well in the marketplace. It is further recommended that organizations "evolve their strategy in ways that make the most sense for their particular business."[254] Continuous evolution is thus an important success factor when transforming to co-created e-Services.

CHAPTER 5 - CONCLUSION

Michael Etgar states that there is a "shifting of a greater part of consumers' expenditures from purchasing of goods to paying for the performance of services."[255] This shift has led to "a terrain of negotiation and power relations quite different from those of industrial era production" where "user-led co-creation practice works as … a dynamic wrecker of industrial era modes of production and associated business practices."[256] Furthermore, Eric von Hippel states that the "shift is being driven by new technologies" and "the availability of very low-cost, Internet-based communications."[257] As these trends continue, it will become increasingly important for organizations to embrace co-created e-Services to enhance economic growth. We have shown through our analysis of case study and empirical data that companies desiring to transform from a product-based orientation to co-created e-Service need to make significant changes to long held beliefs and business models. We have developed a novel framework for such a transformation and outlined the steps necessary to implement a success-oriented strategy.

In order to prove the efficacy of our proposed framework and its associated seven steps to achieve value in co-created e-Services, additional case study and empirical research is needed. Case study research utilizing the framework as the basis of transformation should be undertaken and documented. We further recommend that empirical research be conducted across diverse industries to further prove the viability of our results.

5.1 Conclusions with Respect to the Synthesis Methodology

The synthesis methodology enabled the convergence of three distinct fields of study while integrating results from prior case and empirical studies. Our proposed framework is a direct consequence of utilizing the synthesis methodology to analyze the impact of technology with respect to various service offerings. Co-creation emerged as the key transformational driver to leverage technology breakthroughs to create innovative new e-Service offerings thereby increasing competitive advantage.

The seven steps to successful co-creation of value in e-Service were developed using the synthesis method to examine and analyze common threads between diverse case studies and empirical results. The first step, development of co-creation mindset, was found to be fundamentally essential to successful implementation because co-creation is significantly different from traditional firm-based innovation. An incomplete understanding of the concept of co-creation, coupled with a product-mindset was found to be significant cause of failure. Conversely, an appropriate co-creation mindset was found to be essential in virtually all successful transformation studies. Similar results were also found for the understanding of users and their motivation to co-create with firms. Our findings indicate that proper motivation of users is essential to the success of organizations desiring to transform to co-created e-Services from a product orientation.

The synthesis method proved particularly useful in identifying successful co-creation strategies. This is because of the wide variety of strategies and the lack of fully developed or articulated strategies on the part of firms in documented case studies. Commonality among strategy components thus required the synthesis of similarities between the various aspects of each firm's strategy as documentation in the case studies.

Logical deductions based on empirical evidence were also synthesized to bridge gaps and reinforce case study conclusions.

The leveraging of technology and the identification of lead users as steps in the successful transition to co-created e-Service were fairly straight forward to synthesize based upon a high correlation of these strategies in numerous co-creation case studies. This was also true, but to a lesser extent, for overcoming barriers and resistance. This may be because the focus of some case studies did not include a comprehensive look at firm internal aspects of co-creation. The more recent of these case studies place increased emphasis on the contribution of internal resistance to change. The need to continuously evolve stems from the almost universally held belief that the competitive environment is in a constant state of flux. Consequently, firm strategies must recognize the importance of flexibility in order to evolve their strategies over time in response to their environment. The synthesis method thus greatly aided the development of all seven steps involved in the successful transformation to co-created e-Services.

5.2 Conclusions with Respect to Our Proposed Framework

Our proposed framework is a direct result of the synthesis of prior case studies and empirical research in the fields of co-creation, service transformation and e-Services. However, no case studies currently exist to test the validity of our proposed framework. It is therefore recommended that case study research be conducted to validate and improve the framework.

Because prior research has shown that service organizations depend upon the continuous innovation of new service offerings, product-oriented firms which desire to undergo a transformation to services should focus on co-creation as the source of new service innovations.[258] Kowalkowski and Brehmer have demonstrated that technology drives new and more advanced services.[259] The upper right quadrant of our proposed framework represents the unification of advanced technologies with the co-creation of new service offerings. The research has shown that users, particularly lead users, provide superior quality innovations that can offer a significant competitive advantage.[260] It is therefore logical to leverage this advantage by establishing an effective interface that allows a firm to obtain the skills, talents and knowledge of users during the new service development process. Baldwin and von Hippel found that by doing so, firms could reduce development costs and increase user acceptance.[261] We thus conclude that a transformation from a product-based approach to co-created e-Services begins with co-creation by leveraging lead users to develop new services offerings.

Process improvements to increase the utility of services while lowering costs enable firms to stay ahead of competitors. Bartley et al. empirically demonstrated that process improvement involving users is a best practice of successful firms.[262] Lusch et

al. have also demonstrated that the higher the adaptive competence of a firm the greater is their competitive advantage.[263] It follows that co-created e-Services should be continuously improved to maintain competitive advantange. As Boudreau and Lakhani conclude, a firm's strategy must evolve in order to adapt to an ever-changing competitive environment.[264]

As new technologies enter the environment, firms need to apply them in innovative ways in order to open markets and opportunities. Matthing et al. have shown how new technological advancements have created tremendous opportunities for the development and provision of new service experiences.[265] Additionally, Henk Pretorius demonstrated that the application of web 2.0 tools have enabled the broad expansion of co-creation.[266] One can reasonably assume that the arrival of web 3.0 capabilities will provide additional opportunities to open new markets.

The application of established technology can be efficiently utilized to reduce costs. Kristina Heinonen demonstrated that routine activities can be automated to allow company resources to be applied to more value creating activities.[267] Thomke and von Hippel performed case study research in the custom computer chip industry. They demonstrated that firms could reduce costs, increase speed of delivery and improve customer satisfaction by simplifying design tools and making them available to online users.[268] Thus, services can be automated to improve cost competitiveness, particularly if it can be done quickly enough to stay ahead of competitors.

5.3 Conclusions with Respect to the Seven Steps

The seven steps are important considerations in building an effective implementation plan to transform an organization from a product-based orientation to co-created e-Services. These steps should be used as a guide and modified as necessary to suit a particular business environment.

The development of a co-creation mindset is critical and a necessary first step in the transformation process. It is also necessary to maintain this mindset throughout the full service life cycle. Hsu and Spohrer performed case study research to conclude that the co-creation mindset must be the guiding principle and be rigorously applied throughout the life cycle of the service.[269] Ramaswamy also conducted case study research and concluded that the co-creation mindset must continuously be reinforced by top management.[270]

The synthesis of numerous co-creation case studies reveals that users involved in a co-creation relationship are primarily intrinsically motivated.[271] This finding has significant applicability to organizational development. Several case studies have concluded that firms attempting to motivate users in a similar fashion to that of employees experience significant shortcomings.[272] Whereas, firms that recognized and accounted for intrinsic motivations such as enjoyment, learning and creative expression, as well as social aspects such as status and reputation, achieved positive outcomes.[273] Thus a significant finding of our research is that firms must create interfaces with users that enable intrinsic motivations to be satisfied and enhanced throughout the service co-creation process.

We further conclude that a firm must build an effective co-creation strategy to successfully transform from a product orientation to a co-created e-Services business. This requires a firm to make fundamental changes to their business models in order to be successful. Kristensson et al. conducted case study research to demonstrate that the users need to be fully engaged and involved in the co-creation of value.[274] Further, they identified the necessary conditions to maximize the utility of user involvement using empirical data gathered during case study research.[275] Ziemer and Long demonstrated the need to create an environment whereby a "platform of exchange" is an effective mechanism for user engagement.[276] The growing demand for individualization necessitates a continuous involvement of end users during the entire life cycle of services. Berger et al. showed how this type of user involvement could be accomplished using the appropriate technical infrastructure to acquire user knowledge.[277] Additionally, Alam and Perry concluded that firms should focus on sustaining these relationships over the long term.[278]

Baldwin and von Hippel refer to a major paradigm shift resulting from the advancement in technologies.[279] Exogenous developments in computer processing coupled with advances in communication and web applications have enabled firms to co-create individualized services on a massive scale. As Bruce Friesen states, the Internet makes it "possible for companies to engage in meaningful and targeted dialogue with their customers."[280] He further states that "dialogue enables co-creation."[281] Lusch et al. conclude that internal collaborative networks have dramatically altered traditional producer/user interfaces.[282] Case study research demonstrated that the interface design

and integration were the crucial success factors. Therefore, firms should focus on the creation of a user interface rather than developing solutions for users.[283] Arcot Narasimhila found that a firm's technology infrastructure has a direct bearing on its ability to integrate emerging technologies.[284] The ability to incorporate new technologies rapidly into a firm's infrastructure and thereby improve and enhance the firm/customer interface is essential for the successful co-creation of e-Services.

The identification of lead users to co-create new services is also found to be essential in transforming to co-created e-Services. Eric von Hippel used empirical data to demonstrate that users develop the majority of innovations.[285] However, Kaisa Koskela found that firms often ignore user innovations.[286] She also found that lead users offer significant benefits to the innovation process for new services.[287] Therefore, firms should find ways to identify and incorporate lead users into new service development. Lead user developments become attractive to the general population of users, thus offering expanded markets and reduced design costs.[288] Harnessing lead user innovation provides significant competitive advantage and is vital to the successful transformation to co-created e-Services.

The removal of barriers and resistance is also vital to effective transformation. Research has shown that internal organizational resistance can be a significant barrier to successful incorporation of users into firm processes.[289] Incentives should be developed for company staff to involve and work with users. With proper incentives, employees are motivated to develop an understanding of the context in which the user ideas are relevant. This understanding enables company employees to effectively leverage user innovations.[290]

Finally, firms should continuously evolve in order to adapt to an ever-changing environment. Lusch et al. have characterized this environment as turbulent and complex.[291] Bartley et al. found that best practice organizations continuously evolve their strategies and processes in order to improve their interface with the customer.[292] Thus, firms must continuously evolve the e-Services that they co-create with their customers.

5.4 Conclusions with Respect to Systems Engineering

Howard Eisner has defined Systems Engineering as an "iterative process of top-down synthesis, development, and operation of a real-world system."[293] He further states that synthesis is a key idea within this definition. Synthesis is a logical combining of disparate pieces of information into a cohesive whole. The synthesis methodology offers a way to logically combine the findings from research in disparate fields of study. This method also allows for the logical combining of disparate sources of information. Case studies have provided qualitative insights into firm/user interactions, while empirical studies provide quantitative measures upon which to make judgments. The synthesis method has allowed the simultaneous combining of case study and empirical results from the fields of co-creation, service transformation and e-Services into a cohesive framework with the implementation steps necessary to enable the transformation to co-created e-Services. The conclusions reached in this dissertation are thus wholly consistent with both the definition and intent of the practice of systems engineering.

5.5 Areas For Further Research

Our proposed framework and the associated seven steps require additional study. Case studies using the framework as the basis of research need to be conducted. These case studies should encompass a wide array of industries and geographical areas to include developing economies. Empirical studies based upon case study results should also be conducted to gain a quantitative measure of the efficacy of this research. This could lead to possible framework modifications or additional steps to better support organizations as they transform from a product-orientation to co-created e-Services.

A deeper investigation of the customer/firm interface should also be explored. This could include practices, processes and technologies that best reflect the type of interaction required for effective co-creation of value. Additionally, methods to improve the functionality of the interface require further study. Software applications designed to enable co-creation are currently in their infancy and are thus fertile ground for exploratory case investigations. From the people perspective, studies should be conducted to determine the specific firm resources that users wish to engage with. Furthermore, a deeper probe into the merger of the three research fields may provide additional possibilities for case and empirical research. The synthesis of additional fields such as organizational learning, might also prove to be insightful.

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APPENDIX I

Co-creation as a Source of Competitive Advantage

Focus	Author(s)/Year
Identification of emerging market opportunities before the competition.	Anderson and Narus 1991; Nonaka, 1994; Nonaka and Takeuchi, 1995
More effective organisational learning.	Anderson and Narus 1991; Nonaka, 1994; Nonaka and Takeuchi, 1995
Greater innovation in creating new products and services.	Von Hippel, 1982, 1986 1994; Gibbert, Leibold and Voelpel, 2000
Validation of accumuated organization knowledge.	Gibbert, Leibold and Voelpel, 2000
Better and faster response to latent customer needs.	Leonard and Rayport, 1997
More rapid identification of errors.	Sawhney and Prandelli, 2000b
Improved customer access to information concerning service problems and remedies.	Sawnney and Prandelli, 2000a
Higher perceived customer switching costs arising from the customer's ongoing knowledge investments in the firm.	Sawhney and Prandelli, 2000b
More personalised and unique experiences for the customer and higher profitability and customer loyalty for the firm.	Prahalad and Ramaswamy, 2004
Creative stretching of existing products, services and skills to generate additional revenue and efficiency.	Sharma et al., 2002
Expanded market share.	Sharma et al., 2002
Co-creating competitive advantages.	Zhang and Chen, 2006
Creating growth with services.	Sawhney, Balasbramanian and Krishnan, 2004
Increasing competitive advantage.	Shoeman and Finsterwalder, 2009
Integrative value co-creation as a vision of innovation management.	Tanev, Knudsen and Gerstlberger, 2009

(Adapted from Chris Lawer, 2005)

APPENDIX II

Customer Participation in Production			
	Area	**Type**	**Result**
Lovelock and Young 1979	Consequences of customer participation in production of services	Conceptual	Customers can be a source of productivity gains.
Mills and Moberg 1982	The organizational technology needed to manage the services sector as opposed to the goods sector.	Conceptual	Suggests that one key difference between the two sectors is the customer/client's role in the production process. Customer contributions to services are described as information and effort.
Mills, Chase, and Marguiles 1983	Managing the customer/client as a partial employee to increase system productivity.	Conceptual	Suggests that greater customer involvement in the production process can be a source of productivity gains. Customers' input needs to be monitored and assessed the same way as regular employees' input.
Bateson 1985	Understanding the motivations of the self-service consumer.	Empirical	Examines the differences between customers who would choose to do-it-yourself and those who would choose to be served. Shows that a segment of customers would prefer the do-it-yourself option even when no incentives are offered to encourage participation.
Fitzsimmons 1985	The consequences of customer participation on service sector productivity.	Conceptual	Suggests that customer participation through substitution of customer labor for provider labor, smoothing of demand, and use of technology in place of personal interaction may yield greater service sector productivity.

Mills and Morris 1986	Customers as partial employees.	Conceptual	Customers may serve as partial employees in a service setting by sharing some of the production responsibilities.
Goodwin 1988	Training the customer to contribute to service quality.	Conceptual	Suggests that customers' sources of training and willingness to be trained are a function of their commitment to the provider and the presence of other customers. When customers are committed to the provider, they are more willing to invest in learning how to contribute. Customers may be trained by both the provider and other customers.
Czepiel 1990	The nature of the service encounter and directions for research.	Conceptual	Suggests that customer participation in the production process and the satisfaction with this role may affect customer satisfaction.
Bowen 1990	Taxonomy of services based on customer participation.	Empirical	Participation is a meaningful construct for customers describing various services. It may be possible to segment customers onthe basis of their willingness to participate in the creation of services.
Bowers, Martin, and Luker 1990	Treating employees as customers and customers as employees.	Conceptual	Suggests that treating employees as customers through internal marketing and treating customers as employees through training and reward systems enhance overall system productivity.
Kelley, Donnelly, and Skinner 1990	Managing customer roles when customers participate in service production and delivery.	Conceptual	Suggests that customers may be managed as partial employees when participating in service production and delivery by focusing on customers' technical and functional quality input to the process. Suggests that

			customer particiaption may affect overall quality and productivity, employee performance, and employees' emotional responses.
Dabholkar	Using customer participation to enhance service quality perceptions.	Conceptual	Suggests that customer participation may influence perceptions of the waiting time and thus affect perceived quality.
Fodness, Pitegoff, and Sautter 1993	The downside of customer participation.	Conceptual	Suggests that customers who are trained to do more fo the service for themselves may develop into a potential competitor by performing for themselves services that were previously purchased.
Firat and Benkatesh 1993	Argues for the reversal of roles of consumption and production.	Conceptual	Among the postmodern conditions discussed is the reversal of consumption and production as customers take on more active roles in production.
Song and Adams 1993	Using customer participation in production and delivery as opportunities for differentiation.	Conceptual	Customer participation should not always be examined merely as a cost-minimization problem. Instead, firms can examine opportunities for differentiating their market offering by heightening or lessening customers' participation in the production and delivery of products.
Cermak, File, and Prince 1994	Distinguishing participation versus involvement effects.	Empirical	Attempt to distinguish involvement from participation, but authors conclude that particiation construct was confounded by operationalization as level of involvement.

Firat and Venkatesh 1995	Distinguishes between the consumer perspectives of modernism and postmodernism.	Conceptual	Argues that the modernist perspective confines the consumer by arguing for the "privileging" of production over consumtion. Postmodernism provides a basis for understanding a greater consumer role in production as well as consumption.
Firat, Dholakia, and Venkatesh, 1995	Presents a postmodern perspective of consumer as customizer and producer.	Conceptual	As consumers have become customizers, marketing organizations' offerings will increasingly become processes rather than finished products. Consumers who are integrated into the production systems will need to be conceptualized as producers.
Hult and Lukas 1995	Customer participation in health care.	Conceptual	Suggests that classifying health care tasks in terms of customer participation and complexity of the task has important implications for marketing the services.
Lengnick-Hall 1996	Customer contributions to quality.	Conceptual	Customers influence quality by their roles: as resources, as co-producers, as buyers, as users, and as product. Garnering customer talents in these roles can yield competitive advantages.
Van Raaij and Pruyn 1998	Customer control and its impact on judgments of service validity and reliability.	Conceptual	Suggests that customers may perceive more or less sense of control in three stages int he service relationship: input, throughput, and output. The greater the sense of control, the more customers will feel responsibility for and satisfaction with the service.

Prahalad and Ramaswamy 2000	Coopting customer competence.	Conceptual	The changing roles of customer from passive audience to active co-creators of experience. Companies can achieve a competitive advantage by leveraging customer competence.
Wind and Ramaswamy 2000	Customerization: The next revolution in mass customization.	Conceptual	In the digital marketplace, customers are becoming active participants in product development, purchase, and consumption. Firms must become customercentric and adopt "Customerization" to add value.

(Bendapudi and Leone, 2003)

APPENDIX III

Mass Customization and Personalization					
Author(s)	**Question**	**Type**	**Area**	**Analysis**	**Result**
Ahlström/ Westbrook (1999)	What are the implications of mass customization for operations management?	Survey; subject of research: machinery	Various branches of industry	descriptive statistics, correlation analysis	Mass customization is seen as an interesting form of differentiation with specific patterns of design of operations. Study lacks clear differentiation between mass customization and traditional craft customization.
Bauer/Grether/ Leach (1999)	Does customization/ personalization influence customer relationship intensity?	Survey, (n=94); subject of research: managers	US online brokers for financial services, real estate, travel; online book and music sellers	Covariance Structure Model (LISREL)	(1) Level of interaction is positively related with all three measures of relationship intensity (user satisfaction, commitment, trust; as perceived by the management of the firms) (2) commitment is showing the strongest significance coefficient; user satisfaction is only (weakly) significantly related
Dellaerta et al. (2001)	How do consumers handle choice of modularized products?	Survey (n=728), simulation; subject of research: customers	Tourism: customization of travel packages	Conjoint choice experiment, micro-simulations	Under modularization, producers of products with structural utility benefits are better off offering their competitively weaker modules separately while bundling their competitively stronger modules with weaker modules

Duray et al. (2000)	How can mass customizers be classified?	Survey (n=126); subject of research: managers	Various industries in the USA	Exploratory Factor Analysis, ANOVA	Development of a configurationally model for classifying mass customizers from the perspective of operations Two variables are key in classifying mass customizers: (1) the point in the production cycle where the customer is involved in specifying the product [design/fabrication – assembly/use] (2) the type of modularity used in the product [design/fabrication – assembly/use]
Feitzinger/Lee (1999)	How does a large electronics manufacturer deploy mass customization?	Case study	Electronics industry (Hewlett-Packard)	Interviews, qualitative assessment	Postponement is identified and described as key enabler of mass customization
Franke/Mertens (2001)	How do users perceive, handle and evaluate personalization within complex information systems?	Case studies and field experiments	Management information systems (MIS), training and advising systems, tourism planning system	Interviews, qualitative assessment	(1) Privacy and acceptance issues (2) Identified perception of usefulness and value-added is a significant success
Franke/von Hippel (2002)	Do toolkits for user innovation benefit users?	Survey (n=138); subject of research: customers	Open Source Software	Cluster analysis,heterogeneity index, willingness to pay (WTP) scale	(1) Needs among users of web server software are highly heterogeneous (2) Dissatisfaction with standard offerings is high (3) Users who used the toolkit and created their own product are significantly more satisfied than users who only used the standard products

Gruner/ Homburg (2000)	What is the impact on new products' success of (1) the degree of consumer interaction in different stages of new product development and (2) the characteristics of the involved customers?	Survey (n=310); subject of research: managers	(German) machinery industry	Confirmatory factor analysis for measure validation, cluster and discriminant analysis	(1) Degree of customer interaction in early and late stages of new product development process increases new product success (but not in middle stages of development of technical solution) (2) customers with lead user characteristics, financially attractive customers and close customers are most attractive interaction partners.
Huffman/Kahn (1998)	Does complexity inherent with a wide number of options lead to customers' dissatisfaction "mass confusion"?	Survey / experiments (n=79 and n=65); subject of research: customers	(a) Customization of stay in hotels (b) Customization of sofa	Regression analysis	(1) Attribute based presentation is preferred to alternative based presentation of customization items; (2) Process satisfaction is related to degree of input in an inverted u-shaped fashion (3) Retailers should explicitly inquire customer's preferences and help consumers to learn their own preferences
Khalid/Helander (2001)	How does the cultural influence its use and satisfaction of a configuration tool on the Internet?	Survey (n=137); subject of research: customers	Watch industry (Idtown.com), comparison of two cultural backgrounds of users within one region (Hong Kong versus Malaysia)	Correlation analysis	(1)Users follow top-down approach represented by the product structure (2) Malaysian users show larger enthusiasm towards the idea of customization than Hong Kong subjects (3) Malaysian users evaluate the function "show and manage time" as

					main benefit of a watch much higher than Hong Kong users, who evaluate aesthetics and style higher
Kotha (1996)	What are the management processes and organizational structures of an early mass customization pioneering company?	Case study	Bicycle industry (National Industrial Bicycle Company of Japan)	Interviews, qualitative assessment	(1) The interaction of mass customization and mass production systems can be an effective source of knowledge creation and of organizational learning (2) Identification of external and internal success factors of mass customization
Liechty/ Ramaswamy/ Cohen (2001)	How can customizable features on a choice board be evaluated?	Survey and experiment (n=360); subject of research: customers	Web-based information services (Internet Yellow pages)	Bayesian approach for menu-based conjoint analysis, fractional factorial research design; correlation analysis	Development and concept proof of experimental choice menus for assessing customers' preferences and price sensitivity for features offered on a choice board
MacCarthy/ Bramham/ Brabazon (2002)	How can different operations modes of mass customization be classified?	5 case studies	Consumer goods, consumer electronics, electronic equipment, commercial vehicles	Interviews, qualitative assessment: classification of the case studies against the schemes identified in the literature	(1) Mass customizers differ from mass producers and (craft) customizers in regard to the environments in which the products are offered, the customization strategy, and operational practices and resources used (2) Basic enablers of mass customization (in regard to customer integration) are the exposure to market fluctuations required and the strategic involvement of customers to meet

					existing modular product structure
Meuter et al. (2000)	What are sources of satisfaction and dissatisfaction with self-service technologies from the users' perspective?	Survey (n = 823); subject of research: customers	Various branches of industries using self service technologies	Critical incident study, regression and correlation analysis between clusters	(1) Degree of user expectation when using self service (configuration) is higher compared to interpersonal interaction (2) degree of customization offered of by self service technologies is positively correlated with user satisfaction (3) largest factor of satisfaction was the degree of perceived advantage of using technologies; second largest error-free functionality
Ng (2000) (similar findings report Johnson 1998, Nicholas et al. 2000, Westland /Au 1998)	Does 3D visualization in Internet shopping lead to higher user satisfaction and higher propensity of purchase?	Survey (n=80); subject of research: customers	Consumer electronics	Experiment, correlation studies	(1) 3D visualization increases user satisfaction (compared to 2D images) (2) 3D visualization increases propensity of purchase (compared to 2D images)
Oon /Khalid (2001)	How does web site design and usability of online configurators influence user satisfaction and site efficiency in supporting design activity?	Survey (n=48); subject of research: customers	Mass customization of web sites	One-way repeated measures ANOVA, factor analysis, principal component method	(1) Higher willingness to purchase product (2) Hierarchical structure of product components allows users to complete the design (configuration) task better
Piller (2001)	What are the mass customization best practices?	Case study research (n=120)	Various branches of industry (60% b-to-c; 40% b-to-b)	Interviews, qualitative assessment	Success factors of mass customization are: (1) Clear definition of "solution space" (2) Translation of modular

					product/service structures with configuration tool (3) Smooth interfaces between product configuration and order fulfillment (4) No iterations between sales and fulfillment (5) Closed "knowledge loop" (6) Top management support, clear governance
Piller/Schoder (1999)	What is the state of art of connecting mass customization and customer relationship management?	Survey (n=914); subject of research: managers	German companies; various branches of industry, most companies (79%) are operating in the b-to-b market	Descriptive statistics, correlation analysis	(1) Companies are employing mass customization to get stronger position of differentiation (2) Lack of sufficient information management is main hurdle (3) Use of customer data for building customer relationships is rather weak
Strauss/ Schoder (2000)	What are the status, development, success factors and management implications of mass customization?	Survey (interviews) (n=1308); subject of research: managers	German, Austrian and Swiss companies of various industries	Descriptive statistic	(1) The strategy of mass customization is seen by a third of the companies of increasing importance in future (2) financial services and utilities offer fewer individual products (3) mass customization is connected with more customer satisfaction (from the perspective of managers)
Tian / Bearden / Hunter (2001)	How can consumers' need for uniqueness be evaluated (scale development)?	Two surveys (n=273; n=621); subject of	Personal experiences of users (no specific fields)	Validation studies with three-factor oblique model, measurement of	Development of a scale to evaluate consumers' need for uniqueness (self perception of

		research: customers		factor loadings; validation studies	uniqueness). Scale is defined by creative choice counter conformity, unpopular choice counter conformity, avoidance of similarity.
Vickery/Droge/ Germain (1999)	What is the relationship between product customization and organizational structure?	Survey (n=217); subject of research: managers	US manufacturers , various branches of industry	Covariance Structure Model (LISREL)	Customization associates with more formal control, fewer layers, narrower spans of control.
von Hippel (1998)	What are the economics of product development by users?	Case studies	Application-specific integrated circuits (ASICs); computer telephony integration systems (CTI)	Qualitative assessment	User-driven product development pays off (impact of "sticky" local information).
von Hippel (2001)	What are the benefits of toolkits for user innovation?	Case study	Food Industry (Nestlé)	Qualitative assessment	By the use of a toolkit the normal time of 26 weeks for development of a new product was reduced to 3 weeks on average
Thomke/Von Hippel (2002)	What are business models and strategy implications of toolkits for user innovation?	Case studies	Flavor industry (BBA), plastic industry (GE Plastics)	Qualitative assessment	Toolkits for user innovation demand organizational changes, allow improved design processes and increase customer satisfaction

(Adapted from Franke and Piller, 2003)

APPENDIX IV

E-Services Research

Theme	Theory	Research	Management	Authors
Who Produces the E-Service?				
Multi-Channel Service Provision	Rethink flexible B2C channel strategy in light of strengths and weaknesses of specific channels.	There is variability in the way end-users experience channels.	Transfer simple processes like order taking to the e-channel.	Boyer, Hallowell, and Roth (2002) Montoya-Weiss, Voss, and Grewal (2003) Bendoly et al. (2005) Johnson and Bharadwaj (2005
Self-Service Technologies	Psychological notions such as affect, attitude, self-efficacy and need for cognition play an important role in SST adoption.	Optimism, innovativeness, need for human interaction, fun, and other variables have been investigated.	E-services should be easy, reliable, convenient, and should minimize overload and risks.	Dabholkar (1996) Meuter et al. (2000) Parasuraman (2000) Bobbitt and Dabholkar (2001) Dabholkar and Bagozzi (2002) Meuter et al. (2005)
Co-production	Co-production has possible advantages and disadvantages to the firm.	Self-service has a negative impact on social bonds and may not improve satisfaction due to the self-serving bias.	Carefully integrate self-service into existing personal service rather than replace personal service.	Selnes and Hansen (2001) Bendapudi and Leone (2003)
Service Operations and Fulfillment				
Back Room Processes	Data "completeness" (no data gap) and post purchase support are critical for customer retention.	A new gap exists: the data gap, where customers and providers may not have access to necessary data.	Inventory policy, IT policy, organizational structure, and customer abilities, and customer needs, wants and expectations must all be aligned.	Heim and Sinha (2001) Boyer, Hallowell, and Roth (2002) Garnder, Hanna, and LaTour (2002) Brohman et al. (2003) Piccoli et al. (2004) Cao and Zhao (2004)

				Cao and Gruca (2004) Iyer, Germain, and Frankwick (2004) Rabinovich (2004) Posselt & Gerstner (2005)
	Online Servicescape and Service Quality			
Servicescape	Website design can create flow, arousal, and other positive, or negative, affective reactions.	Aesthetics, professionalism and various design element details can prime attitude and behavior.	Create visually attractive and professional looking interfaces.	Hopkins, Raymond, andd Grove (2003) Williams and Dargel (2004) Edvardsson, Enquist, and Johnston (2005) Vilnai-Yavetz and Rafaeli (2006) Stevenson et al. (2000) Mandel and Johnson (2002)
Service Quality	E-Service quality dimensions do not perfectly overlap with offline service quality dimensions.	Ease of Use, Design, Trust Factors and Reliability imply quality to the consumer.	Key goals are to provide reliable and responsive support, personalization, efficiency, credibility, and ease of use.	Jiang, Klein, and Crampton (2000) Cox and Dale (2001) Yoo and Donthu (2001) Broderick and Vachirapornpuk (2002) Yang and Jun (2002) Santos (2003) Wolfinbarger and Gilly (2003) Zeithaml, Parasuraman, and Malhotra (2003) Parasuraman, Zeithaml, and Malhotra (2005) Collier and Bienstock (2006) Bauer, Falk, and Hammerschmidt (2006)

E-Service Failure, Recovery, Satisfaction, and Loyalty				
Service Failure, Service Recovery	Traditional models have been extended, and new models developed for new technologies and how consumers react to them.	Previous experience plays a key role in explaining how consumers react to service failure and recovery	Describes specific steps managers can take to avoid failure and recover effectively.	Kolesar and Galbraith (2000) Holloway and Beatty (2003) Holloway, Wang, and Parish (2005) Tax, Colgate, and Bowen (2006)
Satisfaction and Loyalty	Application of existing theory with extensions.	Confirms what we know about offline satisfaction. Adds new aspects.	Design sites and procedures to enhance satisfaction, ensure seurity, build trust.	Szymanski and Hise (2000) Meuter et al. (2000) Gummerus et al. (2004) Harris and Goode (2004) Evanschitzky et al. (2004)
Customer Relationship Management	There are unique aspects of E-Service: including interactivity, personalization, and real-time adjustments in offerings. Online switching costs are surprisingly high.	Standard CRM features seem not to encourage traffice to a site. New features need to be developed.	Managers need to relearn how to build relationships with e-service customers and to develop new CRM techniques.	Rust and Lemon (2001) Feinberg and Rajesh (2002) Fruchter and Sigue (2005)

(Adapted from Hofacker et al., 2007)