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The Pursuit of Competitive Advantage and the Strategic Behavior of Firms in Adopting Self-Service Technology

Timothy David Saur

University of Southern Mississippi

The University of Southern Mississippi

THE PURSUIT OF COMPETITIVE ADVANTAGE AND THE STRATEGIC

BEHAVIOR OF FIRMS IN ADOPTING SELF-SERVICE TECHNOLOGY

by

Timothy David Saur

A Dissertation
Submitted to the Graduate Studies Office
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

Approved:

May 2008

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ABSTRACT

THE PURSUIT OF COMPETITIVE ADVANTAGE AND THE STRATEGIC BEHAVIOR OF FIRMS IN ADOPTING SELF-SERVICE TECHNOLOGY

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In 2002 Zuboff and Maxim published their book titled *The Support Economy.* In the book the authors predict a new era of capitalism that holds great promise for companies and individuals who can design useful, usable, and desirable information systems, knowledge networks, and social software. Since the time of publication advances in technology have allowed the use of self-service products to expand into once unforeseen areas. Self-service technology is used by companies to lower cost, to increase market share, to develop new revenue streams, and to position their products as innovative. Yet the body of research surrounding the organizational strategy and decision to adopt using self-service is lacking.

This research studies the pursuit of competitive advantage and the adoption of self-service technology by service providers. Using the strategic behavior typology as outlined in Miles and Snow (1978), and the resource based view of the firm as outlined in Wernerfell (1984), Barney (1991), and Peteraf (1993), the research seeks to ascertain whether a firms adoption of self-service is aligned with its strategic type and whether the adoption of such technology is for the pursuit of competitive advantage. Using a case study methodology the researcher investigated three separate companies, from three separate industries, with three separate Miles and Snow strategic types. In accordance with Conant, Mokwa, and Varadarajan (1990) the paragraph method was used to

operationalize and measure Miles and Snow strategic typology. In addition the researcher developed a taxonomy of self-service applications in order to properly categorize the different functions into similar technological methods. The taxonomy is contained in the appendix.

The results indicate that when companies adopt self-service offerings they follow the expected organizational behavior as postulated within their Miles and Snow (1978) strategic type. However, these same companies do not deploy self-service offerings based on the pursuit of a competitive advantage as defined in the resource-based view of the firm. Throughout the conclusion a variety of different findings are revealed and future research needs are addressed given the limited sample and the nature of case study research.

ACKNOWLEDGMENTS

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CHAPTER I

INTRODUCTION AND OVERVIEW

In 2002 Zuboff and Maxim published their book titled *The Support Economy*. In the book the authors predict a new era of capitalism that holds great promise for companies and individuals who can design useful, usable, and desirable information systems, knowledge networks, and social software. The design, development and deployment of new and useful technology present an opportunity for companies to obtain competitive advantage (Zuboff & Maxim, 2002). Peteraf (1993) defines competitive advantage as "sustained above normal returns" and Barney (2001) argues that competitive advantage is when "a firm obtains above-normal performance when it generates greater-than-expected value from the resources it is employs." Porter (1980) is more specific saying competitive advantage means "having a lower cost, a differentiation advantage, or a successful focus strategy." Joseph Schumpeter outlined competitive advantage as occurring when other firms cannot duplicate the efforts of one company so the disadvantaged company needs to change the structure of the competitive situation through discovery and action (Schumpeter, 1942).

Given that profit seeking companies are pursing a competitive advantage and companies that design useful information systems (Zuboff & Maxim, 2002) have an opportunity to obtain a competitive advantage this research studies the technological adoption of self-service, its potential role as a competitive advantage according to the resource-based view of the firm, and whether the strategic behavior typology as outlined in Miles and Snow (1978) accurately reflects the implementation of SST in organizations with different strategic orientations. By performing in-depth case studies this research

contributes to the integration between the strategic management literature and the organizational behavior literature. Using the Miles and Snow (1978) business typology to compare the process and intention of developing an SST this research will analyze whether the three companies behaved as expected according to the four strategic types outlined by Miles and Snow – prospector, analyzer, defenders, and reactors. The method and behavior of firms when adopting SST technology is directly linked to the expected firm behavior as postulated in the Miles and Snow (1978) strategic typology. Further, through a how and why approach the investigator sought to understand if companies are pursuing SST to develop distinctive sets of capabilities that provide a competitive advantage (Barney, 1991). The research that follows focuses on how companies innovate and adopt SST rather than on the more traditional research of whether or not organizations actually innovate (Blumentritt & Danis, 2006). In the end the research will compare expected firm-level behavior with actual firm-level behavior using the Miles and Snow strategic typology, and examine the expected implications to the firm performance using the resource-based view of the firm. The resource-based view (RBV) of the firm and the Miles and Snow (M-S) business typology are related in that both study firm-level organizational decision making yet they differ in that M-S focuses on the different strategic orientations firms adopt over time while the RBV focuses on how firms develop certain capabilities to gain competitive advantage. M-S reflects a typology based on consistent strategic decisions of firms over an extended period of time and encapsulates central elements of the RBV (Blumentritt & Danis, 2006). The RBV studies firm level assets and capabilities and focuses on how firms develop distinctive sets of capabilities that provide sources of competitive advantage (Blumentritt & Danis, 2006).

Both the RBV and M-S have a focus appropriate for this research. Porter (1980, 1985) has a more outward focus based on market conditions and industry specific issues while Schumpeter (1942) focuses on changes in the market and the corresponding response, or lack of, from firm level manager. As a result of the more market driven approach both Schumpeter and Porter will not be used in this research. By focusing on firm level decisions and strategy orientation the author will focus on M-S and the RBV.

Imagine yourself outside a grocery store, needing some sugar and flour to bake a cake for a party later that evening. The year is 1916 and you arrive at the grocery store waiting for a store employee to go and get your product while you wait in the lobby with the other customers. But there is something different about your trip today because there is no employee waiting to go pull your grocery list and no long line of customers waiting. Instead *you* are to go and get your own groceries off the shelf and walk them to a single employee to whom you will pay. The process, though unusual, is faster, more efficient, less costly and easier for you. The grocery store has also saved wages by reducing employment and offers lower priced goods versus other grocery stores. The customer is more satisfied and the company's market share and profitability increase.

Self-service at a grocery store was a revolutionary idea for the early 20th century. The tale is a true story of one of the earliest examples of the widespread use of self-service. The grocery store is the Piggly Wiggly in September, 1916. Now, into the 21st century, advances in technology have allowed the use of self-service technology to expand into once unforeseen areas. Self-service technology is used by companies to lower cost, to increase market share, to develop new revenue streams, and to position their products as innovative. This research explores the growing self-service economy

within the M-S business strategy typology. Is it important for a prospector to lead in SST? Are defenders going to be the last to develop SST due to their organizational philosophy? Do firms develop SST as a potential competitive advantage? In addition to the research comparing the adoption of SST to the typology presented by M-S the researcher needed to develop taxonomy of self-service in order to properly categorize the different applications into similar technological methods. For example, to assist in the development of a photographic kiosk one could look at the success and failures of an automated teller machine, and to create a retail self-service store one could look at online banking. In both examples the technology is similar but the industry is very different. Knowing what other self-service applications are similar to the solution that a given company is pursuing, whether or not in the same industry, allows for a greater understanding and a more likely successful development. As a result of the taxonomy companies who intend to pursue self-service can learn from other non-industry players who have technology in the same self-service taxonomy location. By looking at self-service offerings in the same taxonomy range a company can determine what is important to consumers in the design, development and deployment of self-service. The taxonomy offers an organized framework to compare cross-industry solutions and presents a roadmap on development. Both lack in today's literature.

In the first section of the literature review the author establishes a foundation for using the M-S business typology in the research. The four classifications – prospector, analyzer, defender and reactor – are discussed. In the second section the author reviews the existing literature on the RBV of the firm. The third section connects the M-S strategic typology with the RBV literature of strategic management for competitive

advantage. Since M-S focuses on the firm level strategic orientation firms adopt and the RBV focuses on how firms develop both scarce resources and distinctive internal capabilities to generate competitive advantage this section provides the foundation for the two theories to be used in the research. In the next section the history of SST is discussed and a complete literature review of self-service is completed. The academic literature falls short in creating a useful framework for business professionals and other academics to compare and contrast different applications of self-service. The author organizes the SST literature into four main themes: Customer satisfaction (or dissatisfaction); the delivery of SST; the corporate strategy of SST; and customer acceptance of the technology. From this literature one cannot categorize the technology into an organized framework nor can the business professional be assisted in appropriate development of a SST for their organization. Both of which are major failings in the existing literature.

Drawing on the work of Richard Normann (2002) the link between self-service and co-production is examined. A detailed review of the existing literature on co-production is first presented and then the connection between the consumer as a co-producer of product and the consumer as a self-server of product is offered. Co-production, or joint production, is a significant area of potential use for self-service technology because the self-service technology does not have to be a complete solution, from start to finish, but rather can eliminate a large number of tasks along a much larger service process all while increasing customer satisfaction (Dabholkar, 2000). The concept of co-production provides a vehicle to input self-service into a larger process thereby reducing a portion of the steps once completed by the service company but not necessary all of the steps. When a consumer uses the self-service kiosk at the airport they

will still be required to obtain a luggage tag from a human representative (assuming you are checking luggage). The kiosk is a self-service step in a larger co-production setting. Both the Bankco and the Printerco case touch on the utilization of self-service technology within the framework of an already existing co-production system.

The three cases in this research are specifically designed to present three different ideals of self-service and a resulting three different perspectives. Yet they all share a common theme; self-service technology has changed the way they interact with customers. The different strategic purposes companies are using to pursue SST are a vital aspect of this research. By using in-depth case studies the author is showing that there are wide ranging strategic corporate reasons to pursue self-service. In the first case Printerco, a manufacturer of large-format imaging equipment, has begun to utilize self-service technology to address competitive weaknesses in servicing their equipment. As Printerco moves towards selling large format printing equipment to a new segment of customers the ability to deliver a self-service solution has allowed them to penetrate the market very quick. Printerco is a first-mover and an innovator within their industry and the launch of a self-service product is a reflection of such an attitude. The second case, Bankco, takes a different perspective, though equally significant, on self-service technology. Bankco is *proudly* not a first-mover. In the third case, Airlineco, the company has discovered that the movement towards self-service has created some unintended consequences, and while not bad, has forced them to rethink the benefits of using such a tool. Each company has chosen self-service, and each has a unique reason why and a perspective on the results. Ultimately the three cases placed side-by-side reflect a broad range of strategic reasons why self-service was used and the diversity is a

reflection on the increasing widespread use of self-service. Each company has a different classification based on M-S and the conclusion compares the actual adoption strategy with the expected strategy according to M-S. In the final analysis this research intends to delve into why and how companies are adopting SST and to determine whether the M-S typology extends to the adoption of SST at the firm-level. Some companies will be first movers in the design, development and deployment of self-service technology while others will consciously choose a wait-and-see approach. Still other companies may be forced into self-service technology in order to remain competitive.

CHAPTER II

LITERATURE REVIEW

In the first section of chapter 1 the author reviews the M-S strategic typology. In the second section the author will review the resource-based view of the firm including the recently introduced concept of strategic liabilities. Last, the author reviews the existing literature on self-service technology with an emphasis on the weaknesses in the current body of literature. The author connects the concept of co-production with self-service technology and concludes with a summary of the chapter.

Miles and Snow Typology

For nearly thirty years the Miles and Snow (1978) strategic typology has been the most enduring strategy classification system available (Hambrick, 2003). Many authors attribute the longevity of the typology to its lack of dependence on industry factors and the actual correspondence to firm behavior and positioning (Blumentritt & Danis, 2006; Desarbo, DiBenedetto, Song, & Sinha, 2005; Dvir, Segev & Shenhar, 1993; Kald, Nilsson, & Rapp, 2000; Lei & Slocum, 2005; Segev, 1987). The lack of dependence on industry specific factors, the firm-level behavior focus and the prolonged existence of the Miles and Snow (M-S) typology make it an appropriate behavioral theory in this research.

Miles and Snow propose that organizations develop relatively similar patterns of strategic behavior that co-align the organization with its environment. The M-S typology views firms as complete and integrated systems within the dynamic environment in which they exist (McDaniel & Kolari, 1987). Miles and Snow (1978) identify a number

of issues constantly confronting management, called the adaptive cycle. Over time the adaptive cycle, the way companies handle fundamental problems, leads to defined patterns of solutions. The behavioral method a firm uses to solve the adaptive cycle problems can be grouped into four strategic orientations. As a result it is possible to distinguish groups of companies within each strategic orientation that deal with the three adaptive problems in a relatively similar fashion (Kald et al., 2000). Miles and Snow (1978) determined that firms make decisions in three main areas; entrepreneurial problems, engineering problems, and administrative problems. The entrepreneurial problems deal with the decisions surrounding what products and markets a company should attack. Technological problems deal with the how and methods to use production resources to deliver the product and service to the customer. Last, administrative problems address how to organize and control the business process (Miles & Snow, 1978). The implementation of SST for this research will encompass the technological type problem. Over time company's exhibit similar patterns, or tendencies, to address the ongoing adaptive cycle and the result are one of four basic organizational strategic types (Miles & Snow, 1978 pp: 13-93).

(1) Defender: A defender attempts to locate and maintain a secure niche in a relatively stable product or service (DeSarbo et al., 2005). Defenders do not look outside their market and tend to offer a more limited range of products and services. Defenders typically use a high-level of marketing and constantly look for cost cutting measures to remain competitive (Conant, Mokwa, & Varadarajan, 1990). Many long-term established airlines would be considered defenders and it will be shown Airlineco is no different.

(2) Prospector: A prospector is virtually the opposite of a defender. A prospector tends to compete by looking new products and markets through technological innovations. Prospectors are firms that thrive with a changing market and enjoy being first to market, first to sell and first-move in the respective industry (Miles & Snow, 1978). Prospector firms need strong research and development and rely on heavy market research. Blumentritt and Danis (2006) write, "we expect the locus of innovation activities in prospector firms to be centered around creation of products and services as well as customer relationships." It will be demonstrated that Printerco is a prospector.

(3) Analyzer: An analyzer is a firm that exhibits characteristics of both. Many analyzers operate in one stable market and one changing market. Analyzer firms usually take a wait-and-see approach and are not first-movers like what would be expected of prospectors (Miles & Snow, 1978). Given their hybrid nature analyzers tend to be the more complex entities. In stable domains analyzers tend to emphasis production and improved efficiency while in more turbulent domains they tend to closely monitor key competitors and adopt only those innovations which appear to have strong market potential (Conant et al., 1990). Bankco is a committed analyzer.

(4) Reactor: A reactor is a firm that has no established pattern of decision making and usually reacts to an ongoing situation. Usually short-term focused Miles and Snow (1978) highlight that this strategy will not be successful unless the company can move to one of the other three strategies. The reactor strategy is not normally

a choice but rather a residual strategy, arising when one of the other three

strategies is improperly pursued (Slater & Narver, 1993).

The first three strategies when viewed together exist on the same continuum where

prospector and defender are on opposite ends with analyzer in the middle. Miles and

Snow (1978) and the empirical tests conducted after (Conant et al., 1990) show that all

three strategies can result in highly successful firms while reactors typically lack long-

term plan and react to the changing environment thus making them less successful (Song,

DiBenedetto, & Nason, 2007). Hambrick (2003) pointed out that the original M-S model

does not seek to predict which of strategic types will perform the best. Rather, the intent

was to develop a typology of corporate strategy and not to explore the performance

consequences. Since this research is not directed at success or failure of the adoption of

SST the M-S typology is in harmony with the objectives of this paper. Consistent with

the RBV of the firm the M-S typology views the organization as a cohesive and

integrated system in dynamic interaction within its environment (Blumentritt & Danis,

2006). In the next section I review the literature on the RBV of the firm.

Resource-based View of the Firm

The resource-based view of the firm originally began as an attempt to understand

the uniqueness of the firm and its implementation of resources. Wernerfelt (1984) first

noticed that firms in an industry may be heterogeneous regarding the strategic resources

that they control. In Barney's 1991 article he extended a second assumption: resources

are not perfectly mobile across all firms. Furthermore, Barney (1991) operationalized

these ideas into what he called valuable, rare, difficult to imitate, and not substitutable or,

what is commonly referred to as the VRIS framework. The framework suggests that for a resource to provide a competitive advantage it must be valuable, rare, costly to imitate and non-substitutable (McWilliams, Van Fleet & Cory, 2002). Resources are rare if they have not been used by other firms or by very few firms while resources are considered valuable if they provide either a net increase in revenues or a net decrease in costs. Resources are costly to imitate if they depend on a unique firm history that cannot be repeated, a complex social network that exists only among a certain group of individuals, or because the way in which the resources lead to a competitive advantage is ambiguous (McWilliams et al., 2002). Lastly, resources are non-substitutable if there are no alternative resources that can give the firm the same advantage. Barney (1991) defines firm resources as all assets, capabilities, organizational processes, firm attributes, information and knowledge that are controlled by the firm. In addition he highlights that competitive advantage can be created by implementing a value-added strategy not currently being employed by a competitor. However, competitive advantage can only be created when the entire above criterion is met and when other firms are unable to duplicate the benefits of the strategy in the long-run.

Firm resource heterogeneity

Firm resource immobility

Value

Rareness

Imperfect imitability
- History Dependent
- Casual Ambiguity
- Social Complexity

Substitutability

Sustained Competitive Advantage
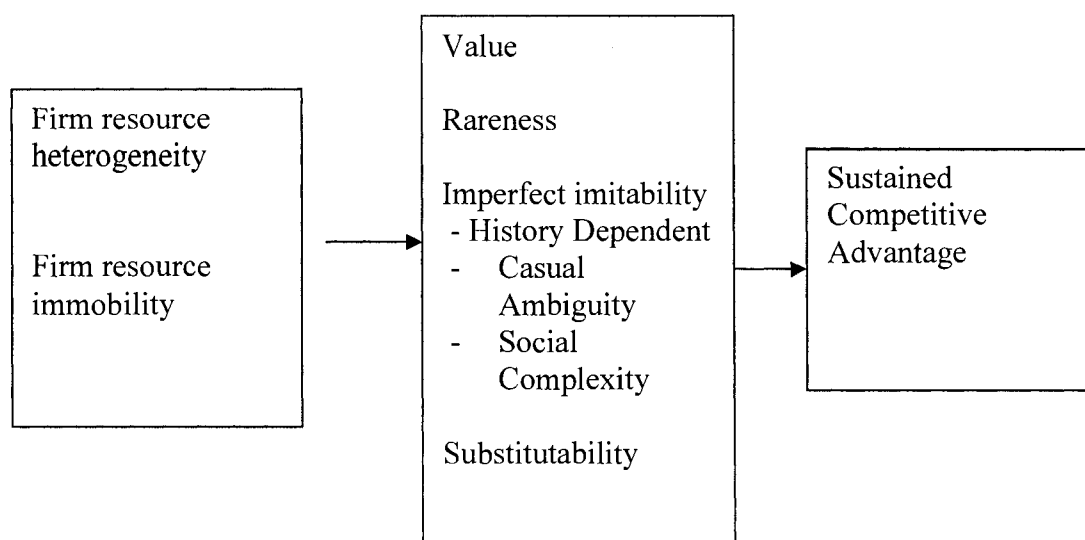
Figure 1. The relationship between resource heterogeneity, VRIS and sustained competitive advantage. (From Barney, 1991)

Peng (2001) highlights the growing popularity of the resource-based view in international business literature. Peng notes the resource-based view of the firm is considered an innovation with many scholars believing that it should be in paradigm status (Peteraf, 1993). Others however argue that it lacks a tight definition and explanatory power (Porter, 1991). Regardless most acknowledge it as an innovation. In addition to the resource-based view's contribution to strategy, Peng (2001) also notes that there is a convergence between strategy and international business yet some concerns develop as a result of this convergence. For example the resource-based view has come under some criticism by researchers like Michael Porter for being circular. Porter feels that if companies were to have resources that are rare, valuable, difficult to imitate and non-substitutable they would have a competitive advantage and if a company were deemed to have a competitive advantage they must have resources that are rare, valuable, difficult to imitate and non-substitutable therefore the argument is circular. Therefore if competitive advantage is defined as having resources that are valuable, rare, difficult to imitate and

not substitutable then the theory that four key characteristics create competitive advantage is circular and of little use. Peteraf (1993) responded to Porter's concerns by better clarifying some of the terms. In Peteraf's writing the four cornerstones of competitive advantage are heterogeneity of resources, ex ante limits to competition, imperfect mobility of key resources and ex posts limits to competition. Grimm and Smith (1997) note that in sum, the Peteraf model is consistent with and helps to clarify the earlier work on the resource-based view discussed previously. The resource-based view emphasizes those establishing resources that are superior but immobile in an environment of limited competition (i.e. industries with some barriers to entry). Some examples include Polaroid and the instant camera and Gillette and their special manufacturing technology (Grimm & Smith, 1997).

The resource based view continues to be utilized and analyzed in academic literature and therefore it makes for an interesting backdrop in which to view SST. RBV has been used to explain how firms allocate their scarce resources to obtain and exploit competitive capabilities. The RBV suggests that the mere possession of capabilities is a necessary but not sufficient condition for superior performance. Rather, the firm that has the resources and abilities to put its capabilities to best use, and that invests in capabilities that compliment the existing capability base, will be best able to exploit its distinctive competencies (Song, DiBenedetto & Nason, 2007). The RBV focuses on the development of asset side of a balance sheet but some companies can have a liability related issue. The development of SST could create a strategic liability if created poorly. Further, the lack of development of SST versus a rival could result in a strategic liability

if the competitor is successful at delivering a valuable solution to the customer base. Therefore, the author reviews the concept of a strategic liability in the next section.

Strategic Liabilities

Strategic liabilities represent the "other side" of the balance sheet with respect to the resource-based view. As discussed above the resource-based view focuses on how firms can exploit their resources to create a sustainable competitive advantage. Underlying this thought is that companies will seek to create valuable, rare, costly to imitate and non-substitutable resources (Barney, 1991; Barney, 2001; Peng, 2001). This analysis represents the asset side of the balance sheet while ignoring the liability side. Companies generally will not care how they obtain excess rents in the marketplace but usually focus on asset building. Strategic management authors such as Porter (1985, 1991) tend to focus on how companies can obtain excess rents through building a superior product, developing strong intellectual property, or applying innovative ideas for new solutions (i.e. develop/grow assets). This paper presents a different look at how companies can create competitive advantage by using predatory tactics to bestow strategic liabilities on their competitors.

Strategic liabilities do not have a long history in the academic literature. Prior research, which parallels the concept of strategic liabilities, refers to liability issues as competitive disadvantages (Powell, 2001), resource weaknesses and/or distinctive inadequacies (West & DeCastro, 2001). Arend (2004) defines strategic liabilities as those resources that damage and destroy a firm's ability to generate rents. He continues by outlining the three definitional characteristics of a strategic liability as:

(1) Costly (reduces firm performance)

(2) Supply restricted (both scarce and not convertible)

(3) Appropriated (paid for by the firm).

The costliness arises from the liabilities role in creating inefficiency in the firm or by the negative market value it creates (Arend, 2004). Strategic liabilities will result in business failure if they can either not be overcome or can not be off-set by strategic assets (the resource based view). Continuing with Arend's (2004) definition a strategic liability is supply restricted if it is scarce in that all rivals do not have it, and it can not be economically converted to a form that is benign. The costs are appropriated if there is no economic way around paying the cost, and the cost of transferring the liability is too high (Arend, 2004).

Strategic liabilities can be created from four main areas that Arend (2004) outlines as:

(1) A former strategic asset turns into a strategic liability. This is may occur as the evolution of an industry changes and a market leader fails to follow. Examples include the United States automobile manufacturers who are now saddled with large pension and labor costs while their foreign competitors make Greenfield sites in the US without this high cost structure.

(2) Strategic liabilities may appear due to poor luck.

(3) They may occur as a result of already existing strategic liabilities. For example, a strategic liability that exists in the purchasing function may spread to the manufacturing operation.

(4) Strategic liabilities may appear from the actions of external parties. For example, a liability in the form of a negative reputation for exploiting third-world labor.

In *Business Week* the Lee and Thornton's (2005) article highlights that the once best-in-class customer service of Dell is now in jeopardy. Some customers have even commented that they will not buy a Dell as their next purchase due to the poor customer service – this has the potential to become a strategic liability that will be difficult to overcome. Companies that move resources offshore in an attempt to reduce costs must be aware of the risks to their current reputation, particularly if the offshored employees have direct contact with customers. In the case of Dell they are at risk for developing a strategic liability generated by external parties. The external parties are the customers who are dissatisfied with the quality and level of customer support and will now consider buying Dell's competitors products. Dell which was considered the best-in-class service has taken a former asset (reputation for service) and quickly turned it into a liability. If Dell is unable to rectify the situation than their perceived poor quality of service will result in a strategic liability. A review of the Dell situation based on Arend's (2004) three definitional characteristics of a strategic liability (a) costly, (b) supply restricted, and (c) appropriated would appear that Dell must act quickly to resolve this problem. First, the situation meets the definition of a strategic liability because this situation is costly. Dell's market share, as a result of poor service, has declined (Lee & Thornton, 2005) thereby creating a costly and inefficient situation. Second, the situation is fixable by Dell because the call center issue is not supply restricted therefore they can avoid the poor service from becoming a strategic liability. However, Dell must identify the issue

and make the corporate decision to improve service, either by relocating the call center to a more customer-friendly region or through the use of some advanced technology. The third criterion, appropriated, is avoidable as well. While Dell has invested in new call center resources offshore (i.e. the sunk cost) they are not necessarily tied to any long-range commitment. There is an economic possibility to remove them from this situation and therefore Dell can avoid acquiring a strategic liability.

Although Dell can avoid creating a strategic liability with regards to the offshoring of customer service they must now make the conscious decision to abandon the lower cost call center. In addition Dell's customers should head the lesson and avoid creating a similar situation for themselves. As long as Dell provides less than expected customer service and their market share declines the competitors can benefit. If Dell chooses to further entrench them in the negative situation the competition will find that they can gain market share as a result of poor decision making by Dell. This example reflects a real world situation, appropriate for this paper, on how companies who offshore service labor then risk negative publicity, loss of market share, and, if not identified and rectified quickly, a strategic liability. Dell has begun to relocate calls from some Indian call centers (Frauenheim, 2003) and has hired more domestic representatives (Lee & Thornton, 2005) to address the situation and to avoid this liability from becoming a strategic liability.

Conclusions

Innovative behavior in firms risks challenging the established means of solving adaptive problems. The M-S strategic typology represents a method to organize the firms in this research to determine whether their introduction of SST is what is expected based

on their M-S typology. Given the strong link between M-S and RBV the research will delve into the strategic objectives of the companies to determine if they are seeking a competitive advantage. The RBV of the firm has been used to explain how firms allocate their scarce resources to obtain and exploit competitive capabilities. The mere possession of capabilities is a necessary but not sufficient condition for superior performance. Rather the firm that has the resources and abilities to put its capabilities to best use is the one that will be most successful. The M-S classification leads one to expect that firms will utilize resources as their adaptive cycle suggests. One would expect the prospector firms to be the leaders in developing in SST while the defenders would launch SST if they aid in operational efficiency and lower cost. Therefore the M-S typology and the RBV of the firm are interrelated (Song et al., 2007; Aragon-Sanchez & Sanchez-Marin, 2005). In the next section the literature on SST is reviewed.

Connecting Miles and Snow with the Resource-based View

Recent research in the fields of management and marketing has sought to examine how a firm's strategic type relates to firm performance. Three recent articles have specifically connected the M-S strategic typology with the RBV of firm (Aragon-Sanchez & Sanchez-Marin, 2005; Blumentritt & Danis, 2006; Song et al., 2007). By definition the RBV needs both superior resources, as defined by the VRIS framework, and specific internal capabilities to achieve competitive advantage while the MS typology does not evaluate success but rather states any strategy can be successful as long as the company develops and deploys according to its internal capabilities. Therefore the relationship can be depicted in the following manner.

(1) RBV = superior resources + specific capabilities. Where superior resources are defined by the VRIS framework (valuable, rare, difficult to imitate, difficult to substitute) and specific capabilities are defined as a company following its M-S strategic typology.

(2) M-S defines and categorizes strategic type by identifying patterns in decisions. M-S argues that three strategic types – defender, reactor, and prospector - can be successful as long as the company deploys according to its developed capabilities where its developed capabilities are a result of historical patterns in decisions (Aragon-Sanchez & Sanchez-Marin, 2005). Furthermore, any company can be successful as long it continues to use its developed capabilities. For purposes of this research the investigator tested if the adoption of self-service technology corresponds with the M-S strategic type. If the adoption of self-service corresponds with the expectations of the company's M-S strategic type then the company is deploying according to its specific capabilities. By matching the method of adoption of self-service with the expected adaptive cycle of the firm the "specific capabilities" aspect of RBV is fulfilled (Song et al., 2007).

In order to satisfy the complete test of the resource-based view the company needs both superior resources and specific capabilities. Since the specific capabilities test is performed by matching the actual adoption method with the expected adaptive cycle as postulated by Miles and Snow (1978) the remaining variable, superior resource, also needs to be tested. During the case study the researcher asked company representatives whether they believed the adoption of self-service technology is (a) valuable, (b) rare, (c) difficult to imitate, and (d) difficult to substitute. If the company answered yes to each

question the self-service application would be perceived within the company to be a superior resource and would satisfy the resource aspect of the RBV. In order to meet the overall criteria of the RBV the company had to adopt the self-service technology as expected and to have created an asset that that they believe is value, rare, difficult to imitate, and difficult to substitute. If the company adopted self-service in accordance with its M-S strategic type then the M-S strategic typology is acting as a predictor of adoption without estimating success in terms of competitive advantage. Only after establishing whether the company has adopted self-service as expected by M-S is it possible to determine if competitive advantage can be accomplished in accordance with the RBV. If the company believes they satisfy the superior resource criteria, as defined by the VRIS framework, they are pursuing a competitive advantage because they would own a superior resource and the internal capabilities to exploit the superior resource (Song et al., 2007). If a company is pursuing a competitive advantage based on the tenets of the RBV further research beyond the scope of this paper would need to be conducted to determine if a competitive advantage was created. For purposes of this paper the researcher is testing whether the adoption of the technology is as expected by M-S strategic typology and whether the company is pursuing a competitive advantage, not whether they achieved competitive advantage.

Self-Service Technology (SST)

In the past five years there has been an increase in the number of studies examining the applied use and success of self-service technology (SST). Lee and Allaway (2002) point out that technology has been increasingly used as a method to

deliver a wide variety of services. The authors continue to articulate that these automated technologies can expand the choice of services, lower labor costs and increase customer satisfaction. Based on this information the applied use of self-service technology can and does act as a replacement for current service workers, and those workers that exist in offshore facilities. The increase strategic movement to offshore locations has been influenced by the pressure on labor cost savings. Yet, there are cases of declining customer satisfaction that are of great concern to companies who compete in a global marketplace. Self-service technology offers the reasonable possibility of lower labor cost and higher customer satisfaction – this makes it an appealing technology for the next step after offshoring, or to avoid offshoring as a step altogether. Existing research highlights key findings based on self-service technology, such how satisfying the experience is for the customer (Bitner, et al., 1990; Dabholkar, 1994, 1996, 2000; Jamal, 2004; Normann, 2002; Walker 2002; Yen, 2005), how frequently and to what extent customers will use self-service equipment (Christinasson & Sporrek, 2004; Curran & Meuter, 2005, Schultz, 2005) and the applications within industries such as banking, retail and tourism (Bitner, Brown, & Meuter, 2000, Christiansson & Sporrek, 2004; Meuter, Bitner, Ostrom & Brown 2005). Below is a summary of the literature organized by technology-based self-service (TBSS) classification scheme from the work of Dabholkar (1994) and Anselmsson (2001) as cited in Wang and Namen (2004). From this classification the author will take Dabholkar (1994); Anselmsson (2001); and Selnes and Hansen (2001) and build upon their existing research in order to achieve a taxonomy of self-service applications.

In addition, a formal definition of self-service technology has not been widely established within the literature. Instead many authors define self-service technology by its application as Meuter et al., (2005) does by stating that SST is technology such as telephone banking, automated hotel checkout and online investment trading. Essentially the authors are defining self-service based on the application and this application is very widespread thereby making the definition too widespread to have any substance. Kiosks and ATMs are popular examples of self-service technology and some authors are becoming more specific coining the acronym ISST to mean internet-based self-service technology (Schultze & Orlikowski, 2004; Yen, 2005). Yet another acronym is technology-based self-service, or TBSS. This concept was introduced by Dabholkar (1994) and Wang and Namen (2004) provide a nice explanation between TBSS and SST. Wang and Namen (2004) state that "TBSS can be any activity or benefit based on hard technology that service providers offer so that customers can perform the service, or part of the service, by themselves." Wang and Namen state that SST has an emphasis on the technologies themselves other than self-service activities while TBSS involves some kind of hard technology that directly or indirectly is operated by the customer in order to receive services. The concept of co-production, a system whereby the customer is partially involved in the service experience (Bitner, Faranda, Hubbert, & Zeithaml, 1997; Chase, 1978; Normann, 2002) is independently discussed in the literature and needs to be included in a definition of self-service. Given the widespread use of the term SST one goal of the research is to create a definition of self-service that is more definitive.

Summary of Key Findings in the Self-Service Literature

Richard Normann (2002) in his work <u>Service Management: Strategy and Leadership in the Service Business</u> dedicates an entire chapter to the customer's involvement in the delivery of service. Included in this chapter is the concept of the customer as a co-producer. Normann states that part of what the customer perceives as the outcome is dependent on how much and in what way the customer participates in the production of the service. He also discusses, early in the book, about the role of innovation in service and the "knowledge explosion" that can occur. Bitner et al. (2000) and Dabholkar (1994) clearly highlight throughout their work that service encounters have the potential to benefit customers and companies and the advances in technology can accomplish these goals. Walker, Craig-Lees, Hecker and Francis (2002) make an important contribution by acknowledging that advances in service technology *can* improve efficiency, *reduce* labor and *gain* competitive advantage. The concept of technology, service *and* competitive advantage is a very relevant finding given the goal of this research.
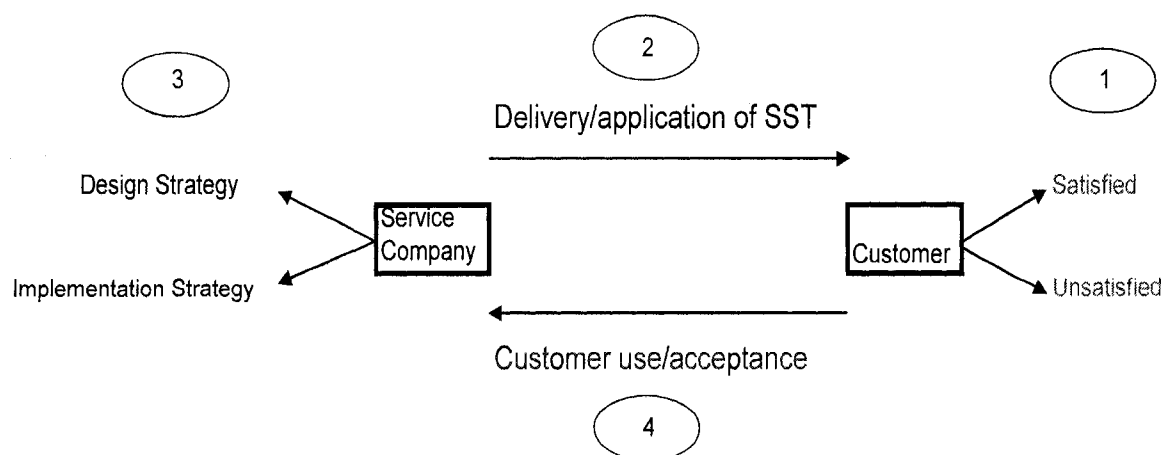
Figure 2. Themes of self-service literature.

The existing self-service literature can best be organized into several different themes as outlined in Figure 2. The first theme, and most popular, focuses on the satisfaction of customers (in a B2C exchange) or businesses (in a B2B exchange). For example in the work of Pujari (2004) the author found that business-to-business customers experience satisfaction from different sources as compared to business-to-consumer customers. These sources include speed, process efficiency and cost savings. Essentially these characteristics are similar to the expectations of the end consumer yet add an extra element that B2B customer expectations can vary widely based on the perceived weakness that the SST will alleviate. Service recovery was found to be a critical problem with regards to SST. The work of Jamal (2004) continues to study the interaction between self-service and customer satisfaction. Through empirical research, the paper argues that, while self-image congruence may be related to customer satisfaction in a normal context, it may not necessarily affect satisfaction levels when customers are using technology-based self-services. Jamal continues by highlighting that during encounters involving self-service technologies customers might experience satisfying or dissatisfying incidents which may not be related to their overall satisfaction and brand preference levels. The paper discusses implications for brand managers in the retail banking sector (Jamal, 2004).

According to Yen (2005) many factors may contribute to consumers' satisfaction with Internet shopping, but the issue has rarely been addressed from the perspective of customer participation. Drawing on the attribute-based model, the article examines the attributes important for consumer satisfaction with Internet-based self-service technology (ISST). In addition, the current study argues that the importance of the attributes in

determining consumers' satisfaction would vary as a function of their readiness to adopt technology. Using qualitative data methods from experienced users of online travel agencies or bookstores the results based show that efficiency, ease of use, performance, perceived control and convenience are attributes having significant impacts on users' satisfaction with ISST. Also worth noting is that available on the web, in a summary version (the full version is not available without subscription) is a white paper by IBM titled, *IBM Kiosk Solution*. This work has some key notes that are worth mentioning before returning to more peer-reviewed academic work. The article suggests that consumers want access to be 'instant' and to be available '24 hours a day' and '7 days a week' (IBM Kiosk Solutions, 2006; paraphrased). A Kiosk has the ability to deliver a stunning variety of goods and services, from ticket sales to information to "mass customized" products such as made-to-order clothing. And using kiosks can help you achieve this in a novel, refreshing way. They're interactive and can engage and entertain your customers while completing transactions. Kiosks are an approach that is 'multi-channeled' in reaching the customer and augments channels of communication and delivery via the Internet.

Kiosks are used by distributors, manufacturers and consumer packaged good companies in building their brand at the retail level, for expansion of their offering without having to add floor space and in making offering of products that are customized (IBM Kiosk Solutions, 2006).

The key finding, or note, worth mentioning at this stage is that in designing a self service solution it is critical to have a good understanding of:

(1)   the user;

(2) the value proposition to the user;

(3) the user experience; and

(4) the location of self service (IBM Kiosk Solutions, 2006).

It is critical as well to monitor the self-service device to avoid having it vulnerable to damage and security breaches. The IBM report states that: "Kiosk technology offers customers an intimate experience that can exceed the person-to-person encounter with a sales representative." IBM's Kiosk comes with: (1) a 24-hour help desk; and (2) Kiosk Remote Management Service. The remote management service is stated to:

- Improve reliability and availability of kiosks

- Detect and diagnoses system problems and alerts to the device level

- Report application alerts

- Monitor application heartbeat

- Perform automatic recovery after device failure

- Enable remote reboot and scheduled reboot

- Manage content updates

- Provide performance logs and reports (IBM Kiosk Solutions, 2006)

A second widely used theme is the service company's application and/or delivery of the technology. For example in Allard, Janjaap and Pauwels (2004) the authors discovered that significant changes have occurred due to the Internet revolution particularly in the manner in which travel agencies interact with their customers. Allard, who studied travel, showed that websites are used to different degrees, and for a variety

of combinations of pre-transaction, transaction and post-transaction services. Indicated within this study is that many companies must obtain a better understanding of how customers interact with online services to improve service quality to levels that satisfy customers, and possibly create loyalty. The work of Christinasson and Sporrek (2004) discuss the role of the internet as an SST tool. The research investigates the role of the Internet as an SST in online booking service and represents another common approach to studying SSTs; specifically the applicability and acceptance of a certain form of SST. The Internet presents a great possibility for the tourism industry to sell and market their services online they write. Continuing, travel agents used to be the main provider of booking systems but with the development of information technology, this trend has shifted and booking systems are now accessible to the consumers themselves. Christinasson and Sporrek (2004) state that because of this development and the growth of self-service technology (SST), the customer has gained greater power and insight in the booking procedure. The study shows to what extent and to what purpose the customers actually use the online service and how they perceive Internet as an information tool. Suggestions on how the service could be developed and improved are also provided. Results of the study indicate a diminishing importance of tourist offices and telephone services as traditional, human interaction-based booking channels regarding this type of service (see case study of Airlineco in Chapter 5). Instead, their role will be to support the online business with qualified information and customer-oriented advice. Curran and Meuter (2005) state that the three different technologies used were all based in the banking industry, which limits the generalizability to other industries. Also cross-sectional data are used rather than a longitudinal study, the

feasibility of which is limited by time and cost constraints (Curran & Meuter, 2005). They continue, that the findings in the research renders practical applications that might serve as a guide to marketers in placing emphasis on issues that are "related to certain critical constructs when utilizing SSTs in their service delivery."

Several of the papers focus on the connection between the application and delivery of the technology with the overriding corporate strategy involved in the decision process. Most notable is in Dabholkar (2000) where the author illustrates that advances in technologies have changed the way many services are now delivered. Dabholkar (1996) begins a discussion on technology-based self-service, the main focus of this paper. The article is premised on the fact that increasing labor costs and advances in technology are encouraging service firms to offer new and innovative ways to fulfill their tasks/obligations. Like many of the other articles referenced here Dabholkar is concerned with the customer satisfaction and acceptance of the technology rather than the actual technology type. Since technology based self-service (TBSS) is defined as any activity or benefit based on technology that service providers offer so that customers can perform the service, or part of the service, by themselves (Wang & Namen, 2004). Therefore, nearly all industries can benefit from TBSS. Additionally, in the work of Schultze and Orlikowski (2004) the authors find that there are a number of tensions and unintended consequences inherent in a service strategy that attempts to complement service relationships with self-service technology. The authors highlight that embedded relationships with the customers have been key in generating repeat and economic advantage, particularly in business-to-business (B2B) settings. Firms that seek to make their service operations more scalable by offering customers access to Internet-based self-

service technology. The authors research is based on a firm called WebGA who served as an intermediary between insurance carriers and the agents (Schultze & Orlikowski, 2004).

The work of Curran and Meuter (2005) identifies that advances in technologies have allowed service providers to incorporate many different technologies into the delivery of their services. These technologies have been implemented in the service encounter for the customer to use with varying degrees of success. This research aims to focus on the examination of factors that influence consumer attitudes toward, and adoption of, self-service technologies. The authors create a conceptual model of the adoption process for SSTs and tests across three different technologies used in the banking industry. One of these technologies, ATMs, has been available for many years and is widely adopted, another technology, bank by phone, has been available for many years but has not been widely adopted, and the third technology, online banking, is relatively new to the marketplace. Data were collected using a random telephone survey of banking customers in a three-state area of the northeast USA and analyzed using structural equation modeling. Findings of the study show that the three technologies provides evidence that different factors influence attitudes toward each of these technologies and offers an explanation of the varying degrees of acceptance found among consumers. The research in this study demonstrates that consideration of multiple factors is needed "when introducing technologies into the service encounter and that the salient factors may vary among technologies and their stages in the adoption process." (Curran & Meuter, 2005).

The work of Lee and Allaway (2002) states that a new literature is emerging around the role of self-service technologies (SSTs) such as airline ticketing machines, automatic teller machines, and computer-based shopping services in the strategic offering of service providers. SSTs allow (or force) consumers to help produce their own service encounters via machine interaction rather than by interacting with a firm's service personnel. Firms which introduce SSTs wish to gain rapid acceptance and usage of these technologies by potential consumers in order to reduce labor cost by the service firm.

The final ongoing theme is customer acceptance of the SST. This theme covers the customer's decision to first use the technology, the expectations the customer has once they use the SST, and the customer behavior towards the technology. Sound examples of this type of research can be identified in the work of Meuter, Curran, and Suprenant (2004) where it is stated that: The introduction of self-service technologies (SSTs) into the service encounter necessitates research to better understand customers' attitudes toward service providers and technologies, and their intentions to use technology-based service delivery systems. In this research, the authors develop and empirically tests three nested structural models that include a hierarchy of consumer attitudes toward both the interpersonal and the technological aspects of the encounter to better understand their intentions to use SSTs. The findings indicate that intentions to use SST options are driven by multiple, hierarchical attitudes. In addition to the direct effects of attitudes toward specific self-service applications and individual employees, the findings confirm that higher order global attitudes toward service technologies influence intentions to use SSTs. Interestingly, the findings indicate that heavy self-service users

rely more on their own attitude toward technology than do light users, who rely more heavily on global attitudes toward self-service when determining the intention to use.

In the work of Bitner, Brown and Meuter (2000) one of the concluding themes is that technology infusion by service customers are being experienced on a daily basis. The authors continue by saying that this infusion is not limited to service industries but rather it is affecting firms in all industries including manufacturing. Bitner, Brown and Muenter create a "Technology Infusion Matrix" and use it to examine how customer and employee behaviors are being altered to customize a variety of service offerings. The increase in the infusion of technology driving service encounters supports and enhances the utility of products. While self-service technology is not the main element of this article the possibility of using self-service technology is apparent.

The work of Meuter, Bitner, Ostrom and Brown (2005) highlights that electronic commerce is an increasingly popular business model with a wide range of tools available to firms. An application that is becoming more common is the use of self-service technologies (SSTs), such as telephone banking, automated hotel checkout, and online investment trading, whereby customers produce services for themselves without assistance from firm employees. Widespread introduction of SSTs is apparent across industries, yet relatively little is known about why customers decide to try SSTs and why some SSTs are more widely accepted than others. Meuter, Bitner, Olstrom and Brown have made significant contributions to SST and are all based at, or have worked closely with, the Center for Service Leadership at the Arizona State University.

Meuter et al. (2005) explores the factors that are key in influencing the SST trial decision with the focus specifically on "actual behavior in situations in which the

consumer has a choice among delivery modes". The author shows that the consumer readiness variables of role clarity, motivation, and ability are key mediators between established adoption constructs (innovation characteristics and individual differences) and the likelihood of trial.

Some sources have a unique perspective and while they have not entered a rigorous peer review process, nor do they fit neatly into one theme, they are nonetheless worth mentioning for their insight. In "The Customer-Centric Contact Center: A New Model" (APQC, 2003) findings relate that originally companies created call center for the purpose of convenience and for the implementation of technology that was innovative and that would assist them in cost savings. Customer service, although believed to be a requirement did not have the capacity to generate revenue, or as stated: "it was a necessary evil." The article further states that companies are responding to changes in the business climate and creating new strategic business models many of which are customer-centric or built around the ideal experience of the customer (APQC, 2003). In this Best-Practice Report is a summary of the studies findings which made an examination of the characteristics and requirements "for success of new-generation customer-centric contact centers." While the call-center industry is not the specific target of this research call-centers have been moving offshore at a rapid pace (Lee & Thornton, 2005). Nineteen organizations participated in the study with another seven participating as benchmarking partners. The study was through a detailed questionnaire with data received from 32 additional companies.

The seven areas identified for research were: (1) Corporate culture and environment; (2) Employee Training, Staffing, and Incentives; (3) Levels of Customer

Service; (4) Incorporating Customer Feedback; (5) Interdepartmental Relationships and Consistency Across Contact Channels; (6) Measuring Customer Centricity and Links Between Contact Center Performance and The Bottom Line; and (7) Tools and Technology. Through the use of an executive summary within the document the main findings were stated as follows:

(1) Corporate Culture and Environment

Finding 1: Currently, there is no one agreed-upon definition for customer centricity, although consistent characteristics are found among best-practice organizations.

Finding 2: Companies agree on and strive toward a core set of characteristics that are considered to be foundational to the success of customer centricity.

Finding 3: Best-practice organizations can easily identify what motivated them to start down the path of customer centricity. Despite varying motivations, each organization found a definite, identifiable catalyst for change.

Finding 4: In order for the customer centricity to be a successful "way of life" the contact/call center must be strategically integrated throughout the corporation. This road to integration is rocky at best. Employee Training, Staffing, and Incentives

Finding 5: Customer centricity is changing the definition of universal representative in the contact center.

Finding 6: In a customer-centric organization the well-being of front-line employees is considered pivotal to strategy success. Employees are rewarded for their customer-centric behavior, and organizations treat these employees as they do their valued customers.

Finding 7: When a company moves toward a customer-centric strategy the time horizon for realizing the return on investment for recruiting, hiring, training, and compensation lengthens.

(2) Levels of Customer Service

Finding 8: Customer-centric companies tailor levels of service to their customer segmentation schemes. Incorporating Customer Feedback

Finding 9: Customer-centric companies interact with customers constantly because they understand how quickly the requirements of a customer, segment, or marketplace can change. Without real-time communication a company can lose critical intelligence and customer loyalty.

Finding 10: Organizations reach customers by implementing multiple, well-integrated customer communication vehicles. The customer-centric intelligence gathering process is systematic, well-documented, and culminates in accurate, timely, detailed, and actionable results.

Finding 11: Customer-centric companies respond differently to customer feedback than other companies do. Interdepartmental Relationships and Consistency Across Contact Channels.

Finding 12: A customer-centric experience demands interdepartmental transparency. All interdepartmental handoffs and links are seamless, which leads the customer to believe that the company is one singularly customer-focused organism. Measuring Customer Centricity and Links Between Contact Center Performance and The Bottom Line

Finding 13: Customer-centric metrics are a discrete set of macro-level indicators that provide managers a quick, comprehensive glimpse of organizational performance in meeting customer-centric goals. These metrics have a direct line of sight to the corporate customer-contact strategy.

Finding 14: A customer-centric strategy forces contact centers to develop a more structured approach to measurement. Tools and Technology

Finding 15: Customer-relationship management technology is intimately linked to customer-centric strategy success.

The APQC study shows how vital the combination of customer satisfaction and cost savings is to a corporation.

Summary of self-service

The volume of research on self-service technology has increased significantly over the past decade. However, earlier research foreshadowing the move towards a self-service society exists (Chase, 1978; Zeleny, 1978). Normann (2002), in his books and articles through the 1980s found that self-service and co-production by consumers can play a significant role in delivery and satisfaction. In the 1990s and 2000s the

concentration of service researchers at places like Arizona State University's "Center for Service Leadership" emerged. Researchers associated with this center (Roundtree, Brown, Olstrom, Meuter & Bitner) typically focuses on the marketing aspect of self-service technology. Dabholkar (1994) classified technology-based self-service into three dimensions:

Dimension 1

- Who delivers the service, or rather, is it the employee or the customer who operates the technology (Dabholkar, 1994)?

Dimension 2

- Where is the service delivered? The technology could be operated at the service site of at the customer's workplace/home (Dabholkar, 1994).

Dimension 3

- How is the service delivered? Dabholkar suggests that a service is delivered through either direct contact, meaning that the user can see and feel the technology of the company, or indirect contact meaning that the user can only reach the technology over the phone or by voice (Dabholkar, 1994).

Dabholkar (1994 & 1996), Bobbitt and Dabholkar (2001), Anselmsson (2001), and Wang and Namen (2004) focused more on the activity or benefit that self-service providers offer so that the customer can perform the service. This group looked at the specific technology in situations where the customer is significantly involved in interacting with the self-service product.

In most cases the implementation of self-service and the customer responses have been the main focus of the research to date. In some limited cases such as Bitner, Ostrom, & Meuter (2002) a paper is written on the management of self-service. "Implementing successful self-service technologies" was published in the Academy of Management Executive and includes a table of why organizations are introducing SSTs at a rapid rate (Bitner et al., 2002). The authors highlight three main reasons: (1) to reduce costs, (2) to increase customer satisfaction and (3) to reach new customer segments. The authors state that the most prominent reason is for firms to introduce new self-service technologies which allow them to save costs. This is particularly true in customer service applications where companies see tremendous potential for saving labor costs when technological solutions are substituted for personnel costs. The authors continue with a very relevant observation that "customers don't care about cost savings to a company" (Bitner et al., 2002). Thus the company cannot achieve a competitive advantage, or reduce a competitive disadvantage, when introducing self-service technology, without obtaining both a reduction in costs and an increase in customer satisfaction (at a minimum no reduction in customer satisfaction). Both elements are necessary thus the reason offshore customer service labor has been unsuccessful in certain situations (Atkinson, 2004; Lee & Thornton, 2005). Many of the articles cited in this section have been categorized by the level of contact the customer has with the company (either direct or indirect) and the location where the service occurs (customer location or at the service location). Dabholkar (1994, 1996) and Anselmsson (2001) define direct contact in a self-service situation as the act of physically using the technology to perform the service while indirect contact would utilize another tool, such as telephone, to perform the

service. A kiosk is an example of direct contact while telephone banking is indirect. One point of clarification can be provided by the example of the internet. A retail store that creates a website for ordering is utilizing direct contact, by this definition, because the website has been specifically designed for the customer and the customer can directly touch it. The location Dabholkar (1994, 1996) and Anselmsson (2001) describe is more easily defined; the service site is at a designed hard location such as a mall, plaza, or store while the customer site is considered the present location of the customer such as home, hotel room, etc. Some specific examples are provided below:

Direct contact at the service site

- Automated teller machines (ATMs)

- Automated retail scanning (self-service grocery store check-out)

- Self-service/self-pay gas pumps

- Blood pressure machines at grocery stores.

- Most kiosks

Direct contact at the customer's site

- Internet shopping

- Financial transactions over the internet

- Internet travel arrangements

Indirect contact at the service site

- Automated wake-up calls

- Use of telephone for car rental at airport

Indirect contact at the customer's site

- Telephone banking

- Other automated telephone ordering such as cable pay-per-view movies.

While this classification scheme is a good beginning to a self-service taxonomy it is simply not broad enough to encompass the multitude of other activities that could/are included by a self-service function. Nearly all processes that are business-to-customer (B2C) or business-to-business (B2B) could include at least in part a self-service function. Meuter and Bitner (1998) separated various service type functions based on customer involvement. The three areas the authors outlined were firm production, joint production and customer production. Firm production is where the good or service is produced entirely by the company while joint production is where both participate and, customer production is where only the customer participates. Given that there are varying degrees of customer participation in self-service production it becomes vital that any broad classification scheme include a continuum of the degree to which the customer participates (i.e. the degree of joint production). Chase (1978) described this concept as a measure of contact between the customer and the service provider as either high contact, or low contact. The extent of contact was defined as the amount of time the customer spends in the system relative to the total time it takes to service him or her (Christiansson & Sporrek, 2004). Joint production of goods or services of any kind is often referred to as a co-production arrangement.

The role of Co-production in Service

In a service context the term *co-production* is defined as the customer performing some portion of the activity that could be wholly completed by the service company

(Normann, 2002). The idea of co-production is not new and in fact first emerged in the late 1970s when Zeleny (1978) spoke about co-production in his seminal book, *Towards a Self-service Society*, Normann (2002) states that,

> *"according to Zeleny, the price mechanism for labor does not function in Western societies according to classical economic theory; in people intensive service sectors, cost will rise more rapidly than productivity, and the market will not be able to bear the increase; it will therefore prefer self-service."*

Essentially Zeleny was acknowledging that in developed economies the cost of employing people to perform service functions is not as efficient as having customers perform the function where efficiency will result in lower overall costs to the consumer. Normann (2002) dedicated an entire chapter in his book, *Service Management: Strategy and Leadership in Service Business* to co-production as a method to increase satisfaction and gain productivity.

Bendapudi and Leone (2003) demonstrate in the early literature on co-production that the object of self-service study was largely focused on the business case for firm's to use customers in the delivery of service offerings. Companies could benefit by increasing their overall productivity by allowing the customer to assist in the production of goods or services. The second theme is focused on the management of the process, when customers may be motivated to participate in production and the necessary resources to properly utilize the customer in co-production. The table below presents an excellent summary of the key research literature of co-production. The complete table is from Bendapudi and Leone (2003).

Table 1

Summary of key literature of co-production

Year	Author(s)	Focus	Nature of Study	Findings and Conclusions
1979	LOVELOCK AND YOUNG	Consequences of customer participation in production of services.	Conceptual	Customers can be a source of productivity gains.
1982	MILLS AND MOBERG	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.
1983	MILLS, CHASE, AND MARGUILES	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.
1985	BATESON	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.
1985	FITZSIMMONS	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.
1986	MILLS AND MORRIS	Customers as partial employees.	Conceptual	Customers may serve as partial employees in a service setting by sharing some of the production responsibilities.

Year	Author(s)	Focus	Nature of Study	Findings and Conclusions
1988	GOODWIN	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.
1990	CZEPIEL	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.
1990	BOWEN	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 on the basis of their willingness to participate in the creation of services.
1990	BOWERS, MARTIN, AND LUKER	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.
1990	KELLEY, DONNELLY, AND SKINNER	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 participation may affect overall quality and productivity, employee performance, and employees' emotional responses.

Year	Author(s)	Focus	Nature of Study	Findings and Conclusions
1990	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.
1993	FODNESS, PITEGOFF, AND SAUTTER	The downside of customer participation.	Conceptual	Suggests that customers who are trained to do more of the service for themselves may develop into a potential competitor by performing for themselves services that were previously purchased.
1993	FIRAT AND VENKATESH	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.
1993	SONG AND ADAMS	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.
1994	CERMAK, FILE, AND PRINCE	Distinguishing participation versus involvement effects.	Empirical	Attempt to distinguish involvement from participation, but authors conclude that participation construct was confounded by operationalization as level of involvement.
1995	FIRAT AND VENKATESH	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 consumption. Postmodernism provides a basis for understanding a greater consumer role in production as well as consumption.

	Author(s) and Year	Focus	Nature of Study	Findings and Conclusions
1995	FIRAT, DHOLAKIA, AND VENKATESH,	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.
1995	HULT AND LUKAS	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.
1996	LENGNICK-HALL	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.
1998	VAN RAAIJ AND PRUYN	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 in the service relationship: input, throughput, and output. The greater the sense of control, the more customers will feel responsibility for and satisfaction with the service.
2000	PRAHALAD AND RAMASWAMY	Co-opting 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.
2000	WIND AND RANGASWAMY	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.

Table 1 Source: A Chronological Review of Literature on Customer Participation in Production taken directly from "Pyscological Implications of Customer Participation in Co-Production", Bendapudi and Leone (2003, pp 16-17).

Co-production, like self-service technology, represents an important function not only in corporate strategy but also with globalization. As technology is developed, particularly in the service sector, companies will find that they have new and innovative ways to assist/service customers. Today many companies are moving to lower cost service labor in countries like China, India and the Philipines (among others) yet new technologies may eliminate the need to send service offshore. Instead of offshoring a combination of advanced technology driven by co-production and self-service may allow the complete elimination of jobs rather than an offshoring of these functions for discounted labor prices.

The link between self-service and co-production

Co-production is a continuum where the continuum ranges from the customer performing all of the necessary steps to produce the product to the customer performing only the most basic first step in a process, such as pressing one for sales or two for service when prompted by an automated phone system. Co-production exists in many places and with the increasing development of self-service technologies, as a tool to assist in co-production, the volume and degree to which co-production is utilized is almost certain to grow. Meuter and Bitner (1998) are active self-service technology researchers and have also examined the link between co-production and self-service. However, they consider only three types of production: firm production, joint production and customer production. While this analysis is a solid starting point it lacks the necessary depth for evaluating the total self-service economy. Joint production is synonymous with co-

production but is not specific enough for this research, or for the creation of a self-service taxonomy, suggesting that new terms and concepts need to be created.

The Oxford English Dictionary (OED) defines taxonomy as

1. The classification of organisms in an ordered system that indicates natural relationships.

2. The science, laws, or principles of classification; systematics.

3. Division into ordered groups or categories: *"Scholars have been laboring to develop a taxonomy of young killers"*

As a result of this definition it is impossible to create a taxonomy of self-service without including co-production. After all, self-service could be a completely stand-alone product or utilized as a step within a larger process. For example, a customer who wants to print their own photographic images may use a kiosk in the local shopping mall where they bring the digital images files to the kiosk, they crop, rotate and/or manipulate their photos, and then print them and pay all at once. This entire process can be completed without any involvement from the firm. When self-service is included as a step in a larger process co-production, in some form, occurs. As Normann (2002) writes "co-production occurs when the client does some of the (physical) work that could have conceivably been done by the service firm". Co-production, which is the direct involvement of customers in the design, delivery and marketing of goods and services that they themselves consume (Bhappu & Schultze, 2006) implies consumer input. However, co-production is not confined to service industries and therefore self-service does not always occur. For example some furniture companies such as IKEA or Sauder

sell furniture that is designed to be assembled by the consumer. This is co-production in that the customer must assemble the product in order for it to function as expected. In summary co-production does not imply self-service but the act of self-service implies some level of co-production where the level of co-production is dependent on the total number of steps that the consumer completes versus the total number of steps in the overall process.

Self-service implies co-production

Co-production, self-service and competition are best linked by quoting Normann (2002) in his chapter on technology, tools and setting.

> "Companies operating in the goods distribution or wholesale fields may install order terminals, inventory-control terminals or other equipment at their customers' premises, thus providing the client with better service while also achieving a more closely integrated client relationship which would be rather difficult to dissolve" (pg 140).

After discussing a related strategy to design new peripheral services he writes of both strategies, "there is no doubt that this genuinely helps the customer, but it also gives the wholesaler a very broad database, and this knowledge puts him in a strong position *vis a vis* his clients." This statement is a good summary of the benefits that can accrue to a firm and highlights the link between self-service, co-production and competitive advantage. Co-production, when used properly, generates a strong customer link and the technology (i.e. self-service tools) can allow an enabling strategy (Normann, 2002) creating tougher entry barrier for competitors. The concept of enabling in service versus relieving is a key idea in regards to the service business. This difference will be discussed in the next section.

Conclusions on Chapter Two

The first chapter starts with a discussion on the M-S strategic typology and the four strategic orientations of firms: defender, prospector, analyzer, and reactor. This research will study the development of SST within three firms, each representing a different sector of the economy and representing a different category of the M-S strategic typology. The reactor strategy does not offer long-term success and therefore is not included in the study. The choice to ignore a reactor as a result of their inconsistent and misapplied strategy is a common practice in the literature (Aragon-Sanchez & Sanchez-Martin, 2005; Blumentritt & Danis, 2006; McDaniel & Kolari, 1987). The researcher would expect that the development and use of SST by firms will follow their M-S strategic typology. As an extension the next section reviews the RBV of the firm and the pursuit of resources to generate competitive advantage. The RBV and M-S typologies are linked since both focus on firm-level behavior, are non industry specific and deal with decision making and resource utilization. The RBV of the firm is covered in length including the concept of strategic liability which may arrive due to firm decisions.

Next, the development of self-service technology is discussed. Advances in technology and the adoption of this new technology have the perceived ability to generate a competitive advantage for companies. Self-service technology does not need to be a complete solution but rather can be one step within a larger process. The consumer can co-produce using the service company labor and their own effort. This research is designed to study the growing self-service market and how the development and adoption of the technology can create or destroy competitive advantage. Co-production, or joint

production, is a significant area of potential use for self-service technology because self-service technology has the potential to eliminate a large number of jobs along a service process cost while increasing customer satisfaction (Dabholkar, 2000). Growing globalization trends, such as offshoring in the service sector, may eventually be eliminated due to self-service technology and co-production. In the next chapter the author discusses and reviews case study methodology. In chapters three through six the author presents three cases studies of companies who have used self-service technology and a conclusion tying the case studies and the research together. In the appendix the author details a self-service taxonomy in order to compare like applications of self-service and to provide business managers and researchers a method to classify the rapidly growing technology in the self-service segment.

CHAPTER III

METHODOLOGY

The case study method offers a tool for researchers to obtain a deep understanding of a specific phenomenon. Furthermore, the case study method can be used to provide a powerful context for understanding the firm-level strategy of using self-service technology. This research seeks to obtain an in-depth understanding and provide the reader with a vivid picture of the behavior of firms in adopting self-service technology. Therefore, due to the rapid development of self-service technology, and its current undeveloped state, the use of case study methodology to understand the "how" and "why" of the decisions of company's is deemed most appropriate.

Yin (2003a) writes that using case studies for research purposes remains one of the most challenging of all social science endeavors. Eisenhardt (1989) states case studies typically combine data collection methods such as archives, interviews, questionnaires, and observations. Case study methodology is used in situations to contribute to our knowledge of a group, individual, organization, social and political issues, and related phenomena. In general case studies are the preferred strategy when "how" or "why" questions are being posed, when the investigator has little control over events, and when the focus is on contemporary phenomenon within some real-life context (Yin, 2003a). As a result the use of case study research is deemed appropriate for this author and the research issues posed in this paper.

The case study research strategy focuses on understanding the dynamics present within a single setting (Eisenhardt, 1989). Case study methodology has been viewed as a

less than desirable form of inquiry by many research investigators due to the perceived lack of vigor of the process (Yin, 2003a). Yin lists three main complaints of case study research and the counter-arguments to each as follows:

(1) People have confused case study research with case study teaching. In case study teaching some facts are either removed or emphasized to make a significant point. While this may be acceptable for teaching to purposely highlight a specific purpose the case study researcher must work hard to gather and report all evidence fairly (Yin, 2003a). Bias exists in all research (Creswell, 2003) but the case study researcher must be very conscience of its existence given the perception of other non-case study researchers. As Yin (2003a) states, "The problems are no different (between research techniques), but in case study research, they have been more frequently encountered and less frequently overcome."

(2) Case studies provide little basis for scientific generalization. Yin (2003a) attacks this argument from two main angles. First, relative to other techniques there is not much difference in the ability to generalize. To generalize from a single experiment takes replication and case studies too can be replicated. Second, Yin writes that cases are generalizable to theoretical propositions and not to populations or universes.

(3) Case studies are too long and result in massive unreadable documents. Yin (2003a) points out that this may be appropriate for the way case studies were completed in the past but case studies written now *should not* be long and unreadable. Furthermore case studies do not need to take a long time to complete as does the techniques of ethnography or participant observation. Yin states, "You can do a valid and high-quality case study

without leaving the library and the telephone or internet, depending on the topic being covered" (Yin, 2003a, p.11).

Although case study research has endured criticism it is the proper research method to explore and explain the phenomenon of self-service technology and its ever-growing applications in business strategy. Further discussion regarding case study criticism can be found later in this paper. The author, keeping the critiques in mind, will adapt the methodology to insure it is appropriate. Case study research can be examined as a 2x3 matrix (Table 2 below) where at least six different kinds of case studies can be developed (Yin, 2003b). First, case study research can be based on either a single-case study or a multiple case studies. When using multiple cases they should be selected so that they replicate the other. Next, the case study can be exploratory, descriptive, or explanatory. An exploratory case study is aimed at defining the questions and hypothesis of a subject. A descriptive case study presents a complete description of a phenomenon within its own context and an explanatory case study presents data on a cause-effect relationship in an effort to explain what has happened (Yin, 2003b).

| 1) Single-case study | a) exploratory | b) descriptive | c) explanatory |
| 2) Multiple-case study | a) exploratory | b) descriptive | c) explanatory |

Review of different types of case studies

A researcher who chooses case study methods must first decide whether to use a single-case design or a multiple-case design.

(1) Single-case design: The single-case design is analogous to a single experiment, and many of the same conditions that justify a single experiment also justify a single case study (Yin, 2003a). The single-case study is appropriate under the following rationales.

    a. When the case represents the critical case in testing a well-formulated theory (Yin, 2003a). The theory has specified a clear set of propositions as well as the circumstances within the propositions are believed to be true as occurred in the 1971 study of the Cuban Missile Crisis (Allison, 1971).

    b. When the case represents an extreme or unique case such as a rare disorder in clinical psychology (Yin, 2003a).

    c. When a case is typical case. The case study may represent a typical project among many different projects such as a typical urban neighborhood, or manufacturing firms in a given industry (Yin, 2003a).

    d. When the case represents a revelatory case. This situation exists when the researcher has the opportunity to observe and analyze phenomenon rarely experienced by the researcher (Yin, 2003a). The intimate experience at Printerco in determining whether, how and when to launch a self-service solution is an example of a revelatory case.

    e. The longitudinal case. The theory of interest would likely specify how certain conditions have changed over time (Yin, 2003a).

(2) Multiple-case design: When the same study contains more than one case study it is considered a multiple case design. This research is a multiple case design in that

the author will present three separate cases studies within the same research. A common example of a multiple-case design is a new school initiative where a wide variety of different schools have initiated a defined project and the researcher performs individual case studies of each district. Together the case studies show a broad picture of what is occurring while each case study itself covers one individual school.

Once the researcher has determined whether it is best to pursue a single-case or multiple-case research they must then decide what type of a case to pursue. Three main types of case exist:

(1) Exploratory case study: In an exploratory case study the researcher does not have final study questions and hypothesis but rather is seeking these questions and/or observing a social phenomenon in its raw form (Yin, 2003b). Exploratory cases have come under criticism for being too undefined yet Yin (2003b) provides a framework for their design to enhance the case focus.

(2) Descriptive case study: A descriptive case study is not an expression of a cause-effect relationship. Instead a descriptive case study studies the depth and scope of the case being covered (Yin, 2003b). When researchers use descriptive cases they must still have theory to determine the priorities for data collection. Descriptive case studies, in a multiple-case setting, should also follow replication logic.

(3) Explanatory case study: The explanatory case study is suitable for doing causal studies. In complex and multivariate cases the analysis can make use of pattern-matching techniques (Tellis, 1997). Viable explanatory theories do not always exist for topics covered by case studies so the researcher may not be able to use an

explanatory approach (Yin, 2003b).

Within the context of a multiple case design the researcher can incorporate cases that exhibit "least similar" or "most similar" cases (George & Bennett, 2005). The use of least similar and most similar case design occurs most frequently in the political science, international theory, and criminal justice fields of research. Cases comparing multiple countries, different war time strategies, methods to peaceful existence, and criminal jurisdiction issues (Pakes, 2004) are common. Multiple cases which are containing a most similar design occurs when the researcher attempts to select cases that are similar in all of their independent variables except one an differ in their dependent variables (George & Bennett, 2005, p. 50). Multiple cases that are considered least similar are purposely designed by the researcher such that the cases are dissimilar in all but one independent variable and share the same dependent variable. (George & Bennett, 2005, p. 50-51). The research contained in this study reflects that of a least similar design in that the dependent variable, the adoption of self-service technology, is known to have occurred. However, the goal of this research is to identify if the M-S strategic behavior typology of each company was followed during the decision to adopt the SST. As such the formal use of either a least similar or a most similar design was not intended by the researcher.

Case Study Criticism and Response

Flyvbjerg (2006) writes that he became interested in in-depth case study research only to be dissuaded by teachers and colleagues. Flyvbjerg writes, "at first I did not

know how to respond to such claims, which clearly formed the conventional wisdom about case-study research." As a result he identified the five common criticisms of case study research, each of which I address in more detail below.

Criticism #1: General, theoretical (context-independent) knowledge is more valuable than concrete, practical (context-dependent) knowledge.

Harvard University is famous for its use of case studies as a teaching tool. Both teaching and research in professional schools are modeled to a wide extent on the understanding that case knowledge is central to human learning writes Christensen (1987). While observing case study research at Harvard University Flyvbjerg noticed the closeness of the case study to real-life situations. First, case study research is important for the development of a nuanced view of reality, including the view that human behavior cannot be understood merely from a textbook. Second, cases are important for researchers own learning process and in developing the proper skills to do sound research (Flyvbjerg, 2006). The level of depth of case studies, as exhibited in this paper, reflect that the level of detail and knowledge gained for both students and the researcher exceed that of the textbook. Campbell, the renowned academic on research methods, once believed case study methodology to be too weak to be considered a legitimate method. By the mid-1970s he altered his view and by 2003 his support of the case study methodology is evident (Shadish, Cook, & Campbell, 2002). Ragin and Becker (1992) supported the sentiments of Hans Eysenck (1976) that "sometimes we simply have to keep our eyes open and look carefully at individual cases – not in the hope of proving anything, but rather in the hope of learning something". In conclusion predictive theories

cannot be found in the study of human affairs. Therefore, concrete, context-dependent knowledge is more valuable than the search for predictive theories (Flyvbjerg, 2006).

Criticism #2: One cannot generalize on the basis of an individual case; therefore, the case study cannot contribute to scientific development.

In 1959 Karl Popper used the now famous example of "all swans are white" and proposed that just one observation of a single black swan would falsify this proposition and stimulate further theory building (Popper, 1959). Giddens (1984) took a typical natural science approach when he pieces of ethnographic research like a small scale community in anthropology is not a generalizable study unless it is carried out in greater numbers. While the statement holds some truth it is incorrect to assert that that one cannot generalize from a single case. Flyvbjerg (2006) discusses Galileo's rejection of Aristotle's view of gravity. At the time Galileo did not have the proper technology to conduct extensive tests as would be required by Gidden's and other more critical of case study methods. As a result Galileo used a single experiment, a case-study, and his findings came under great scrutiny until technology was available to conduct a critical case thereby falsifying Aristotle's view.

Eckstein (1975) was a strong proponent of case study research and argued against the criticism that case study methodology cannot be generalized. He wrote comparative and case studies are alternative means to the end of testing theories. He further adds that it is impossible to take seriously the position that case study is suspect because problem-prone and comparative study deserving of benefit of doubt because problem-free. John Walton (1992), a political scientist, has observed that case studies are likely to produce

the best work in the field of political science. While this paper does not pursue political science research the statement does assist in the denial that case study method cannot be used to generalize. Flyvbjerg concludes that one can *often* generalize on the basis of a single case, and the case study may be central to scientific development. But formal generalization is overvalued as a source of scientific development, whereas the power of an example is underestimated (Flyvbjerg, 2006). Essentially that a tangible detailed and in-depth example (i.e. a case) is more valuable than those that criticize case study research acknowledge or understand.

Criticism #3: The case study is most useful in generating a hypothesis but other methods are more suitable for hypothesis testing and theory building.

When the objective is to achieve the greatest possible amount of information on a given problem or phenomenon, a representative case or a random sample may not be the most appropriate strategy (Flyvbjerg, 2006). Case studies are valuable at all stages of the theory building process, including, and possibly the most important, at the stage at which they are tested (Eckstein, 1975). This occurs because cases provide the greatest amount of information. Atypical or extreme cases are even better than the typical case because they will contain the widest and most complex amount variables involved. Flyvbjerg (2006) writes:

> *For example, an occupational medicine clinic wanted to investigate whether people working with organic solvents suffered brain damage. Instead of choosing a representative sample among all those enterprises in the clinic's area that used organic solvents, the clinic strategically located a single workplace where all safety regulations on cleanliness, air quality, and the like had been fulfilled. If brain damage related to organic solvents could be found at this particular facility, then it was likely that the same problem would exist at other enterprises that were less careful with safety regulations for*

organic solvents. Via this type of strategic choice, one can save both time and money in researching a given problem.

This is not only an important statement to refute the case study criticism it is also vital to the selection of my three cases. Each case and company I select will have a different strategic purpose, and as highlighted in the above passage, will show self-service is likely to exist in other enterprises. The cases are not extreme, or atypical, and instead they represent the typical. Examples such as Geertz's (1973) cockfights in Bali, Foucault's (1979) European prisons, Whyte's (1943) Boston slum neighborhood are all examples of case study research playing a greater role in theory building and hypothesis testing. Without the wealth of information and the various perspectives these cases offer the ability to build a theory and test a hypothesis would be reduced. Flyvbjerg writes, "random samples emphasizing representativeness will seldom be able to produce this kind of insight; it is more appropriate to select some few cases chosen for their validity". In the study of self-service technology as a   corporate strategy to obtain competitive advantage it is more important to clarify the deeper causes behind the strategy and the resulting consequences than to describe the symptoms of a strategy and how frequently they are used. While a less in-depth study could be useful it is more valuable to utilize case study methods for this research paper.

Criticism #4: The case study contains a bias towards verification, that is, a tendency to confirm the researcher's preconceived notions.

Case study research is not vigorous enough and therefore creates a tendency to confirm the researcher's preconceived notions. As a result the study becomes of little

scientific value. These thoughts, as held by Diamond (1996) and others, reflect what he called a "crippling drawback" because case study research does not apply scientific methods. The bias towards verification is general, but the alleged deficiency of the case study and other qualitative methods is that they ostensibly allow more room for the researcher's subjective and arbitrary judgment than other methods (Flyvbjerg, 2006). While it is viewed as less rigorous than quantitative the criticism is useful in that it forces researchers such as this author to focus on the potential scrutiny the paper will come under. However, Shadish, Cook and Campbell (2002) and others have shown the critique of those such as Diamond is fallacious because case study research has its own vigor. This vigor is different for sure but no less strict than the rigors of quantitative methods. Ragin and Becker (1992), Shadish et al., (2002), Flysvbjerg (2006), Geertz (1973) and Wieviorka (1992) have concluded that their case studies typically result in their preconceived notions, views and assumptions were wrong and that the case material has compelled them to revise their hypothesis on central points. The case study method forced in-depth understanding. Geertz (1973) goes as far as to say that case study work in the field is a powerful disciplinary force: assertive, demanding, and even coercive. Like any force, it can be underestimated, but it cannot be evaded - it is too insistent for that.

Flyvbjerg (2006) writes that it is falsification that characterizes case study methods, rather than verification. Beveridge (1951) conclusion that there are more discoveries stemming from the type of intense observation made possible by the case study than from statistics applied to large groups. As a result true legitimate case study

research does not have a bias towards verification (quite the opposite) and does not conclude the researcher's preconceived theory.

Criticism #5: It is often difficult to summarize and develop general propositions and theories on the basis of specific case studies.

Good narratives typically address the complexity of real life and as a result it may be difficult, or impossible, to summarize into general propositions and/or theories. This is a common argument presented in Mitchell and Charmez (1996), Roth (1989), and Rouse (1990) against case study research. Flyvbjerg (2006), (Yin, 2003a), and Geertz (1973) have a different perspective in that this criticism is not really a drawback of case study research but rather a very positive. The question is whether the summarizing and generalization, which the critics see as ideal, is always desirable. Flyvbjerg (2006) draws on a quote from Nietzsche that, "above all on should not wish to divest existence of its rich ambiguity".

In the experience of case study researchers it is the focus on in-depth particular events that generated the important results. In a sense it was the minutiae of the events that made the case! According to Peattie (2001) the denseness of the case study and the in-depth detail is exactly what makes the case so valuable. She further states that to attempt to summarize all of the detail of a case study into a nice package is to perform a disservice. The dense case study is more useful for the practitioner and more interesting for social theory than high-level generalization. In attempting to summarize a case study there appear two large risks to the author of this paper. First, attempting to summarize the three case studies in this paper risks the loss of important details. For in each case the

there are a combination of different factors at play; from financial, to political, to competitive strategy and game theory, to personal opinions. This is what makes the case so robust. The case is not designed to summarize and link to one academic specialization. Instead the case reached across multiple specializations and into a variety of spectrums to allow the reader to determine what conclusion can be drawn. The case is not intended to be "all things to all people" (Flyvbjerg, 2006). The three case studies in this paper reflect the growing trend of the use of self-service technology as a corporate strategy yet each self-service application is pursued for a different reason, for each company. In the details of the case there are reflected multiple motivations for the actors involved and this minutiae is vitally important to formulate a complete understanding of the research. To generalize would be a tremendous disservice to the case studies.

Multiple-case study: A three case studies

This research contains three separate case studies, in a multiple case design, and the development of taxonomy of self-service technology. Pettigrew (1988) noted that while cases could be chosen at random it is neither a necessary or preferred method of choosing cases. Given the limited number of cases which can usually be studies "it makes sense to choose cases such as extreme situations and polar types in which the process of interest is transparently observable". As a result the researcher's sample is not random and instead reflects different industries and strategic thought processes in order to show a convergence. The first case study will be a descriptive and explanatory case regarding the development of a self-service and co-production web-based portal for field operations of Printerco. The case study first addresses the environmental need for a new

solution, how the process evolved into becoming a self-service solution, what steps the company followed in order to achieve the solution and how the strategic decisions fit into the larger self-service taxonomy. The second and third case studies will focus on two industries that are known for innovative service changes. The first is the banking industry and the second is the airline industry. Case number two will be descriptive in nature, take place in the banking industry, and explain the how and why of corporate-level strategy regarding online cash management and remote deposit. This case presents an interesting look at the continued movement towards self-service in a large bank. The bank openly acknowledges that they are not a first-mover, nor do they want to be. Interestingly the companies involved in the first two cases use opposite strategies in the pursuit of the implementation of self-service strategy. Printerco, a global producer of imaging equipment, prides themselves on developing the latest technology, exploiting niche markets and first-mover advantage in their equipment and their service. In contrast the Bankco is a large regional bank that prides itself on a high-level of customer service but on not developing new self-service technology but rather allowing the larger companies to be the first-mover. Although the two companies reside in much different industries the self-service taxonomy will allow their respective methodologies to be compared.

The third case is within the airline industry and while customer satisfaction is vitally important the industry itself is under tremendous pressure to reduce costs. Many of the major airline carriers in the United States have filed for bankruptcy protection and are under strict business plans to streamline operations and reduce cost (Schultze & Orlikowski, 2004). The third case will look at Airlineco and their movement towards

self-service within their call centers. The self-servicing of a call center represents a risk to the offshoring of call center jobs (as well as domestic call centers) and is central to the underlying premise of this research. This case represents a movement towards self-service in an attempt to eliminate labor cost. This case is a combination of exploratory and descriptive. Airlineco has discovered that through the use of self-service technology the volume of calls to their call center has declined but the complexity of these calls has increased. Airlines have had success implementing self-service solutions, such as check-in kiosks, and are leaders, along with financial institutions, in developing and implementing self-service solutions within their process.

Together these three cases will encompass a variety of self-service solutions each positioned differently within the taxonomy and each which address a different priority of strategic goals. Of the three cases one will have a greater level of immersion than the other two. The case of Printerco, and the decision to move forward with self-service solution for field operations, has been lead by this researcher and therefore there is a greater depth of sources in data collection. The case study plan for each case is listed below.

(a) Printerco: The decision to move towards a self-service solution for Printerco was arrived at after an extended period of time during which multiple current and future field service issues were identified. This case will utilize the case study protocol as outlined in Yin (2003a) and Gerring (2007).

Case Study Plan: Following an established protocol

Tellis (1997) writes that some of the early criticism of case study as a research methodology was that it was unscientific in nature, because replication was not possible. Yin (2003a) asserts that the development of the rules and procedures contained in the protocol enhance the reliability of case study research. He states that while it is desirable to have a protocol for all studies it is essential in a multiple-case study such as this. Therefore, for each of the three cases in this multiple-case study the following protocol will be outlined:

(a) An overview of the case study project – including project objectives, case study issues, and presentations about the topic under study.

(b) Field procedures

(c) Case study questions

(d) The outline and format for the case study

The protocol is important to the overall progress and reliability of the study by keeping the investigator's focus on the main task and goals (Tellis, 1997). Within the context of the case study protocol the author will also include the five components of a case study as outlined by Yin (2003a). The five proposed components are:

(a) The study's questions

(b) The unit of analysis

(c) The logic linking the data to the proposition.

(d) The criteria for interpreting the findings

(e) Last, the author will discuss the method of evaluation for each case and the sources of evidence used.

In following the case study protocol the researcher paid attention and took notes by using a stream of consciousness approach. The researcher wrote down comments of what was occurring rather than trying to determine on the spot what was important or not important (Van Maanen, 1988). It is also worthy to note that this researcher, in following Eisenhardt (1989), did not set out to produce a set of summary statistics about a set of observations. Instead the goal was in-depth detail to create a very rich body of information.

Validity and replication

Construct validity remains especially problematic in case study research often due to an investigator's failing to develop sufficient operational set of measures (Yin, 2003a). Therefore in order to meet the test of construct validity an investigator must be sure to cover two steps:

(a) Select the specific types of change that are to be studied (and relate them to the original objectives of the study) and,

(b) Demonstrate that the selected measures of these changes do indeed reflect the specific types of change that have been selected.

In order to increase the construct validity in the three cases I will utilize the following tactics:

(1) During the data collection the investigator will use multiple sources of evidence (Yin, 2003a).

(2) Maintain a chain of evidence throughout each case from the initial question to the final case study conclusion (Yin, 2003a)

(3) When a draft copy of the case study is completed the investigator will have key

informants read the document (Yin, 2003a).

Internal validity is only a concern for explanatory case studies where the investigator

is attempting to find a causal link. Yin (2003a) writes that internal validity, for case

study research, may be extended to the broader problem of making inferences.

Therefore, in this multiple-case study approach the researcher will use analytical tactics

like potential rival explanations and the use of logic models as a way to protect internal

validity.

External validity deals with the ability to generalize the findings in the case study.

Yin (2003a) writes the external validity issue has been a major barrier for doing case

studies. Most case study critics compare the ability to generalize the findings of a case

study with that of survey work. Yin counters that both are generalizable with the

distinction being survey research are relies on statistical generalization, whereas case

studies rely on analytical generalization (Yin, 2003a). Given that this is multiple-case

study research the author will use replication logic.

Replication for multiple-case studies is analogous to that used in conducting

multiple experiments (Yin, 2003a). The logic underlying the use of multiple-case studies

is the same in that each case is purposely designed to either predict similar results (literal

replication) or predict contrasting results (theoretical replication). The ability to conduct

these multiple case studies is dependent on a strong theoretical framework outlining

where the particular phenomenon is likely to be found (Yin, 2003a). One important

distinction which Yin goes to great lengths to highlight is that replication logic is not the

same as sampling logic. This sampling logic requires "an operational enumeration of the entire universe or pool of potential respondents and then a statistical procedure for selecting a specific subset of respondents to be surveyed" (Yin, 2003a). In order to have string replication, as well as valid research, the initial step of designing the cases must consist of theory development, a detailed step-by-step procedure (that can later be followed), and specific measures of design and data collection.

Case Study Protocol

For the three case studies that will be a part of this research the author will use the following case study protocol as outlined in Yin (2003a).

    A. Introduction to the case study and purpose of the protocol

        i. Case study questions, hypothesis and propositions

        ii. Theoretical framework for the case study.

    B. Data collection procedures

        i. Names of sites to be visited, including contact persons

        ii. Data collection plan

        iii. Preparation prior to the onsite visit

    C. Outline of case study report

        i. The practice in operation

        ii. Innovativeness of the practice

        iii. Outcomes from the practice, to date

        iv. The history and context of the move

    D. Case study questions

        i. The practice in operation

ii. The evaluation of the practice

Using Conant et al. (1990) paragraph method the researcher will ask eleven

specific questions to the representatives of the firm's in the study. The nominal

scale level of the data produced required that the majority-rule decision structure

was used (Conant et al., 1990). Ties between prospector, analyzer, and defender

resulted in the company being categorized as an analyzer. Whiles any ties

involving reactor resulted in the firm be considered a reactor. According to

Conant et al. (1990) and Desarbo et al. (2005) this is the proper way to

operational in accordance with M-S concept. The idea of self-typing as a

measure to categorize an organization was first introduced in Snow and Hambrick

(1980). Along with self-typing other acceptable methods include objective

indicators, external assessment and investigator inference (Conant et al., 1990).

Although a number of researchers have advocated the use of multiple approaches

to operationalize and measure the organizational constructs few studies have

actually employed this method (Conant et al., 1990). Since this research is case

study based the researcher will have the advantage of utilizing both self-typing

and investigator inference based on the actions and responses to the original and

follow questions. If the self-typing and investigator inference result in different

strategic typologies they will be properly noted in the cases.

To test the expectation of a potential competitive advantage four specific

questions were directed to the firm employees. The questions focused on the four

attributes of competitive advantage according to the firm-level RBV theory. The

researcher asked whether the self-service solution was (a) intended to be valuable to the organization, (b) to be rare relative to industry competitors, (c) to be impossible to imitate by competition, and (d) was not substitutable by competitors. Each answer was followed by an explanation of why and noted in the case.

Case #1: Printerco: Self-service online animated portal for field service operations.

A: Overview of the case study project: This is a descriptive case reviewing the decision of Printerco to invest in a self-service portal to increase customer uptime, reduce the amount of onsite travel, further position the company as innovative leaders and to increase customer uptime. The objective of this case is to properly describe the method a company takes in determining how to develop a new technological solution (i.e. the corporate strategy) and where it chooses to position the technology in the market and within the taxonomy of self-service.

Printerco is seventy year old manufacturer of large-format printing equipment used throughout the world to reproduce images. The company designs, manufactures, sells, and service their equipment throughout the world. Printerco equipment is expensive capital goods ranging in price from $150,000 to $700,000. In this case the author is Vice President of North American operations, finance and service. The author's responsibilities include all management of accounting, human resources, information technology, inventory and purchasing, and the service business unit. The North American operation is a wholly-owned subsidiary of Printerco, AG and is named Printerco US. The service operation, within Printerco US, represents 40% of the overall revenue and 98% of the annual profitability for Printerco US. Margins within the service

business are in excess of 50%. Printerco US services the customer base through an organized process. In this process a customer calls a toll-free telephone number and speaks with a highly trained telephone engineer (TAC) in an attempt to identify the root cause of the issue. The TAC person is then tasked with both solving the problem over the telephone and closing the service call, or deciding that a field service engineer (FSE) needs to go to the customer location. If the TAC person deems that replacement parts are necessary to solve the equipment failure he/she will have parts sent from the company warehouse directly to the customer. If a FSE is required at the customer site, due to an inability to properly troubleshoot the issue over the telephone or because the replacement of the part is too complex for a customer, then the FSE is dispatched at the end of the day for arrival the following day. Typically service calls that require a customer visit will occur on the next business day though sometimes, if no FSE is available, it will take two days. Printerco also had a long history of not providing after-hours support in Europe to their customer base and charging for after-hour support in the United States. Given the cost of a service contract can range between $10,000 and $40,000 per year the inability of customers to obtain after-hour service in Europe and the excess cost beyond the cost of an annual service contract of after-hours service in North American was becoming a competitive disadvantage. Printerco competition would advertise a faster response time and 24/7 service available. In addition some competitors offered lower priced service contracts making the ability of the Printerco sales personnel more challenging when discussing future service on the equipment during the equipment sales process. During the author's doctorate program he was introduced to the concept of self-service and the growing support economy. Upon completion of the class the author studied other self-

service offerings and felt that Printerco could utilize a self-service solution to provide a more rapid response to the customer base and provide service 24/7. The solution would be the first among Printerco's competition and would include a number of visual simulations to walk a novice customer through the proper troubleshooting and repair procedure. The author presented a proposal directly to his boss, the worldwide CEO, and was able to obtain funding for the project through the Austrian sister company. Therefore, the author is fully submerged in the strategic, political and financial aspects of this program as well as the marketing and information technology opportunities and risks.

B: Sources of Evidence and Field Procedures: Given that this is a descriptive case where the researcher is fully immersed in the activities the sources of evidence will be very encompassing. It is important to note that although the author is fully immersed in the company his day-to-day responsibilities have nothing to do with the self-service economy. Rather they are focused on growing the market share and profitability of Printerco in the North American market. The potential use of self-service to solve an existing issue for Printerco was discovered through the combination of an academic class and the researcher's knowledge of corporate strategy.

The first source of evidence is extensive documentation available with a broad coverage over an eighteen month period of time, showing events, decisions, directions and the reasons for each. Second, the sources of evidence will include participant observation by covering real events in real time with decision makers. Since the researcher is immersed in this project participant observation over an extended period of time is a tremendous advantage in gleaning knowledge. Furthermore, according to

Gerring (2007), Yin (2003b) and Tellis (1997), participant observation is often considered the best case study method because it is insightful into interpersonal behavior and motives that is difficult or impossible to replicate. Participant observation is not without a large concern of bias due to the investigator's ability to manipulate events. The final source of evidence will be archival records explaining the history of Printerco and why they would pursue a self-service solution, the history of the company and the industry changes over a 70-year period.

The scope and the depth of the Printerco case study will reveal a powerful push towards companies finding a technological solution to ongoing problems. Given that the investigator is intimately involved in the case and a wide set of sources of evidence have been gathered the case will show the *desire* of companies to find self-service solutions to ongoing problems.

C: Case study questions: The case of Printerco will highlight how and why this company is moving towards a self-service/co-production solution to equipment service. The approach is innovative within the printing industry and costly to implement yet there exists strong economic, strategic and political factors that make the decision easier. Printerco has a strategy to compete on service by delivering a real-time knowledge self-service system to increase customer uptime. By offering a self-service solution not currently offered in Printerco's competitive landscape they are positioning the company to have a stronger value proposition against competition. Since Printerco's business is selling and servicing capital goods a self-service delivery system for customers will increase the value of the purchase versus competition. As Yin (2003a) writes the case

study questions are for the investigator, not the interviewee. In this sense the case study

protocol and questions are directed at an entirely different party than a survey. The

protocol's questions are the investigator's reminder regarding the information that needs

to be collected and why (Yin, 2003a). For this single case study the investigator is

seeking to understand answers to the following questions.

(1) Why did the company pursue a self-service solution?

(2) What other potential solutions were available (regardless of cost)?

(3) What is the corporate strategy (if it can be shared), and how does self-service accomplish the corporate strategy?

(4) How was the solution received within other departments within the company?

(5) Was the technology pushed to the customer or pulled by the customer and was it consciously designed in that manner?

(6) Is the technology available at the customer site, at the service company site or both? And why...

(7) How did you complete this function in the past? Was it never completed (completely new procedure)?

(8) Is this technology designed to act as a resource for a similar service or as a replacement to a prior service?

(9) Is self-service being investigated in other departments in order to increase efficiency, reduce costs or increase customer satisfaction?

There are many other issues and questions that will arise throughout the case study but the above list represent the fundamental case study questions that the researcher seeks to answer.

D: The outline and format of the case study: The Printerco case study will present a brief overview of the company, the history and the market they serve. Given that the researcher is a part of the company an in-depth understanding of the philosophy and direction the company is moving will be presented. In addition each detail of the process from the conception of the idea of self-service to the actual implementation will be included in the case study.

E. Summary: Being fully immersed in the Printerco case has allowed the researcher to collect written documentation, recite private inter-company conversations and obtain presentation information including video. There are no specific interviews that were used for the sole purpose of the case study however notes of conversations, as well as recollections of these conversations, between Executive level Printerco participants to position the self-service solution are used throughout the report. The information used in the case study was collected over a two-year period.

Case study #2: Bankco Web Infocus online cash management

A: Overview of the case study project: The banking industry has shown a propensity to utilize self-service technology and the Web Infocus project was no different. Based on competitive pressure and a desire to offer services similar to other larger banks Bankco responded by offering online cash management and deposit verification for its corporate clients. The case study project will focus on multiple facets of this launch in an

explanatory and descriptive format. Bankco is not a first-mover and therefore this case differs from the Printerco case study. Instead, Bankco prefers to respond to competitive pressure thereby reducing technology cost and absorbing less customer acceptance risk while risking the potential loss of market share. This case will highlight the competitive pressures that move companies in a direction to utilize self-service technology as well as the strategic approach Bankco chooses to follow.

The case will discuss the history of Bankco, how they arrived at their strategic posture as it relates to technology innovation, and their core competences as they see them. Further, the case will show the evolution of WebInfocus and some of the difficulties they overcame while planning to launch the product. Next the benefits achieved by both the consumer and the bank are reviewed. Last the future of self-service banking is discussed and the launch of a new product, remote deposits, is discussed in detail.

B: Sources of Evidence and Field Procedures: The author has a close relationship with Bankco and will utilize high-level contacts to conduct the case study. Two main sources of evidence will be used for this case study; documentation and interviews. The documentation will be gathered through public records and as a result of direct request from the participants. These documents will reflect the history of Bankco, the growth and strategy of Bankco and the size and scope of Bankco market. The other source of evidence will be interviews.

In this case at least three people within differing functions of the organization will be interviewed all relevant to the launch of the WebInfocus project yet all with different functional roles. The first participant is a client relationship manager, essentially a

salesperson, who obtains and manages client relationships. The second participant is a department manager for the cash management product portfolio. This individual is responsible for implementing, training and contributing to the development of cash management products for corporate clients. Last, an executive responsible for regional banking was solicited to highlight the importance of the technology to the corporate clients and enlighten the investigator on the market positioning of the bank versus other banks and the technology.

By combining interviews with documentation the investigator believes a complete picture can be shown and a deeper understanding of the purpose of self-service technology obtained in this study. Unfortunately the direct observation and participant observation that was obtainable in the case of Printerco is not available in this case. Nonetheless the case of Bankco will show a powerful *need* for companies to move towards a self-service model in many applications.

C: Case study questions: The case of Bankco will highlight how and why this company chose to launch their online cash management tool, WebInfocus, solution to corporate clients. The approach was one of early adaptor rather than first-mover yet still costly to implement. There exist many strong economic, strategic and political factors that make the decision easier for the bank. For this single case study the investigator is seeking to understand answers to the following questions.

(1) Why did the company pursue a self-service solution?

(2) What other potential solutions were available (regardless of cost)?

(3) How does self-service accomplish the corporate strategy, and what is the corporate strategy (if it can be shared)?

(4) How was the solution received within other departments within the company?

(5) Was the technology pushed to the customer or pulled by the customer and why was it designed in that manner?

(6) Is the technology available at the customer site, at the service company site or both? And why...

(7) How did you complete this function in the past? Was it never completed (completely new procedure)?

(8) Is this technology designed to act as a resource for a similar service or as a replacement to a prior service?

(9) Is self-service being investigated in other departments in order to increase efficiency, reduce costs or increase customer satisfaction?

(10) Banking comes with tremendous amount of risk, how was the risk of an online, seemingly less secure than traditional person-to-person banking, product overcome?

There are many other issues and questions that will arise throughout the case study but the above list represent the fundamental case study questions that the investigator seeks to answer.

D: The outline and format of the case study: The Bankco case study will present a brief overview of the company, the history and the market they serve. Given that the researcher has a close working relationship with the bank and contacts at high levels the information in the case study will represent defined strategies of the company. In

addition each detail of the process from the conception of the idea of self-service to the actual implementation will be included in the case study.

E: Summary: Throughout the Bankco case data is collected by conducting interviews. Where possible these interviews will be recorded though the researcher has been informed this is unlikely due to the bank's refusal. As a result the information is contained in a series of notes. Public sources such as 10-K's and information on websites such as Yahoo! Finance are used to understand the overall positioning, strength and market share of the company. The interviews were conducted with the Vice President of Middle Markets, the Vice President of Cash Management and the Senior Regional Vice President. None of these interviews were recorded. The interview questions were a combination of specific/direct questions and a variety of open-ended questions. As the researcher gained a stronger understanding of the company and product position additional direct and open-ended questions were asked in addition the opening questions listed in section (C) above. In this case the researcher did not provide specific questions in advance. The three Bankco representatives were asked similar questions in order to validate the answer of one person with another. In this manner the researcher could use triangulation made possible by multiple data collection methods and people. Triangulation in case studies provides stronger substantiation of constructs and hypothesis (Eisenhardt, 1989). Furthermore, multiple contacts within a case study have multiple advantages. First, they enhance the creative potential of the study as they have complimentary insights and add richness and depth to the study. Second, the convergence of observations enhances confidence in the findings for both the researcher

and reader. There were several situations where only one of the individuals had an expertise (i.e. workflow benefits of cash management solution from the VP, cash management) and therefore the information was accepted and used without further investigation. The researcher is comfortable that in these cases the information was provided by the key expert and fairly represents the company opinion. After all of the notes were compiled from the various sources the researcher began to write the case. If more information or clarification was needed a telephone call would be made and the response noted and included, if appropriate, in the case study. This occurred on multiple occasions to insure the greatest depth and accuracy in the case.

Case study #3: Airlineco self-service application and the resulting effect at their call center.

A: Overview of the case study project: The movement of self-service travel arrangements has resulted in an interesting dynamic as is revealed in the third case. The case of Airlineco call center operations studies the affect of a change in one segment of the business due to a self-service application on other segments within Airlineco business. The case will walk the reader through how self-service technology has eliminated the need to process the easier reservations, as they are completed via the internet, yet the call center remains active due to more complex telephone reservations. This activity is a result of the call center handling only the more complex reservations. The researcher will present the method in which the call center was able to handle the more time consuming calls and how they determine the appropriate labor force to handle

these calls. As a result of a portion of the calls moving to the internet one of three possibilities exists in regards to the call center which the researcher will investigate.

The first possibility is that the call center has reduced its number of employees due to a declining call volume, even if the calls are more complex. Unless the complexity was a direct result of the self-service technology the more difficult calls would still occur regardless of whether the easier calls were taken or completed over the internet. In other words the complex calls would exist regardless of whether self-service technology was available and therefore there should still be a possible decline in the call center workforce. Second, the call center may not have been able to decrease the number of call center employees because of an increase in complex reservations. The higher volume of complex reservations would result in a lower than expected decline in full-time employees (FTEs) because resources who would have been used to answer easy calls would now be redeployed to handle more difficult calls. In this scenario Airlineco would still have a lower number of employees than they would have otherwise had if it were not for the self-service application absorbing a portion of the calls. Though the number of calls handled per person may literally be decreasing within the call center (due to the longer average time per call) the total number of reservations processed is likely increasing because the self-service application is absorbing a portion (as will be determined in the case) of the total reservations. Since the more complex calls would exist whether or not the self-service option was available the conclusion is that though the move to self-service reservations has not reduced the actual number of employees within the call center it has reduced the need to hire more representatives – therefore saving Airlineco future expenditures.

A simple example may be helpful.

(I) *Prior to self-service* a call center with 10 people could answer 60 calls per hour (six calls per hour per FTE). The complex calls took, on average 20 minutes while the easier calls took five minutes. For simplicity each FTE answered two difficult calls (40 minutes) and four easy calls (20 minutes).

(II) *After the launch of self-service* it was calculated that the 10 people could answer 30 calls per hour (three calls per hour per FTE). Therefore the call center could not reduce the number of employees.

(III) Based on this very simple example you can see that the difficult calls have increased from two in (I) to three in (II). The self-service option has eliminated the four easy calls in (I) and has replaced them with an additional difficult call in (II). Had the self-service application not been able to handle the four easy calls per hour per FTE than the call center would have been required to now answer four easy calls and three difficult calls per FTE. The call center would have had to hire more people to cover the calls, assuming they did not want a longer hold time for the customer. The volume of calls has risen and the call center has avoided the need to hire more employees – a tangible savings.

The final possibility which the researcher will investigate is the possibility that the call volume has not increased but the call center has become less efficient. In this case even though self-service has handled the easier reservations the call center has become less efficient and has needed to retain the same number of employees to handle a lower volume of calls.

This case will investigate the consequences and resulting performance actions that a corporation undergoes when self-service technology is introduced into one of their processes.

B: Sources of Evidence and Field Procedures: The researcher has been directed to this case study by his faculty advisor who has a close relationship with the company. In addition the researcher has been introduced to the Managing Director of reservations for Airlineco. The researcher will utilize contacts to conduct the case study and will rely on the main contact to assist in identifying and speaking to these people. Two main sources of evidence will be used for this case study; documentation and interviews. The documentation will be gathered through public records and as a result of direct request from the participants. These documents will reflect the history of Airlineco, the growth and strategy of company, the reservation process, and the size and scope of the market. The other source of evidence will be interviews.

In this case the researcher has the intention of discussing the case with at least three people within differing functions of the organization in an attempt to triangulate (Yin, 2003a). At this point the exact contacts have not yet been established but will include the Managing Director of reservations.

By combining interviews with documentation the investigator believes a complete picture can be shown and a deeper understanding of the consequences of self-service technology on other functional areas can be obtained in this study.

C: Case study questions: The purpose of the Airlineco case will be to study and reveal how self-service applications affect business operations. As a result the case study questions will focus on the post self-service technology implementation and how

Airlineco has handled a changing business dynamic. For this single case study the investigator is seeking to understand answers to the following questions.

(1) Why did the company pursue a self-service solution?

(2) What other potential solutions were available (regardless of cost)?

(3) What is the corporate strategy (if it can be shared), and how does self-service accomplish the corporate strategy?

(4) How was the solution received within other departments within the company?

(5) Was the technology pushed to the customer or pulled by the customer and was it consciously designed in that manner?

(6) Is the technology available at the customer site, at the service company site or both? And why...

(7) How did you complete this function in the past? Was it never completed (completely new procedure)?

(8) Is this technology designed to act as a resource for a similar service or as a replacement to a prior service?

(9) Is self-service being investigated in other departments in order to increase efficiency, reduce costs or increase customer satisfaction?

D: The outline and format of the case study: The Airlineco case study will present a brief overview of the company, the history and the market they serve. Given that the faculty chair has a close working relationship with the airline and strong contacts at high levels the information in the case study will represent defined strategies of the company. Detail

of the process from the conception of the idea of self-service to the post implementation

effects on the operation will be included in the case study.

Case Study Method: Summary

The researcher will complete three single case studies and write individual case

study reports. Once these individual studies are completed conclusions can be drawn and

if necessary a modification to the original theory will be made.

Given that the researcher is seeking to determine whether companies that launch

and develop SST act in away expected in accordance with the M-S strategic typology.

The researcher is also attempting to identify whether the development of an SST is to

obtain a long-term competitive advantage versus industry rivals in accordance with the

principles of the RBV of the firm. The cases delve into the adoption of technology and

the pursuit of competitive advantage for the growing self-service economy.

The cases in this research are specifically designed to present three different

ideals of self-service and a resulting three different perspectives. Yet they all share a

common theme; self-service technology has changed the way they interact with

customers. In the first case Printerco has become innovators within their industry with

the use of self-service to deliver interactive, animated, detailed and in-depth self-service

for specific customers and industry. As Printerco moves towards a new segment of

business self-service has allowed them to address weaknesses in their current delivery

method while increasing the ability to sell within these markets. Printerco is a first-

mover and an innovator within their industry and the launch of a self-service product is a

reflection of such an attitude. The second case, Bankco, takes a different perspective,

though equally significant, on self-service technology. Bankco is *proudly* not a first-mover. In the third case, Airlineco, the company has discovered that the movement towards self-service has created some unintended consequences, and while not bad, has forced them to rethink the benefits of using such a tool. Airlines are notorious for cost cutting measures and felt pressure to reduce costs and move towards self-service.

Self-Service Taxonomy

As outlined in the introduction there is a need to develop a taxonomy of self-service technology in order to allow researchers to compare cross-industry technologies. Further, as the author began to develop a self-service solution for a growing business issue for his company he discovered that there is no method to organize different self-service solutions. This taxonomy is being developed to assist both researchers and business professionals in developing and adopting self-service technology.

Self-service interfaces have been categorized by Meuter, Ostrom, Roundtree and Bitner (2000) into (1) internet; (2) voice/telephone; (3) automat – kiosk and ATM withdrawals; and (4) video or CD. Within the context of this article the authors classified SSTs as differing along the different lines of technology and along the purpose of the technology. Chase (1978) viewed self-service as customer centric and classified interactions into high-contact or low-contact interactions. Dabholkar (1994) classified technology based self-service into three dimensions as who delivers the service, where is it performed and how is it delivered.

As recent as 2006 Salomann, Kolbe and Brenner (2006) summarized that the literature on self-service centered around two main themes; customer-centric and technological-centric. First, the majority of literature centered on the customer-centric approach (Salomann et al., 2006). The customer-centric approach is characterized by studies on customer feelings and acceptance of available self-service applications. The findings are diverse with customers often satisfied if the technology is easy to use and functions properly, while they are disappointed if the technology is too impersonal or fails to work properly. The second theme is technology based. This technological-centric model studies the technologies that are used in self-service. In these cases the technology is the enabling factor that allows self-service to occur. The technology focused approach is often referred to as technology based self-service (TBSS) (Dabholkar, 1996) or self-service technology (SST) (Bitner, Ostrom & Meuter, 2002). What is lacking is an organized classification scheme, or taxonomy, of self-service. In particular it is difficult, if not impossible, for a company manager/executive to understand how self-service can be applied in their organization and how to best design the technology to meet their goals. With a vast array of different variables involved in designing a self-service solution, each with their own risks and opportunities, a manager/executive needs a roadmap or decision matrix to aid their trip through the self-service road. This taxonomy does not try to identify a good self-service design from a poor self-service design but instead provides a classification which academic researchers and business persons can use to determine the classification of a given self-service product and its association to the customer. In essence this taxonomy will allow for the organized classification of where a self-service offering is and present visual

opportunities to move to other regions within the taxonomy to alleviate concerns that

researchers and managers have determined such as lower customer satisfaction and/or

lack of cost savings (or any other perceived goal a company may have).

Table 2
Taxonomy benefits by function

	Benefits of taxonomy for **academic research**	Benefits of taxonomy for **business executive**
1	Better organized classification scheme..	Creates organized decision making process.
2	Easier to compare goals and results of various technologies.	Allows comparison of solutions outside of industry.
3	More valuable knowledge with findings assisting in applying self-service.	Creates a roadmap for improving current offerings.
4	Unifies research across industry settings and academic disciplines	Simplifies the thought process for new innovators and industry leaders.

The researcher is both a doctoral student and a business professional. Having

read the self-service literature and found nothing regarding an organized taxonomy that

could illuminate the challenge of discerning where a company is today, where a company

wants to go, and why is concerning. To fill this gap and meet this need this research

creates a taxonomy that achieves these goals by answering these questions. As a

researcher there exists difficulty understanding and applying some of the classification

schemes that researchers have created and used to explore the interaction between

different studies and technologies. The fact that some technology based self-service is

internet-based versus telephone-based is important to the extent that one understands

which method empirically work best (i.e. provide customer satisfaction, reduce costs,

etc.). This taxonomy allows someone to understand where in the classification scheme

the user lie and whether it is easy and/or intelligent to transition to another segment. This

taxonomy also allows researchers to identify companies and technology and examine

their activity to determine success and/or failure versus similar companies and technology in a different location on the taxonomy (or different companies on the same location). Within an industry setting the taxonomy can be used by an executive to identify competitive strengths and/or weakness.

The reader can compare their self-service technology, as defined by its singular location within the taxonomy, with:

(a) *The same singular* results of *industry competitors*, AND

(b) *The same singular results of non-industry* companies.

Additionally the reader can compare their self-service technology, as defined by its singular location within the taxonomy, with:

(c) The *non-similar* results of industry competitors located

    throughout the remaining taxonomy.

This taxonomy and hierarchy is viewed from the company perspective rather than the consumer perspective. The work of prior classification schemes has contributed to this taxonomy (Bhappu & Schultze, 2006; Bitner et al., 2002; Dabholkar, 1994, 1996). However, any taxonomy should be continuously tested and modified as necessary. The complete taxonomy is contained in the appendix of the research paper.

Methodology Summary

The three cases presented demonstrate three different methods to seek and develop a self-service solution. All of these companies have strategic reasons for

pursuing a self-service solution including: (a) to create new self-service solutions in order to gain a competitive advantage over their competitors (Printerco); (b) pursue self-service solutions to avoid obtaining a strategic liability (or competitive disadvantage) because competitors have introduced self-service technology (Bankco); (c) Companies pursue self-service for the sole reason of reducing costs. Essentially they are being forced by competitive issues to find new ways to lower cost and have chosen self-service as a mechanism to achieve the lower costs (Airlineco). The three cases show how prevalent self-service is becoming and the wide range of uses SST offers for a company. Through case study methodology the investigator tests the adoption of SST against the expected behavior as outlined in M-S typology and the results are presented in the following four chapters.

CHAPTER IV

THE CASE OF PRINTERCO

"In 1791 the then secretary of the treasury argued America's destiny lay in encouraging domestic manufacturers with high tariffs, immigration and new inventions particularly those which relate to machinery."

- From *They Made America: From the Steam Engine to the Search Engine* (Evans, 2004) in reference to Alexander Hamilton's thoughts on USA progress, pp. 11.

Case outline

The case of Printerco begins with an introduction detailing the perceived need for a self-service solution. Next, the methods of data collection are explained. The third and fourth section provide the reader with a deeper understanding of the company involved in the case and its overall business strategy as explained to the researcher. The next three sections provide in-depth explanation of why the company launched a self-service offering and how they went about developing and deploying the technology. Moreover, throughout the interviews the researcher was able to ask about the future development of self-service products and the findings are contained within this case. The case then segues into the test of the theory by reviewing the Miles and Snow strategic typology and the results of the company's deployment of self-service technology. The outcome of the responses to determine if the self-service offering is a scarce resource in accordance with the resource-based view is then discussed. Finally, the case is summarized in the concluding section of the case.

Introduction

Printerco, AG is a seventy year-old Northern Italy (Tyrol) based company specializing in the design and manufacture of large format printing equipment. Over the years the company has evolved from camera manufacturer, to an enlarger manufacturer,

to a printer manufacturer. Printerco builds capital goods and machinery which require high levels of research and development and capital. As the company moved into more industrial printing applications in an attempt to seek new niche markets, the delivery of field service to support the equipment required similar advances; Printerco needed a new invention related to the machinery to service the equipment as Alexander Hamilton wrote over two-hundred years before in the quote above. This is a case study of Printerco launching a new self-service product into a segment of the market that had no self-service before in an attempt to provide faster service to customers who demanded an ever increasing level of service. Printerco was about to offer a self-service solution that not a single competitor offered. The fact that Printerco was the first to move into using self-service to deliver field service knowledge was not surprising given Printerco's long history as a prospector.

Methods of data collection for the case

Data collection for the Printerco case included the vice president of North America, the program manager on the project, and the worldwide chief executive officer. Each individual involved in this case requested anonymity. The method of collection included interviews, emails, and telephone calls. Furthermore, the author was immersed in the case as the senior member of the North American operation. The information was collected over an eighteen month period from the initial idea to use self-service technology until the launch of the technology. Given the case was not reflective, as is the case for Airlineco and Bankco, the amount of time collecting the data is much longer. If

the case investigation occurred completely after the launch of the product the author

expects that a four to six month collection period would have been sufficient.

About Printerco

Printerco is a leading manufacturer of high-quality systems for the reproduction

of image data on a wide range of media utilizing digital printing systems. Printerco sells

along two functional product categories. The first is photographic output; the

reproduction of images onto photographic paper. The second is Ultra-Violet (UV) cured

ink jet output on a wide range of substrates. Printerco serves several market segments

from graphic printers, to commercial photographic labs, to traditional screen printers.

Printerco produced images can be found at airports, malls, grocery stores, slot machines,

and any other places where advertising is located.

Printerco United States (US) method of servicing is relatively straight forward

and similar to all Printerco organizations throughout the world. When a Printerco

customer encounters a problem they call into the Printerco service line. Located at

Printerco are highly skilled technicians who troubleshoot the root cause of the problem

and work jointly with the customer to identify the problem over the telephone. These

individuals in the technical assistance center (TAC) periodically travel for field service

work (20%) and spend the remainder working over the telephone (80%). If the issue can

be easily identified the remote Printerco personnel will instruct the customer how to

correct the problem. If parts are necessary to correct the problem the Printerco technician

will have the parts shipped from the Rochester, NY warehouse. If the issue cannot be

diagnosed over the telephone, or if the telephone support technician needs more skilled

support at the customer location, a field service technician will be dispatched. Printerco service maintains multiple targets for TAC resolution rates and for TAC properly identified percentages. On average Printerco US creates 300 new service tickets per month with an average of 58% solved without a Printerco representative assistance at the customer location, while the remaining 42% require at customer support.

Printerco Sales and Service Strategy

In January 2006 Printerco was well into its transition from a digital photographic equipment maker to one of an inkjet equipment maker. Within the scope of specifically Ultra-violet (UV) cured inkjet equipment Printerco had spent considerable resources for niche applications. As one of the newer entrants in the field of large-format direct-to-substrate printers, though still global in reach and large, they struggled with the aggressive spending of competitors. Companies such as Vutek (EFI owned company), Inca, Nur, and Hewlett-Packard's recent purchase of Scitex made the competitive landscape very active and the consumer base more price conscience.

With UV-curable inkjet technology developing rapidly the capital investment in manufacturing was large. In the past most direct to substrate printing was produced by offset printers, lithographic equipment, or flatbed solvent printers. The last was the main technology UV-cured printing attempted to replace. Throughout Europe the use of solvent ink was beginning to be regulated by governmental organizations concerned about long-term effects on the environment. As a result UV-cured printing equipment now offered a benefit to screen printers to avoid legal issues. The quality of UV-cured printers was also now sufficient to produce image quality that rivaled solvent. The offset

printing industry and lithographic printers were not targeted by Printerco, or other UV-cured manufactures, due to faster production speeds and higher quality printing respectively. In the United States some companies began to market and sell the benefits of an environmentally friendly print using UV-cured printing ink rather than solvent ink.

One of the major hurdles within the industry was the concept of digital. Typically the target customer base had worked using long production runs thereby reducing the need for the flexibility digital offers. Long-run work could be costly; to design the templates and setup the equipment, but high volumes made this cost efficient. At low volumes the cost (or per print price) was very expensive but generally accepted by the advertising agencies and retail customers. Digital was slow to be accepted and generated confusion on proper production techniques to maximize efficiency. Still, there was an acceptance throughout the industry that digital was the direction of the future for its flexibility, faster design changes/updates, and speed at which it could be sent to a printer.

Between 2003 and 2006 there were rapid developments in UV-curable inkjet technology. The original Printerco inkjet printer was called the Rho 160. At a reasonable quality the unit could produce three 48"x 80" boards per hour in four colors at 360 dots per inch (dpi). The addition of the Rho 205 and then Rho 600 increased the quality and speed of the output three fold. The Rho 600 also offered the industries first white ink. In addition to white ink customers could also purchase a varnish thereby offering four colors; CMYK plus white and varnish. Depending on the number of print heads the Rho 600 would be sold between $275,000 (eight heads) to over $700,000 (24 print heads with white and varnish). In late 2005 advancements in large format ink jet technology began to slow and the industry began to focus more on pricing. As the

industry slowed the largest Printerco competitor in the United States, Vutek, was looking

for additional funding from a suitor. In order to increase their market appeal Vutek

sought larger market share and focused on selling as many units as possible to show a

large market share. Vutek eventually sold to EFI and continues to be the low price seller

in the industry. Printerco has never maintained a low-price strategy and rather chooses to

sell on build quality and level of service. Still, with a similar output quality and speed the

price always was a factor in the sales process. In addition the cost of ongoing service for

the equipment was always an aspect of the business decision. Printerco, with its strong

reputation for service quality could be hurt by the cost of this service. Other competing

companies began to price service at lower prices than Printerco offered and it was

becoming a competitive disadvantage. As a result the Printerco sales team normally

would attempt to avoid a conversation on service and pricing. In some segments the

reputation of the Printerco equipment would be enough to be successful but this reach

was not sufficient to meet the growth targets of Printerco as outlined in the five-year

business plan.

An additional area of concern was the increasing quality of UV-cured inkjet

technology was reducing the advertising space of the Printerco Lambda's photographic

prints. For example point-of-purchase (POP) advertising at department stores (and other

mall-type retail stores) that had previously been photographic prints matted to a substrate

and laminated were being changed to direct to substrate prints as produced on UV-cured

equipment. As a result the utilization at customer's sites of existing Lambda printers was

declining. As the production utilization declined there was a reduction in the number of

service contracts being purchased. Though the decline was slow and manageable there

were increasing indications that the decline may occur rapidly in the future. The threat of a rapid decline in service business on the Lambda was very concerning to the fiscal health of the organization. To replace the Lambda business Printerco had to identify how the Rho service business could replace the higher margin Lambda business in aggregate contribution.

A typical Rho customer was less likely to accept a service contract as historically these companies provided their own maintenance staff and would rather self-insure. Also, and somewhat related, the Rho contracts were priced at a lower price and were more complex to service resulting in higher costs for travel, onsite labor, and lost efficiency. The result was less financial contribution to the Printerco organization. The executive in the US business felt a dramatic loss in Lambda contracts had to be addressed immediately. Some new and lower priced Lambda contracts were developed to retain the customers who saw their production on the Lambda slowing but still wanted the protection of a contract. There were also service packages created that allowed customers to "pool" hours on multiple pieces of equipment thereby reducing the customer cost per piece of Printerco equipment. Of most important to position Printerco service for the future was the need to become more efficient at servicing Rho equipment while creating a reason for customers to purchase service contracts. Printerco needed to increase the percentage of Rho customers on a service contract and to increase the profit margin. The answer was found in a self-service solution. Increasing competitive pressure, a changing service landscape, and a pending declining revenue stream from service on the Lambda product all came together like a perfect storm at the end of 2005.

Origin of Printerco's SST solution for service

In January 2006 Printerco focused on the need to move towards a more industrial based printing company. The industrial segment has a long history for the need of faster service response times in relation to the existing photographic segment. This is not to suggest that response time is unimportant for current customers but rather that response time, and overall equipment uptime, will become even more vital to the success of Printerco's business in the future. While today's customers desire greater uptime and faster response time from Printerco service in the near future these desires will be necessities as the Rho equipment line is used as one step in a much larger process. Companies such as Weyerhaeuser contractually require uptime for the equipment and more companies will follow this pattern as Printerco focuses on industrial applications. As a result the following issues arose that need to be addressed:

(1) How can Printerco insure downtime of < 4 hours (estimate) given the limited number of field resources and the large geographical size versus the uptime requirements?

(2) How can Printerco create a reoccurring revenue stream similar to today's contracts for a group of customers/industry that typically will not sign on to annual service contracts?

(3) How can Printerco make after-sales service a competitive advantage versus competitors given our need for low overhead and sound margins when the competition may have more available resources and/or use service as a loss-leader?

The Printerco executive in charge of the program hypothesized:

"When our equipment has an issue at a customer site one of two things happen; either the customer calls Printerco or the customer solves the problem without Printerco assistance (therefore we never really know a problem ever existed). In a reactive service situation (i.e. the customer has called a problem into Printerco service) the process is a two-step function of (a) troubleshooting the root cause of the issues, and (b) physically fixing the problem. Onsite support may or may not be needed and for Printerco US it is about 42% likely that a field person will need to travel onsite. Today we operate in a relieving logic; a customer "orders" service and we fulfill the request. As we move towards more industrial applications it is my belief that we must move to an enabling logic; a situation where we provide or deliver the knowledge and tools necessary for performing the task which could now done by the customer. While an enabling logic is the direction we need to move we run the risk of losing our reoccurring revenue stream."

Printerco needed a technological solution that provides the following:

(1) Truly increase customer uptime by:

    a. Allowing the customer to fix their own problems and/or,

    b. Reduce the amount of time that proper troubleshooting takes and/or,

    c. Working jointly both verbally and physically from two separate locations with shared technology (i.e. over-the-web meeting like WebX so that a phone-based technical service representative (TAC) person can show an operating what he/she wants them to do).

(2) Is valuable enough to the customer that they agree to pay some annual fee for a bundled solution. For example Printerco could create a service that costs $24,000 per year and the customer would receive two preventative maintenance visits a year and access to this technology. If enough value lies in the technology the customer would be willing to pay for the service agreement. This technology would create the demand for the service agreement.

(3) Have a technology that enhances the ability to sell equipment by offering best-in-class service expertise. Essentially turning Printerco's service knowledge and capability into a physically tangible benefit that customer's desire.

Self-service allowed Printerco to be presented as an innovator not only within the large-format printing industry but also in the area of service delivery.

The benefits of SST for Printerco and the customer base

The self-service technology (SST) for field service, named the enhanced diagnostic and service online network, or EDSON, creates a visually pleasing computer animated piece of equipment such as the Printerco Rho and all of the related serviceable parts within the equipment. By having interactive animation the user can rotate the image and take components on and off in the proper sequence that otherwise would be unable to be clearly identified by photographs or videos and not interactive. One example of the technology is used by Intel to show a complete step-by-step assembly of an Intel laptop including detail to the level of the screws, bolts, and washers. The HTML that surrounds the animation provides instructions, tips, and other relevant documents. The technology creates a virtual piece of equipment and all of its relevant components. Further, the technology allows different users to see different levels of detail so that a customer may only see a limited portion of the components while a technician could see a greater number. Someone such as the Printerco service trainer could instruct by showing a step-by-step procedure on this virtual platform and have all service technicians from throughout the world view the procedure at their own availability. Yet, training is not what Printerco considered the most valuable aspect of this technology.

The virtual piece of equipment, along with a variety of programmed service solutions to problems, could be established on a Printerco server. Customers could access this virtual piece of equipment through a set of pass codes where the pass code is only given with a chargeable service contract. Furthermore, the virtual piece of equipment could be protected so that it could never be copied. The customer could now visually see a step-by-step process to correct an error without the interaction of Printerco service personnel (as could a Printerco field person who has failed to recall the steps necessary to fix an issue). If Printerco service personnel are still required as the problem is unique or new, a joint session between the operator at the equipment site and a TAC-level engineer could occur. A customer equipment operator located in California could work jointly with a Rochester-based engineer by viewing the same virtual file over the web. This file would sit on the Printerco server and the Printerco technician could work step-by-step with the operator – it would be as if the Rochester based technician can trouble shoot onsite only he would be using the operator's hands. This would reduce the amount of troubleshooting time and increase the opportunity to solve the problem without an onsite field visit. Last, a savvy customer could use this technology to determine their own problems without ever speaking to service person but this would be rare and only be used by the most skilled customers who more than likely have had factory training.

Printerco identified specific benefits of this technology as follows:

(1) Allows the TAC group and customer operator to use visual trial and error to improve troubleshooting the problem.

(2) Allows the customer the capability to solve problems without a field visit thereby increasing uptime, reducing our expense and ultimately increasing customer satisfaction.

(3) If the technology is robust enough it allows us to bundle to the customer the access to this technology with a service offering thereby creating a consistent reoccurring revenue stream that may otherwise not exist in the industrial segment.

(4) Allows for global dissemination of a step-by-step solution for worldwide service problems/training. The visual aspect of the instructions removes any language barriers that may exist.

(5) The access to this technology if deemed valuable by the customer will enhance our ability to sell.

The growing self-service model: Preventative Maintenance

While this case is focused on the developed of Printerco's online self-service technology to deliver field service the company has already began developing additional self-service products. The Printerco online preventative maintenance program will allow customers to record the daily, weekly, monthly, and semi-annual preventative maintenance online for Printerco personnel to view. There is also a two-way feedback system which will allow Printerco technicians to review the findings with management and operators of the customer. The preventative maintenance product will have the capability to highlight items not finished promptly by sending automatic emails to a list of predefined individuals. Typically these individuals include the equipment operator, the head of operations, the owner, and the Printerco service team. A dedicated member

of Printerco service is assigned to monitor the progress of the existing customer base and to communicate regularly with the customers in a proactive manner.

The preventative maintenance program is currently in a beta mode and is expected to be fully launched in April, 2008. During the beta test Printerco has been busy monitoring the customers who use the system and have found substantial improvements in the increase production time of the equipment. In one case a customer has reduced its Printerco onsite visits from an average of four visits per month from Printerco service personnel (and over forty-two hours of time per month), to one visit every three months and less than five hours per month mostly through telephone support. In all of the other beta cases customers have found that proper maintenance through the online system has resulted in a reduction of machine downtime and thus an increased level of production capacity. The online preventative maintenance program will have a taxonomy position of push-customer site-high echelon (4)-replacement. This taxonomy positioning differs from the self-service field service offering (EDSON) who resides in pull-customer site-mid/high echelon (3-4)-resource. Yet, both offer the customer an increase in value and assist Printerco in having more satisfied customers. The difference in the taxonomy position is directly related to the purpose of the offering and the necessary assistance a customer needs to complete the tasks. The preventative maintenance program pushes the tasks much in the way a vehicle will inform its owner it is time for the oil to be changed. The system is pushing its needs to the operator, operations director, Printerco personnel, and anyone else designed to be on the email list. The preventative maintenance program is a high echelon, essentially designed for no input from Printerco personnel. In conjunction with the EDSON program each task is shown in a step-by-step process

though many of the maintenance activities are much simpler than field service issues

when the equipment is broken. Last, the preventative maintenance program is a

replacement for interaction with Printerco service personnel rather than a resource.

Printerco service will not, without payment, provide preventative maintenance as part of

a service contract offering. The nature of preventative maintenance differs from the field

service self-service product (EDSON) in that the online system is a resource for customer

but the customer is eligible to have Printerco service onsite (or on the telephone) to repair

the inoperable printing equipment. In a preventative maintenance situation the printer

works as expected prior to the maintenance.

Future issues and applications of SST

Future issues for Printerco revolve around its need for large service revenue and

the competitive nature of the large-format printing industry. The balance between

providing best-in-class service while offering the best overall value in printing is

challenging the business model as competitors focus on price advantages. Printerco

continues to rely on proceeds from servicing older equipment, at substantial margins, but

does not believe they can maintain this model. As Printerco develops new service

delivery methods, such as self-service, the need for customers to use Durst service

personnel, and thereby maintain higher cost service contracts, begins to be reduced. This

dichotomy should encourage further advances in self-service solutions to still provide the

need for customers to remain entrenched in Printerco service. Applications that can

provide faster response times from service personnel, less mechanical failures (or self-

correcting technology), or further knowledge sharing will be essential for the future.

After the launch of the preventative maintenance self-service product Printerco does not have any plans for future SST. However, this is not due to the lack of desire or interest but rather a realization that the initial applications of the SST must function and provide value to the customer before more applications can be developed. The company plans to continue to develop SST to service equipment for the long-term to aid in its competitive position, to address the issue of limited resource for unlimited demands, and to reflect Printerco's innovative history.

Miles and Snow strategic typology

Printerco maintains a prospector typology as indicated by the company answering nine of the eleven typology questions in the prospector category (82%). The remaining two questions indicated analyzer orientation. In accordance with Conant et al. (1990) the paragraph method has been the most widely employed method to operationalize and measure Miles and Snow strategic typology. Further, according to Contant et al. (1990), the nominal scale level of the data produced by the multiple-option questions required that categorization be based on a majority-rule decision structure. The companies were classified as defenders, prospectors, analyzers, or reactors depending on the option that was selected most often. A prospector is often the creator of change and uncertainty to which its competitors must respond (Miles & Snow, 1978, p.29). Using the paragraph method, as outlined in the methodology section and shown below, Printerco answered nine of the eleven questions as a prospector.

1. In comparison to other _____ the services we provide to our members are best characterized as:

    a. Services which are more innovative, continually changing and broader in nature throughout the organization. (Prospector)

    b. Service which are fairly stable in certain units/departments and markets while innovative in other units/markets.

    c. Services which are well focused, relatively stable and consistently defined throughout the organization and marketplace.

    d. Services which are in a state of transition, and largely based on responding to opportunities or threats from the marketplace or environment.

2. In contrast to other _____ , my organization has an image in the marketplace as:

    a. Offers fewer, selective services which are high in quality

    b. Adopts new ideas and innovations, but only after careful analysis.

    c. Reacts to opportunities or threats in the marketplace to main or enhance our position.

    d. Has a reputation for being innovative and creative. (Prospector)

3. The amount of time my ____ spends on monitoring changes and trends in a marketplace can best be described as:

    a. Lengthy: We are continuously monitoring the marketplace.(Prospector)

    b. Minimal: We really don't spend much time monitoring the marketplace.

    c. Average: We spend a reasonable amount of time monitoring the marketplace.

    d. Sporadic: We sometimes spend a great deal of time and at other times spend little time monitoring the marketplace.

4. In comparison to other _____, the increase or losses in demand which we have experienced are due most probably to:

    a. Our practice of concentrating on more fully developing those markets which we currently service.

    b. Our practice of responding to the pressures of the marketplace by taking few risks.

    c. Our practice of aggressively entering into new markets with new service offerings and programs.(Prospector)

    d. Our practice of assertively penetrating more deeply into markets we currently serve, while adopting new services only after a very careful review of their potential.

5. One of the most important goals in this _____, in comparison to other _____ is our dedication and commitment to:

    a. Keep costs under control.

    b. Analyze our costs and revenues carefully, to keep costs under control and to selectively generate new services or enter new markets. (Analyzer)

    c. Insure that people, resources and equipment required to develop new services and new markets are available and accessible.

    d. Make sure that we guard against critical threats by taking whatever action is necessary.

6. In contrast to other _____, the skills (competencies) which our managerial employees possess can be best characterized as:

    a. Analytical: their skills enable them to both identify trends and then develop new service offerings or markets.

    b. Specialized: their skills are concentrated into one, or a few, specific areas.

    c. Broad and entrepreneurial: their skills are diverse, flexible, and enable change to be created.(Prospector)

    d. Fluid: their skills are related to the near-term demands of the marketplace.

7. The one thing that protects my organization from other _____ is that we:

    a. Are able to carefully analyze emerging trends and adopt only those which are proven potential.

    b. Are able to do a limited number of things exceptionally well.

    c. Are able to respond to trends even though they may possess only moderate potential as they arise.

    d. Are able to consistently develop new services and new markets.(Prospector)

8. More so than many other _____, our management staff tends to concentrate on:

    a. Maintaining a secure financial position through cost and quality control measures.

    b. Analyzing opportunities in the marketplace and selecting only those opportunities with proven potential, while protecting a secure financial position.

    c. Activities or business functions which most need attention given the opportunities or problems we currently confront.

    d. Developing new services and expanding into new markets or market segments.(Prospector)

9. In contrast to many other _____, my organization prepares for the future by:

    a. Identifying the best possible solutions to those problems or challenges which require immediate attention.

    b. Identifying trends and opportunities in the marketplace which can result in the creation of service offerings or programs which are new to the industry or reach new markets.(Prospector)

    c. Identifying those problems which, if solved, will maintain and then improve our current service offerings and market position.

    d. Identifying those trends in the industry which offer other _____ have proven possess long-term potential while also solving

problems related to our current service offerings and our current customer needs.

10. In comparison to other _____, the structure of my organization is:
   a. Functional in nature (i.e. organized by department – marketing, accounting, personnel, etc.)
   b. Service or market oriented (i.e. specific departments and/or business units have marketing or accounting responsibilities).(Prospector)
   c. Primarily functional (departmental) in nature; however, a service or market oriented structure does exist in newer or larger service offering areas.
   d. Continually changing to enable us to meet opportunities and solve problems as they arise.

11. Unlike many other ____, the procedure my organization uses to evaluate our performance are best described as:
   a. Decentralized and participatory encouraging many organizational members to be involved.
   b. Heavily oriented toward those reporting requirements which demand immediate attention.
   c. Highly centralized and primarily the responsibility of senior management.
   d. Centralized in more established service areas and more participatory in newer service areas.(Analyzer)

As a prospector it is not surprising that Printerco is the first to launch a self-service solution in field service. While this may be eventually copied by other firms Printerco is the first to develop such a solution. In addition to the first launch of self-service for purposes of field service Printerco was the first to introduce white ink and the first to develop a high-speed large-format digital photographic printer (Lambda).

Prospectors continually seek new market opportunities, experiment with potential solutions to emerging trends, and create uncertainty in the market (Miles & Snow, 1978). Printerco sought to generate an advantage in servicing equipment by using technology readily available but under utilized within the industry Printerco participates.

Self-Service and the Resource-based View of the Firm

Being the first industry participant to introduce a 24-hour self-service solution to the market Printerco is seeking an advantage to sell more equipment. The goal of the self-service solution is to provide the customers with a resource that will reduce the amount of downtime on their equipment. The customer will be able to increase printing time by solving their own problems quickly and obtain more production for greater profits. In turn Printerco hopes to sell more equipment to a growing customer base and increase the number of printers serviced per Printerco technician. In this manner Printerco can increase equipment sales, reduce service costs, and increase customer satisfaction due to less equipment downtime. Printerco is seeking a competitive advantage. However, the resource-based view (RBV) focuses on long-term competitive advantage and Printerco does not expect this to occur. When asked whether the self-service solution is rare, valuable, non-substitutable, and impossible to imitate the answers are mixed. The solution is considered valuable for its ability to improve sales, reduce costs, and increase customer satisfaction. The solution is also rare in that it does not exist in the industry and utilizes multiple forms of different technologies to present the best communication at the proper time. However, the self-service product is substitutable (to a large degree) by adding more service personnel and/or providing free 24/7 telephone support. However the real-time delivery directly to the customer site (see the taxonomy of self-service in the appendix for a more detailed explanation of delivery to a customer site) makes it nearly impossible to substitute without a service engineer at every customer site. The flaw in reference to the RBV appears to occur at the impossible to imitate requirement. There may be a skill set at Printerco that has allowed for the creation of the

solution but any competitor could copy the program by substituting their own products and rewriting the solution codes to fix their equipment rather than Printerco equipment. Printerco has pursued trademark and patent coverage but the workflow could be modified to create a like self-service product at competitors. As a result of the inability to create a product that is impossible to imitate the Printerco program does not meet the criteria of the RBV as a long-term sustainable competitive advantage.

Conclusion

Typical of a prospector Printerco is always looking for an opportunity to show their innovative nature. This case shows that the development of a SST is in line with the adaptive cycle of Printerco and the expectation from the Miles and Snow strategic typology. Printerco competes in a challenging market where margins tend to be low and the demands on service very high. For the last ten years the company has thrived in the photographic printing market by selling productive equipment and expensive service contracts. Like any industry the large-format printing industry is changing rapidly and Printerco is seeking news ways to compete. As the 21st century began, and the photographic industry declined, the company entered the more competitive ultra-violet curable ink jet industry segment and the past profitability from equipments sales is difficult to maintain and the large service margins cannot be expected.

Printerco has a history of innovative developments in the printing industry dating back to the 1930s. Printerco takes great interest in planning and this focus on planning has helped them develop the first large format digital printer (Lambda), and the first UV-cured ink jet manufacturer to develop a white ink. Printerco is also a very analytical company with the worldwide CEO holding a Ph.D. in Economics. This analytical nature

led to the investment in a new and innovative service model utilizing self-service principles. Printerco is acutely aware that the savvy customer will analyze not only the cost of the printing equipment but also the cost of ongoing service and maintenance. Given that the company has chosen to not compete on price, yet the market presents price sensitivity Printerco must find ways to increase the value of the ownership akin to buying a higher priced (e.g. luxury) vehicle. One of the substantial conclusions from this case is that the creation of a self-service field service offering has allowed the company to preset itself as on the leading edge, a luxury brand for only the most savvy, while maintaining a cost structure necessary to be profitable. In essence the use of self-service has allowed Printerco to appear more exceptional to the customer base. Regardless, some customers may buy on price but the Printerco corporate strategy accepts that it cannot sell to every potential buyer but rather only to a limited set.

Another conclusion from this case is that Printerco has found multiple uses for the development of its self-service solution. The EDSON program was developed to allow customers to service themselves quickly and efficiently without having to wait for Printerco support. A secondary benefit of the technology is that Printerco technicians themselves can use the system to learn about new solutions or refresh their memory for infrequently used service calls. Furthermore, the mere act of having a SST available to customers, where nothing similar yet exists, has assisted the sales process and presents the "cost" of service favorable vis-à-vis competition. Last, the creation of the SST has allowed Printerco to hire less service technicians as more printing equipment is sold into the market. By offering an online service solution customers can solve more of their own

problems and this has resulted in a higher number of printers in the market per service engineer.

The case did reveal that some internal issues are created throughout the development process. The internal struggle was discovered between engineering, service, and research and development groups. Each group has a slightly different agenda and while the issues can be overcome they do tend to slow the process of development. Additional issues have also arisen as a result of the self-service preventative maintenance program. This program has already been shown to greatly decrease the number of onsite service calls and as a result some in the service group are concerned that customers will stop purchasing contracts. If customers decline contracts then the ongoing revenue and profit stream will begin to dry and could risk the long-term solvency if more equipment is not consistently sold. However, this would be like encouraging automotive companies to produce poor quality vehicles so the service business is strong. In time a company will produce a more reliable vehicle and people would stop purchasing the poor quality, high service cost vehicle. The same can be said in the printing industry where the cost is ten times greater than that of a vehicle and the annual service cost is more than a single sedan. Internally Printerco has some disagreement about whether a strong preventative maintenance and online service program is a smart idea.

While Printerco feels they can gain a competitive advantage by offering a self-service solution for field service of equipment they also understand it is not sustainable in and of itself. In the end Printerco acknowledges that in the long-term an advantage may not be gained but they remain pleased they were the first to market such a product;

increasing sales, providing lower costs, generating a higher customer satisfaction all while continuing to brand themselves as the innovative leader in their industry. As a prospector they appear ready and willing to continue to seek new product innovations.

CHAPTER V

THE CASE OF BANKCO

"Epochal shifts in the logic of commerce-and of capitalism itself-have typically begun in response to underlying changes in the nature of society as they were expressed in new approaches to consumption."

- From *The Support Economy* (2002): Why corporations are failing individuals and the next episode of capitalism, pp. 9.

Case outline

The case of Bankco begins with an introduction detailing the perceived need for a self-service solution. Next, the methods of data collection are explained. The third and fourth section provide the reader with a deeper understanding of the company involved in the case and its overall business strategy as explained to the researcher. The next three sections provide in-depth explanation of why the company launched a self-service offering and how they went about developing and deploying the technology. Moreover, throughout the interviews the researcher was able to ask about the future development of self-service products and the findings are contained within this case. The case then segues into the test of the theory by reviewing the Miles and Snow strategic typology and the results of the company's deployment of self-service technology. The outcome of the responses to determine if the self-service offering is a scarce resource in accordance with the resource-based view is then discussed. Finally, the case is summarized in the concluding section of the case.

Introduction

The movement towards a self-service economy is occurring in grocery stores, at the airline check-in counter, in publishing, and even in corporate banking there has been a

change from a live person assisting the customer to the transaction being conducted directly by the customer. This business case will focus on the evolution of online corporate banking at Bankco; a new approach to the consumption of banking information. That is, the banking transactions of corporate customer's by an accountant, a controller, or any other authorized financial employee of a company.

Self-service solutions are not a new concept to banking. For years personal consumers have seen a decline in the number of tellers and an increase in Automatic Teller Machines (or ATMs) (Jamal, 2004). Zuboff and Maxim (2002) point out that the banking industry has had record profits due in large part to transaction cost inflation. The U.S. Public Interest Research Group documented new fees to call a computerized call center and new ATM fees. First Chicago bank charged $3.00 to use a live teller and Banc One began to charge its own account holders for use of its cash machine. Interestingly, on consumer (or sometimes called personal) banking, as in the examples above, the banks appear to have found that passing costs on to customers was a nice way to increase revenue and reduce their own overhead, thus increasing profitability with little true growth. But where was the customer backlash? After all, at places such as First Chicago the customers are now required to have less interaction with banking personnel or incur a greater cost, essentially paying for the convenience of dealing with a live person. Further, what about the concerned banking employees; would not their jobs be lost if customers stopped transacting with them? The commercial side of the banking industry (i.e. business entities) is different than the consumer side but there has been a strong trend toward real-time online banking at the commercial level as well. While the movement towards self-service has been slower on the commercial side than on the consumer side

there appears to be a growing trend towards utilizing the technology. This case is

focused on the growth of the use of self-service into commercial banking.

Methods of data collection for case

Data collection for the case of Bankco was collected over a six month period.

Three main individuals at varying levels of the organization were solicited. The author

communicated with two of the individuals through email and telephone only while the

third member of Bankco communicated through face-to-face interviews in addition to the

telephone and email. The highest ranking member of Bankco, who has asked for

anonymity, is an executive vice president in charge of regional banking. The main

contact was a vice president of customer relationships who has the job of managing

corporate accounts. The third contact is a vice president tasked with corporate cash

management and support.

About Bankco

Bankco is considered one of the country's most highly regarded regional banks.

They were founded over 140 years ago in western New York, where they are still

headquartered. The parent company, Bankco Corporation, has over $52 billion in assets

and is one of the 25 largest bank holding companies in the U.S (Table 3). Their

customers are able to bank at over 650 branches throughout Delaware, Maryland, New

York, Pennsylvania, Virginia, West Virginia, and Washington D.C. Their customers have

access to a sizable ATM network of more than 1,500 locations as well as state-of-the-art

telephone and web banking. Like most banks, Bankco has grown through acquisition and now own the naming rights for the Baltimore Ravens football stadium.

According to the Bankco web site their WebInfocu$ product is Bankco's Internet based balance reporting tool that helps a company efficiently manage its organization's cash flow needs. WebInfocu$ is now a popular product for all of their corporate customers.

Table 3
Bank rankings by asset holding

Rank	Bank Name / Holding Co Name	Bank Location
1	BANK OF AMER NA/BANK OF AMER CORP	CHARLOTTE, NC
2	JPMORGAN CHASE BK NA	COLUMBUS, OH
3	CITIBANK NA/CITIGROUP	NEW YORK, NY
4	WACHOVIA BK NA/WACHOVIA CORP	CHARLOTTE, NC
5	WELLS FARGO BK NA	SIOUX FALLS, SD
6	U S BK NA/U S BC	CINCINNATI, OH
7	SUNTRUST BK/SUNTRUST BK	ATLANTA, GA
8	HSBC BK USA NA/HSBC NORTH AMER HOLD	WILMINGTON, DE
9	STATE STREET B&TC/STATE STREET CORP	BOSTON, MA
10	CHASE BK USA NA/JPMORGAN CHASE	NEWARK, DE
11	KEYBANK NA/KEYCORP	CLEVELAND, OH
12	BANK OF NY/BANK OF NY CO	NEW YORK, NY
13	PNC BK NA/PNC FNCL SVC GROUP	PITTSBURGH, PA
14	REGIONS BK/REGIONS FC	BIRMINGHAM, AL
15	BRANCH BKG&TC/BB&T CORP	WINSTON-SALEM, NC
16	LASALLE BK NA/ABN AMRO N AMER HC	CHICAGO, IL
17	NATIONAL CITY BK/NATIONAL CITY CORP	CLEVELAND, OH
18	TREASURY BK NA/COUNTRYWIDE FC	ALEXANDRIA, VA
19	NORTH FORK BK/NORTH FORK BC	MATTITUCK, NY
20	MBNA AMERICA BK NA/MBNA CORP	WILMINGTON, DE
21	22 FIFTH THIRD BK/FIFTH THIRD BC	CINCINNATI, OH
23	COMERICA BK/COMERICA	DETROIT, MI
24	Bankco BK	WESTERN NEW YORK, NY
25	UNION BK OF CA NA/UNIONBANCAL	SAN FRANCISCO, CA

(Source: usabanks.org)

Bankco's Corporate Banking Strategy

Bankco has grown rapidly in the last 15 years mainly due to acquisitions and an understanding for the middle-market customers they traditionally serve. Bankco considers themselves as a "fast-follower" rather than an industry leader. By being a fast-follower they believe that they can see where the market is going and avoid the

unnecessary cost of innovative products and designs. By allowing the larger banks, such as Citibank, Chase, and Bank of America to be the innovative leaders Bankco is afforded the ability to choose only the new products that their customers demand without the loss of market share. Bankco's corporate banking strategy can be summarized as:

(1) listening to customer needs

(2) Providing products that better allow customers to manage their business

(3) An acceptance that they lack some of the functionality of larger banks but that they provide a closer customer relationship.

(4) The level of security provided by their corporate banking group is extremely high.

(5) Grow revenue and market share by being fast-followers

Bankco strongly believes that other banks spend too much time, energy and money on developing Information Technology (IT) solutions. Although Bankco is very focused on IT they believe their advantage is in their ability to identify the customer's IT needs, find a solution externally (with some Bankco ideas incorporated) and move to market. The move to market is never hurried, as it may be at some other banks, until both the staff and an internal committee is completely sure that the application will operate as intended by the designers. The investment that Bankco can save by acting as a fast-follower and in listening to the exact customer needs (rather than designing a program and trying to "sell" it customers) can be utilized for higher profitability, re-investment into other areas, or for acquisitions of other banks. In order to insure that the bank makes a logical choice before investing in a new program they have an internal review process. After understanding the customer requests and/or a market IT opportunity a group of Bankco employees

perform a detailed analysis of the project. Using Net Present Value (NPV) as an analytical tool the employees research and estimate all of the costs and benefits associated with the planned project. In most cases Bankco will complete a 5-year NPV study that must have an internal rate of return that exceeds their cost of capital. A NPV that exceeds this "hurdle rate" can be approved, while a project with an NPV below this hurdle rate would be declined. All of the one-time research and development cost (or outside consulting/developing fees for the product line) would be considered in year 0. An increase in revenue would be planned in years 1-5 plus a terminal value for all remaining years. Bankco strategic team has decided that a five-year life is the most appropriate valuation timeframe for the technology projects.

<p align="center">WebInfocu$: A basic description</p>

The bank's *Web*Infocu$ brings together deposit accounts and cash management services, making them accessible, anytime day or night, through the Internet, a personal computer, fax machine, or touch-tone telephone. Additionally, *Web*Infocu$ allows a customer to manage cash flow. *Web*Infocu$ is an anywhere, anytime, Internet-based service. Bankco also offers a personal computer based system, INFOCU$. A summary of the benefits of WebInfocu$ to the customer are summarized below:

- Around the clock access to comprehensive, accurate, and up-to-date financial information.
- Access to all corporate checking and savings accounts.
- Information on each and every transaction posted.
- A customer can perform wire transfers and purchase foreign exchange.

- Strong internal protection for security.

- An ability to sort and analyze financial data to assist forecasting and planning.

- Immediate access to see what transactions have cleared the bank and are available, including Automatic Clearing House (ACH) and direct debits.

- Convenient money management without the need to contact the bank directly.

Origin and Evolution of WebInfocu$

In 1994 Bankco created their InFocu$ program that allowed approximately 150 customers to download their corporate banking information, post transactions and then upload the information back to Bankco. This program held the company's banking data on their own servers. InFocu$ could be used in a number of ways but the DOS dial-up method was the most widely accepted. The product itself was developed by an external firm at the direction and review of Bankco employees. Prior to the launch of the product it was extensively tested by Bankco before being distributed to the customers.

Bankco officers and managers pride themselves on staying in tune with their customers, many of whom are in the corporate middle market segment. These customers indicated that their banking needs were increasingly more automated and that other competitive products existed that allowed them to more easily access their corporate information. As Bankco states, they consider themselves as "fast-followers" rather than first-movers. Prior to 1994 all of the corporate banking transactions were not visible to the company manager and usually required that the corporate chief financial officer, controller or other authorized person speak directly to a bank employee.

By 1999 technology and customer demands had changed and this allowed Bankco to create WebInfocu$ for their customers. WebInfocu$ was the web-based InFocu$ product (rather than DOS based) and allowed customers to access their financial records at the Bankco server site. The middle market customers had begun to demand that a web-based product be offered and Bankco again searched for an external developer for their product. Although the product idea was given to several developers the Bankco decision-making body, the strategic committee, decided to continue their relationship with Fundtech whom had developed the initial InFocu$. The customer no longer needed to dial-in to the bank, download their information and later dial-in again to the bank and upload the information. The information was now readily available on the web for the customer and transactions could be posted at that point in time. An additional and important benefit to Bankco and their clients was that the 1999 launch of WebInfocu$ was year-2000 (Y2K) compatible. Given the immense concerns surrounding Y2K Bankco was able to create a customer desired program that was Y2K compatible. By converting clients to the new web-based cash management reporting system (WebInfocu$) Bankco assured both themselves and the client that there would be no Y2K issues at the start of the year 2000.

Bankco has a policy of carefully reviewing and testing any new software that will go to their customers. In addition, Bankco has a steering committee for all new technology programs. The steering committee suggested that not only Infocu$ and WebInfocu$ be offered to customers but they also launched Infocu$ Prior Day, a one-day delayed Infocu$ program targeted for small companies. The three programs allowed

companies of all sizes within and below the middle market segment to use a personal computer based cash management reporting system.

The benefit of WebInfocu$ to Bankco

All of the Infocu$ products at Bankco have provided customers with self-service cash management capability. The cost of the program is driven by the product (Infocu$, WebInfocu$ or Infocu$ prior day) and the volume of the transactions that occurs at the customer level. Due to the multiple variables involved the prices are wide ranging from less than $1,000 to more than $7,500 per month.

Somewhat surprisingly Bankco anticipates little to no employee reduction from the labor savings associated with the SST. Instead, the benefit of the Infocu$ product line for Bankco is in increasing market share and revenue. As market share increases, and customers remain loyal to Bankco because of the SST, the unnecessary employees in one segment due to the SST can be utilized in other functional areas not yet utilizing SST such as treasury management. The chart below reflects the increase in customers using the Infocu$ family of products since 1997.
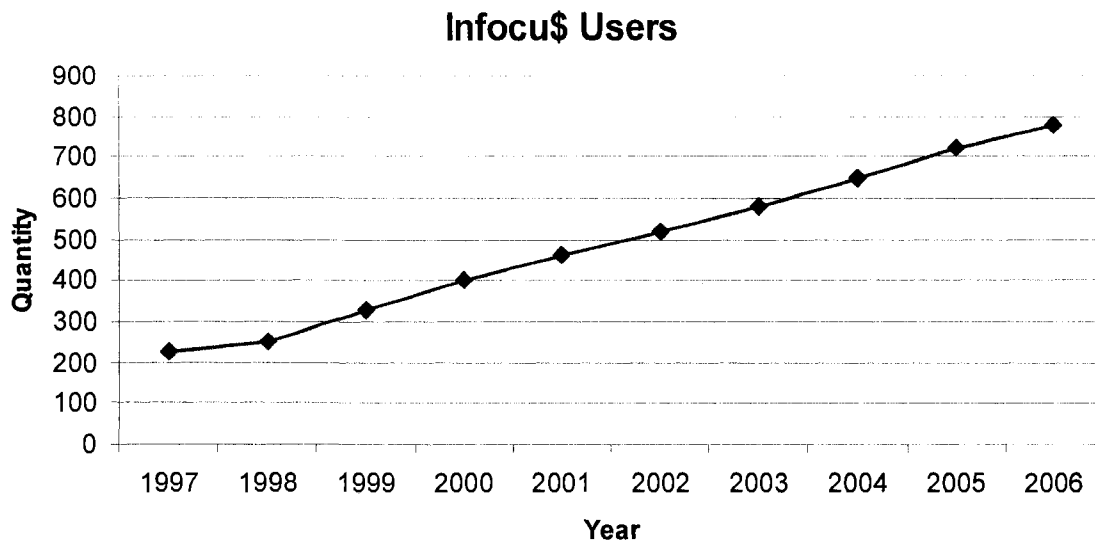
Infocu$ Users

Source: By Author (2007)

As the chart reflects there has been a steady growth of users since the inception of

the product with the largest spike occurring in 1999. Bankco believed in 1994, and

continues to believe today, that the Infocu$ family of cash management reporting

products provides a competitive advantage over banks that do not offer a similar self-

service transaction capability. However, Bankco does acknowledge that any competitive

advantage gained by continuously developing new Infocu$ products can be replicated by

their competitors. Therefore, it is not anticipated to be a competitive advantage over

larger banks with greater resources but may keep smaller, regional banks away from their

clients. Bankco is able to compete with the larger banks by offering a similar product at a

lower cost with less direct research and development cost while maintaining technology

superior to what is available at a smaller bank. Although the need for corporate banking

employees declined due to the increase of self-service, Bankco employees that were

affected were moved to more value-added activities such as sales or analysis. However,

one could make a case that Bankco, due to the launch of the Infocu$ family and the reduced need for on the telephone corporate banking representatives, did save by not hiring future sales and analysis people. In other words, the banks ability to replant the displaced workers internally was actually a future savings for the bank in the form of lower hiring needs later. Unfortunately, there is no formal study within Bankco that quantifies the savings.

The growing self-service model: Remote deposit

In early 2006 Bankco launched the remote deposit product designed to allow corporate customers the capability to deposit checks through the internet. This was the most recent self-service business product offered and the first self-service product in the Web Infocu$ family that requires hardware. From a taxonomy perspective Bankco has stayed loyal to their pull-customer site-high echelon (3 or 4)-resource strategy.

The Remote Check Deposit service works by way of a scanner that you purchase through Bankco from the manufacturer, Digital Check Corporation, a subsidiary of NCR. Bankco provides a special rate for customers so they can buy the scanner at Bankco's cost of $985. Most of Bankco's competitors are marking up their scanners, and selling them for as much $3,000. Not so with Bankco - you get it at the same price Bankco pays for it to supply their 630 branches. Because Bankco use the same scanner, you can be sure it is field-tested and works very well.

The scanner connects to a personal computer with a universal serial bus (USB) cable. A small driver file is installed on the personal computer and then a customer simply logs onto a secure website with their unique user identification and password.

The customer will enter the total number of checks and the total dollar amount of the deposit into the website, and then scan the checks. The scanner is automatically fed so a customer can enter up to fifty deposits at once.

Once all items are scanned, a summary list of each appears on the screen for verification. The operator must correct any misreads and validate any other items in question. The software is reading not only the magnetic ink character recognition (MICR) link on the bottom of the check, but also the handwritten dollar amounts, so some checks will need to have their amounts confirmed or corrected. This is an easy task and it is very clear to the operator where the issue is so it can be corrected easily. Once the validation process is complete and the deposit balanced, the customer transmits the image files to Bankco with a click of the mouse and the deposit to the customer account is made as soon as Bankco receives it. A customer can keep the checks for a time if they like, and then destroy them. Customers do not need to send them to Bankco nor do they need to make a trip to the bank, because the deposit is already completed. The monthly fee for the service is $100, plus $0.08 for every check scanned. These fees are part of the customers overall analysis so they may be partially or entirely offset by earnings credits (i.e. cost reductions as a result of maintaining large business deposits with Bankco).

Bankco followed the lead of several other banks once they deemed the technology a useful customer product. Bank of America was the first to launch a remote deposit capability for corporate customers. The remote deposit technology allows Bankco to compete in regions where they have too little of presence to make it easy for businesses to bank with them thereby providing an opportunity to increase their market share. As customers are able to use Bankco's services over the web the need for a business to be

located close to their banking branch is declining. The researcher discovered that in addition to the potential to grow market share one of the main drivers for launching the remote deposit product was to avoid the potential loss of business from banks such as Bank of America and Wachovia. These banks did not have a traditionally strong presence in the Northeast and have begun to more aggressively pursue corporate clients in non-traditional regions. While Bankco "sells" the product to its existing customers and now utilizes the service as a direct sales tool in more remote locations (e.g. the southern tier of New York) the reality is Bankco saw that the technology was safe, widely accepted, and did not want to risk a loss of market share. Bankco maintained the early adopter (or "fast-follower" as Bankco calls it), and not the first mover strategy. The "fast-follower" approach has led them to adapt the technology after identifying a risk to their market share. The remote deposit product has been met with a varied level of success. Many of the existing corporate clients have accepted the technology as a faster mode of deposits. While there is a cost associated with the product the savings in float from faster clearance can offset the cost depending on the deposit volume, average daily balance in the account, and market interest rates.

The Future of Corporate On-line banking

The ability for corporations to conduct transactions, manage cash positions and transfer foreign funds will continue to grow as the market demands increase. The movement from a DOS-based system in 1994 to a web-based application in 1999 has allowed the representatives of Bankco clients to better control their activities. But what is next for the unique world of corporate online banking? After all, this case is not as

obvious as manufacturing more ATMs in the hope of removing a bank teller. Corporate banking is unique in the needs and demands of the client base. Corporate clients have a fiduciary responsibility to the owners of the company and therefore tend to monitor the activity within the account for vigorously. Also, corporate clients transact much more frequently than personal clients.

Bankco believes that the self-service economy of corporate banking will not undergo a major shift in the near future. Instead, their belief is that corporate banking will continue to expand in the amount and type of corporate activity. Some of this activity, such as large and complex (multiple currency) foreign exchange transactions, will need to wait until the technology is available to wire simultaneously in two currencies. Other areas, such as the completion of letters of credit will be available in the short-term. Another area that will improve is the capability to "push" information to the customers from the bank. In the future the bank will be able to push information by sending an email to a client informing them of large transactions or pending wire transfers. Corporate customers today "push" information, in the form of transactions, to the bank but there is little in return. Instead, the client today needs to be aware that there is an incoming transaction (or periodically check to see if it has been posted) or that a wire transfer needs to be approved. The benefit of a "push" from the bank is that, at times, the client is not expecting the transaction to occur or is too busy to periodically check if there are outgoing wire transfers that need approval. From personal experience the author can suggest that this will be a valuable option for corporate customers as many times the controller has needed to inform the researcher to "go to WebInfocu$ and

approve the wire, it needs to go today!" In broad terms Bankco believes that the future of

the self-service corporate banking will:

(1) Continue to grow in the number of clients using the capability

(2) Continue to enhance the capability of WebInfocu$

(3) Offer a wider variety of banking information and data (transaction capability)

(4) A "pushing" of information from the bank to the client.

Regardless of what the future holds, Bankco plans to maintain their "fast-follower"

philosophy in order to identify customer wants and desires and maintain lower research

and development costs.

Miles and Snow Strategic Typology

Bankco falls into the category of analyzer according to the Miles and Snow

typology. In accordance with Conant et al. (1990) the paragraph method has been the

most widely employed method to operationalize and measure Miles and Snow strategic

typology. Further, according to Contant et al. (1990) the nominal scale level of the data

produced by the multiple-option questions required that categorization be based on a

majority-rule decision structure. The companies were classified as defenders,

prospectors, analyzers, or reactors depending on the option that was selected most often.

An analyzer is expected to minimize risk while maximizing opportunities for

profits (Miles & Snow, 1978). Using the paragraph method, as outlined in the

methodology section and shown below, Bankco answered seven of the eleven questions

(64%) as an analyzer.

1. In comparison to other _____ the services we provide to our members are best
   characterized as:

    a. Services which are more innovative, continually changing and broader in nature throughout the organization

    b. Service which are fairly stable in certain units/departments and markets while innovative in other units/markets.

    c. Services which are well focused, relatively stable and consistently defined throughout the organization and marketplace. (Defender)

    d. Services which are in a state of transition, and largely based on responding to opportunities or threats from the marketplace or environment.

2. In contrast to other _____ , my organization has an image in the marketplace as:

    a. Offers fewer, selective services which are high in quality

    b. Adopts new ideas and innovations, but only after careful analysis. (Analyzer)

    c. Reacts to opportunities or threats in the marketplace to main or enhance our position.

    d. Has a reputation for being innovative and creative

3. The amount of time my ____ spends on monitoring changes and trends in a marketplace can best be described as:

    a. Lengthy: We are continuously monitoring the marketplace.

    b. Minimal: We really don't spend much time monitoring the marketplace.

    c. Average: We spend a reasonable amount of time monitoring the marketplace. (Analyzer)

    d. Sporadic: We sometimes spend a great deal of time and at other times spend little time monitoring the marketplace.

4. In comparison to other _____, the increase or losses in demand which we have experienced are due most probably to:

    a. Our practice of concentrating on more fully developing those markets which we currently service.

    b. Our practice of responding to the pressures of the marketplace by taking few risks.

    c. Our practice of aggressively entering into new markets with new service offerings and programs.

    d. Our practice of assertively penetrating more deeply into markets we currently serve, while adopting new services only after a very careful review of their potential.(Analyzer)

5. One of the most important goals in this _____, in comparison to other _____ is our dedication and commitment to:

    a. Keep costs under control.

    b. Analyze our costs and revenues carefully, to keep costs under control and to selectively generate new services or enter new markets. (Analyzer)

    c. Insure that people, resources and equipment required to develop new services and new markets are available and accessible.

    d. Make sure that we guard against critical threats by taking whatever action is necessary.

6. In contrast to other _____, the skills (competencies) which our managerial employees possess can be best characterized as:

    a. Analytical: their skills enable them to both identify trends and then develop new service offerings or markets.(Analyzer)

    b. Specialized: their skills are concentrated into one, or a few, specific areas.

    c. Broad and entrepreneurial: their skills are diverse, flexible, and enable change to be created.

    d. Fluid: their skills are related to the near-term demands of the marketplace.

7. The one thing that protects my organization from other _____ is that we:

    a. Are able to carefully analyze emerging trends and adopt only those which are proven potential.(Analyzer)

    b. Are able to do a limited number of things exceptionally well.

    c. Are able to respond to trends even though they may possess only moderate potential as they arise.

    d. Are able to consistently develop new services and new markets.

8. More so than many other _____, our management staff tends to concentrate on:

    a. Maintaining a secure financial position through cost and quality control measures.

    b. Analyzing opportunities in the marketplace and selecting only those opportunities with proven potential, while protecting a secure financial position.

    c. Activities or business functions which most need attention given the opportunities or problems we currently confront.

    d. Developing new services and expanding into new markets or market segments.(Prospector)

9. In contrast to many other _____, my organization prepares for the future by:

    a. Identifying the best possible solutions to those problems or challenges which require immediate attention.

    b. Identifying trends and opportunities in the marketplace which can result in the creation of service offerings or programs which are new to the industry or reach new markets.

    c. Identifying those problems which, if solved, will maintain and then improve our current service offerings and market position.(Defender)

    d. Identifying those trends in the industry which offer other _____ have proven possess long-term potential while also solving

problems related to our current service offerings and our current customer needs.

10. In comparison to other _____, the structure of my organization is:
   a. Functional in nature (i.e. organized by department – marketing, accounting, personnel, etc.)
   b. Service or market oriented (i.e. specific departments and/or business units have marketing or accounting responsibilities).
   c. Primarily functional (departmental) in nature; however, a service or market oriented structure does exist in newer or larger service offering areas.(Analyzer)
   d. Continually changing to enable us to meet opportunities and solve problems as they arise.

11. Unlike many other _____, the procedure my organization uses to evaluate our performance are best described as:
   a. Decentralized and participatory encouraging many organizational members to be involved.
   b. Heavily oriented toward those reporting requirements which demand immediate attention.
   c. Highly centralized and primarily the responsibility of senior management.(Defender)
   d. Centralized in more established service areas and more participatory in newer service areas.

As an analyzer Bankco would be expected to take a "wait and see" approach to the implementation of new technology. Given that analyzers are somewhere between prospectors and defenders Bankco has shown a propensity in self-service technology to balance the opportunity-seeking nature of the technology against the risk of aversion by customers. By waiting to see if the technology becomes accepted at the customer level Bankco allows itself to better understand the opportunity. If an opportunity exists then Bankco can move quickly to fulfill the possibility while minimizing the development costs vis-à-vis the first-mover. However, if the technology proves unsuccessful they can avoid the cost of designing and developing the SST. Analyzers are firms that seek to maintain their position in the marketplace, waiting for the market's reaction to new

product or new entrants into the marketplace. Once the market's reaction is analyzed, they pursue the opportunity, having identified the key success factors.

In this case business online cash management and remote deposit capability was first introduced by competing banks. Bankco analyzed the opportunity and chose to implement the technology. Both SST developments have allowed Bankco to act as a prospector to find and cultivate new business while also protecting their existing market share by offering the same solutions as some banks, and better solutions than other banks (most notably the smaller regional banks). This is a classic analyzer strategy and Bankco's behavior in developing and implementing SST is what the Miles and Snow strategic typology would expect.

Self-Service and Resource-based View of the Firm

Bankco is very clear that they do not believe a competitive advantage can be gained from the Web Infocu$ product or remote deposit versus larger companies. However, they do believe that they hold a competitive advantage over smaller regional banks due to the financial and managerial ability to follow the best practices of the industry leaders. When asked specifically whether the two self-service products are valuable, rare, and difficult to imitate the Bankco representative answers a resounding no. However, Bankco does believe that the ability to substitute remote deposit technology and Web Infocu$ is not possible through other means (i.e. adding more bank staff). The resulting answers compared to the criteria of the RBV clearly shows that Bankco is not able to, nor are they attempting to, create a long-term competitive advantage in the delivery and adoption of SST. Interestingly Bankco personnel do believe they have a

competitive advantage over smaller, less fiscally strong competitors but this is mainly a result of larger available resources. This is not surprising giving their analyzer approach. An analyzer is constantly monitoring the competitive landscape. The mixed results of no competitive advantage at one end of the competitive spectrum, yet a competitive advantage at another does bring up the possibility of a part industry competitive advantage whereby investments in SST can reduce the volume of industry competitors over an extended period of time. The possibility of studying partial competitive advantage or the reduction of the number of industry competitors, through the development of SST is a concept noted in the conclusion of the research as an area for further research.

Conclusion

Bankco has been successful by attempting to listen to their customer needs and by providing products that has reduced features but serves their customer demands. Bankco has grown rapidly through acquisition and a consumer friendly policy and is now the 24th largest bank in the United States. By positioning the company and acting as an analyzer Bankco uses their resources to watch other market leaders and minimize the cost of new technology and expand their market share.

Their Infocu$ product line was the start of a self-service banking economy and has now developed into a completely web-based product that provides information and transaction capability in real-time. By removing the extra step of contacting a bank representative Bankco has been able to move their human capital into more value-added positions and have been able to minimize the hiring of new employees. Furthermore,

they have been able to charge the customer for the ability to use their self-service products, thereby increasing the bank's revenue. Zuboff and Maxmin (2002) highlight this exact idea where the company can be viewed favorably by the consumer while lowering their cost base.

Corporate banking was chosen for this business case because of its unique needs between corporate customers and the bank. Without strong customer service the bank risks losing a very large base of cash reserves and liquidity. In addition, the corporate banking activities represent a different view of the self-service economy; a view that suggests that satisfying customer needs can also be used to increase revenue. The personal side of banking is more focused on a reduction of overhead and an increase in the use of ATMs to accomplish this goal. Thus, this business case presents an interesting perspective at one separate, and unique, aspect of the banking industry.

Bankco will continue to utilize their business model as a fast-follower and plan to continue to expand through fiscal discipline and acquisitions. Their strategic orientation is one of analyzers and they show in this case that they follow the typology closely and successfully. As the company grows, and continues to compete with top tier banks it is possible that Bankco, as a means to attack the market leaders, moves from acting as an analyzer to more of a prospector in an attempt to gain greater market share by offering the newest services. How Bankco will handle the competitive desire to become a top five bank, and if they truly continue to maintain their analyzer strategy, will be determined in the future. However, it is unlikely their adoptive cycle will change so dramatically that they would move up the continuum from analyzer to prospector. The Miles and Snow typology suggests that Bankco is rooted in a historic adaptive cycle

which has resulted in an analyzer strategy. Regardless, at this point Bankco has been successful in providing their customers with new applications the customers seek while reducing the cost and increasing the revenue to the bank.

CHAPTER VI

THE CASE OF AIRLINECO

"An innovation for one airline became a competitive necessity for the others. The airline industry was transformed."

- From *They Made America: From the Steam Engine to the Search Engine* (Evans, 2004). The statement is in reference to the launch of the SABRE system; a joint development between IBM and American Airlines. pp.471.

Case outline

The case of Airlineco begins with an introduction detailing the perceived need for a self-service solution. Next, the methods of data collection are explained. The third and fourth section provide the reader with a deeper understanding of the company involved in the case and its overall business strategy as explained to the researcher. The next three sections provide in-depth explanation of why the company launched a self-service offering and how they went about developing and deploying the technology. Moreover, throughout the interviews the researcher was able to ask about the future development of self-service products and the findings are contained within this case. The case then segues into the test of the theory by reviewing the Miles and Snow strategic typology and the results of the company's deployment of self-service technology. The outcome of the responses to determine if the self-service offering is a scarce resource in accordance with the resource-based view is then discussed. Finally, the case is summarized in the concluding section of the case.

Introduction

Airlineco, a United States based airline, has been in existence since 1916. The industry and the company have gone through radical changes over the 90-year history as noted in the quotation above from Evans (2004). The airline industry is characterized by

high levels of operating leverage due to large fixed costs (e.g. airplanes). Within a high

operating leveraged business such as air travel the profitability of a company will

fluctuate and is hyper-sensitive to the volume of revenue (D'Aveni, 1994), or as is the

case in the airline industry the volume of passengers serviced. As a result the number of

passengers per flight is vitally important to the ongoing success of an airline. If an airline

can reduce its operating leverage (e.g. buying less aircraft, avoiding low volume routes)

they can better control the swings in profitability. Regardless, the high operating

leverage is one significant reason the airline industry has focused on cost cutting and

volume.

This case surrounds the deployment of the Airlineco online reservation system.

Airlineco has five reservation call centers in the United States; two in Minnesota

(Chisom, Minneapolis), one in Washington (Seattle), one in Florida (Tampa) and one in

Iowa (Sioux City). Airlineco also operates a reservation center in Baltimore, MD but that

is scheduled to close in March 2008. The launch of the online reservation system was a

necessity for Airlineco for two main reasons.

(1) Competition: Other airlines began to offer the service and Airlineco desired to

copy as acceptance and satisfaction grew from the customer base.

(2) Financial: Due to the need to cut costs to remain competitive and solvent, self-

service technology (SST) presented a solution to eliminate labor.

The airline industry provides many self-service opportunities including at-airport

kiosks and online check-in over the internet so it is not surprising that Airlineco began

shifting reservations to a self-service approach. As SST gained greater acceptance

Airlineco was surprised to discover that not only would SST eliminate more jobs than they first thought but customers would become increasingly satisfied with the online method to book their own reservations. Airlineco discovered customers liked the control and speed at which they could plan travel and Airlineco liked the lower number of call center representatives they needed to employ. This case presents the story of Airlineco's move towards self-service for customer reservations.

Methods of data collection for case

Data collection for the case of Airlineco was through email and telephone conversation over a six month period. During the gathering of information the senior manager in charge of customer service and the call center operations accepted a new position, as an executive, with a competing airline. Based on discussions with the author's committee chair it was determined that no concern related to a continued honest and independent assessment of Airlineco's operation, after acceptance with the new company, would occur. However, the change in company did result in only one high level individual being involved in the case. While more individuals may have increased the depth of the case the committee chair and author believe that the length of time to develop the case, the senior level position of the Airlineco representative, and her long history in the airline industry resulted in a detailed in-depth case. The senior executive has asked to remain anonymous and therefore her name is not being revealed throughout the case.

About Airlineco

Airlineco began operations in 1916 by flying mail for the United States postal service. By 1927 Airlineco began to fly passengers throughout the United States and into Canada. The company continued to grow throughout the next six decades and in 1986 Airlineco purchased another airline and took over the three main hubs in cities throughout the Midwest. High levels of spending and fixed costs through the 1980s resulted in a leveraged buyout by an investment group in 1989. Following several years of losses and the sale of many aircraft and real estate holdings the company threatened entering bankruptcy until an employee group accepted three years of wage cuts. In 1993 Airlineco posted a profit but financial issues remained and a focus on cost cutting became prevalent within the organization. Following the terrorist attacks in September 2001 Airlineco conducted a major employee layoff. Along with the terrorist attack the increasing pressure from low-cost airlines such as Southwest Airlines and the increased labor costs forced Airlineco to file for Chapter 11 bankruptcy protection in September 2005.

Prior to the launch of the self-service reservation system passengers would contact their travel agent to book accommodations or they would call the airline reservation call center directly. In 2001 and 2002 the company began to offer self-service products over the internet including rebooking, reservations including fares, and reservation changes. The launch of the online reservation system began to change the dynamic within the reservation call center operation.

Airlineco's call center operations and strategy

The use of self-service technology began in the Airlineco call center operation in 2000. The main focus of the launch of SST was to reduce the costs associated with employing individuals solely to process customer reservations. Secondary focuses included the opportunity to remand more process control to the customers given the processing was not a complex task, and the need to remain competitive. The industry in general, and Airlineco specifically, was in need of constant cost cutting and the opportunity to reduce staff using SST was an opportunity to remain competitive. Airlineco did consider other potential solutions, particularly given union/employee influence, such as continuing with expanding call center operations but decided it was not the most beneficial path. SST had already been introduced by other competing airlines and the program used to process reservations was widely accessible by all airlines. Airlineco saw that not only did it allow other companies to reduce the cost of operations but there were documented examples of improved customer satisfaction.

In 2000 Airlineco's e-commerce division along with the customer service department put a plan in place to reduce the headcount dedicated to call center reservations by 50% over a five-year period. The plan was to implement SST as other airlines had done and begin to reduce the call center staff as more customers used the online tool. Airlineco decided to develop more sophisticated tools than some of the competitors offered such as changing reservations, using frequent flier miles, and making multi-city destinations. Other airlines, notably American Airline (parent company AMR), had begun to offer more "advanced" options such as the use of frequent flier miles on the reservation system so Airlineco wanted to imitate and improve upon

competing website reservation offerings.

Origin and evolution of self-service reservation system

Airlineco summarizes its corporate strategy for the delivery of reservations as providing the most efficient, hassle free experience. The entire company position on the process of airline travel is similar in that it says the customer should always have travel that is fast, satisfying, and efficient. The movement towards self-service was directly influenced by this mission statement. The feeling within Airlineco was that the self-service reservation system provides, "fast, efficient assess to information and transactions." The company also commented that self-service eliminated wait times.

The issue surrounding wait times demands a longer discussion. Internet access provides a seamless process void of relevance towards other customers currently booking tickets. The system can handle thousands of simultaneous bookings at once with no problem. If necessary, larger servers could be used increasing the acceptable volume of traffic thereby creating near limitless number of transactions for the cost of a larger server. The taxonomy position of Airlineco's call center reservation is push-customer site-high echelon (mainly 4 though at times 3)-replacement. The benefit Airlineco recognizes in reducing wait times is a direct result of the decision to deliver the SST to the *customer site*. If we contrast the "customer site" decision against a "service site" decision the reduction of wait times could not be assured. For example, self-service check-in kiosks at airports allow the *possibility* of a reduced wait time, and therefore could accomplish Airlineco's goal of hassle free travel, but does not insure that it will definitely occur. It is possible, and likely at busy times, that passengers waiting to check-

in using a kiosk will create a line. The wait times may be reduced if the passengers using the kiosk move quicker than those waiting for a live person but nonetheless there remains a wait time. The distinction between customer site and service site is important for an airline because they would prefer customers perform as many operations as possible remotely (i.e. away from the airport) to reduce wait times and attain the goal of hassle free service.

Within the call center the customer service representative attempts to process calls as efficiently as possible from one of five call centers throughout North America but long queue times do occur not allowing the mission to be met.

The benefit of SST for customer reservation

Airlineco pursued SST in order to reduce costs, remand more process control to customers, and to stay competitive. Other airlines had begun to offer online reservations with success and Airlineco did not want to be at a competitive disadvantage. As Airlineco launched web-based online reservations they were designing planned cuts in the call center staff. From the launch of the online system to the filing of bankruptcy in 2005 there had been a 50% reduction in the call center staff over the five-year period. Most of this reduction was controlled through normal attrition, by not hiring when representatives chose to leave the company. Interestingly the airline union had protection for all employees for loss of jobs overseas but not through the reduction in new technology. Since SST was a new technology the union had little leverage to protect the employment of call center employees. Had Airlineco decided to relocate jobs offshore they would have been unable to release call center reservationists. As a result of the new technology Airlineco was able to begin to reduce its dependence and utilize new

technology quickly and without union involvement. This has important implications for the development if SST in other industries and is discussed further in the conclusion chapter.

During the deployment process of online reservations Airlineco noticed that a portion of their customers preferred the online system. The number of customers that preferred online booking continued to grow at a rapid rate as acceptance and understanding expanded to a larger set of the travel population. Although it was a "low-touch" service model the customers seemed uninterested in working with Airlineco employees so "high touch" was unnecessary. Instead this group of customers wanted fast service with or without Airlineco employees. However, another group of customers still wanted to speak with a representative of the call center so Airlineco utilized the online reservations as a resource in terms of the SST taxonomy. Customers that chose to use the SST could while customers who liked to speak with a representative, or who were uncomfortable with the internet, could use the call center. At first Airlineco provided incentives to customers who chose to use the online system (e.g. frequent flier miles, upgrade coupons, etc.) until the acceptance was clear, and even preferred. The resource model, giving an option with incentives, quickly moved towards a replacement model (see the taxonomy discussion in the appendix for more detail on resource versus replacement) when Airlineco began charging to speak to a live representative. Surprisingly the customers who chose to use the call center were not disappointed by the cost increase. At first Airlineco was able to move towards a SST model that became widely preferred thereby allowing the company to reduce call center staff. After several years of providing incentives to use the online system Airlineco was able to remove the

cost of providing incentives online and increase revenue by beginning to charge customers to use the reservation call center. In both cases customer satisfaction remained higher than it was before the online self-service reservation system was developed.

Another result of the increased use of online reservation booking was the call center representatives could now spend more time selling rather than being pure administrators to book reservations. In the past the volume of calls, and the necessary post processing time (15 seconds), required call center representatives to move quickly to new customers, not allowing much time to upsell in the process. While the reduction in call center employees still requires fast processing time the reduced number of calls allows call center representatives to focus on selling premium seats, insurance, and other issues such as the reissue of flights. Airlineco has seen an increase in revenue per call center employee and attributes this rise to a more focused approach to selling and the type of situations that require a telephone call such as passengers stuck at an airport, missing connections, and complex travel (e.g. complex travel such as five cities, in four countries, in one week).

Airlineco was able to obtain a benefit from launching SST in its reservation system through declining call center employees and an increased selling attitude made possible by the SST. In addition they began to charge customers for the use of call center representatives' thereby encouraging people to use the SST, and when they did not, to earn revenue from them. This would be akin to banks charging for the use of a live teller instead of using an automated teller machine (ATM). Airlineco followed the lead of other airlines in beginning to charge customer for the use of call center employees and have not had any significant customer negative feedback. The reduction in call center

employees was completed through attrition without a matching hire. Over a period of five years Airlineco was able to reduce the number of call center employees by 50%. Since 2005 Airlineco has had an initiative to eliminate 700 more call center jobs resulting in a target level of 2000 employees throughout four call centers. Attrition rates have increased from 20% pre-2005 bankruptcy to 40% attrition as the pay ($9/hour) remained unchanged. As a result Airlineco has decided to close a call center in Baltimore, MD and open a new, smaller center, in Sioux City, IA where employment opportunities for candidates are less robust.

<center>The growing self-service model: At airport kiosk</center>

While the case is focused on the development and consequences of an online self-service model for reservations the discussion must contain some other self-service applications used by the airline as a context. Airlineco maintains a strategy for providing fast and efficient service to customers and is not concerned with the need for high-touch. This concept is reflected in its online reservation system and in the kiosks available for customers at the airport. Airlineco is charging customers for using call center representatives rather than using online reservation booking but does not charge for using a live person at the airport to check-in. Instead the kiosk at the airport can be used by travelers as an option to expedite the check-in process rather than waiting for a live person. The use of fewer customer touch points is not a concern of Airlineco because of its belief that customer satisfaction is not only irrelevant to the volume of touches but more likely to be inversely correlated to satisfaction. In other words, customers of airlines are not deriving their satisfaction from the frequency of interaction with airline employees but rather the less interaction the better as long as the process is as efficient as

possible. Customers using an airline are using the product with the sole purpose to go somewhere. The mere act of interfacing with an airline employee is unnecessary and not a factor towards a positive experience. As a result of this belief Airlineco continuously searches for more efficient means to deliver product to customers without service interaction. Kiosk's represent an at-airport efficient means to deliver service while the online reservation system presents an off-airport means.

The development and delivery of the SST offerings at Airlineco present two separate perspectives within the SST taxonomy. The goal of SST at Airlineco is for increasing efficiency of the processing system and increased control by customers. These goals are accomplished through both the kiosks at the airport and the online reservation system. In comparing these two SST the online reservation system uses a pull-customer site-high echelon-replacement strategy while the airport kiosk represents a pull-service site-medium echelon-resource strategy. The pull design is the same in both; the customer must access the technology rather than the technology being forced on the consumer. The location is different and somewhat obvious since consumers will use an online system at their home or office while the airport kiosk is located at the airport. The echelon levels differ because in an online reservation setting the customer can complete all the necessary steps to book a flight including choosing the time, destination, seats, and paying for the ticket. The self-service kiosk requires actual customer service support when checking baggage. Last, the online reservation system is designed as a push system because it represents the only free method for the consumer to book travel. Airlineco initially provided incentives to use the online system but has since copied other airlines and now charges customers to use the call center. The airport kiosk is free as is the

higher touch interaction of using a live person at the check-in counter. If Airlineco eventually moves towards a fee-based system for using the check-in representative they will have consciously moved the kiosk from a resource to a replacement.

The online reservation model is designed to continue to reduce the number of call center representatives even if the employees themselves feel irreplaceable. Yet, a 50% reduction in call center employees over a five-year period and the target of another 26% reduction has only been achievable because of the development and deployment of SST for online reservations which indicates that call center representatives are replaceable with technology. The Airlineco executive believes that the SST model for online call center reservations has exceeded the initial plans and anticipates future self-service products could one day eliminate most of the call center reservation employee tasks. Although the call center representatives have been able to spend more time up selling future advances in SST could allow for greater efficiency in sales and therefore reduce the dependence on call center representatives. For example at airport kiosks now offer upgrades and premium seats during the check in process. The interviewee commented that customer satisfaction of at-airport kiosks is very high and the more frequent the traveler the higher the satisfaction.

Future issues and applications of SST

Airlineco plans to continue to develop and deploy SST technology throughout its customer service process as a way to provide the customer a more satisfying experience and to reduce its labor pool. During the interview process Airlineco focused on the success of its SST reservation system as well as the other SST it uses throughout the

flying experience. The Vice President of Customer Service did not have specific new self-service products the airline will offer but did comment that the company is very focused on new self-service solutions. The company will continue to look for SST to eliminate the need for physical employees to perform tasks that could otherwise be easily completed by SST. While Airlineco has been successful in implementing SST they have followed the lead of competing airlines and will likely wait until further SST is developed and used. However, based on the comments from the company they seem to be taking a more proactive approach to the deployment of SST, likely a result of past success. Airlineco hopes to offer a more pleasant experience and they believe SST can accomplish the goal. Therefore, Airlineco is, as a senior level executive in charge of customer service states, "aggressively pursuing" self-service based solutions to "ongoing competitive pressures and customer preference."

Miles and Snow Strategic Typology

Airlineco falls into the category of defender according to the Miles and Snow typology. In accordance with Conant et al. (1990) the paragraph method has been the most widely employed method to operationalize and measure Miles and Snow strategic typology. Further, according to Contant et al. (1990) the nominal scale level of the data produced by the multiple-option questions required that categorization be based on a majority-rule decision structure. The companies were classified as defenders, prospectors, analyzers, or reactors depending on the option that was selected most often.

A defender is expected to have a narrow product-market domain (Miles & Snow, 1978, p.29). Using the paragraph method, as outlined in the methodology section, Airlineco answered seven of the eleven questions as a defender.

1. In comparison to other _____ the services we provide to our members are best characterized as:
   a. Services which are more innovative, continually changing and broader in nature throughout the organization
   b. Service which are fairly stable in certain units/departments and markets while innovative in other units/markets.
   c. Services which are well focused, relatively stable and consistently defined throughout the organization and marketplace. (Defender)
   d. Services which are in a state of transition, and largely based on responding to opportunities or threats from the marketplace or environment.

2. In contrast to other _____ , my organization has an image in the marketplace as:
   a. Offers fewer, selective services which are high in quality. (Defender)
   b. Adopts new ideas and innovations, but only after careful analysis.
   c. Reacts to opportunities or threats in the marketplace to main or enhance our position.
   d. Has a reputation for being innovative and creative

3. The amount of time my ____ spends on monitoring changes and trends in a marketplace can best be described as:
   a. Lengthy: We are continuously monitoring the marketplace.
   b. Minimal: We really don't spend much time monitoring the marketplace.
   c. Average: We spend a reasonable amount of time monitoring the marketplace. (Analyzer)
   d. Sporadic: We sometimes spend a great deal of time and at other times spend little time monitoring the marketplace.

4. In comparison to other _____, the increase or losses in demand which we have experienced are due most probably to: (Defender)
   a. Our practice of concentrating on more fully developing those markets which we currently service. (Defender)
   b. Our practice of responding to the pressures of the marketplace by taking few risks.
   c. Our practice of aggressively entering into new markets with new service offerings and programs.
   d. Our practice of assertively penetrating more deeply into markets we currently serve, while adopting new services only after a very careful review of their potential.

5. One of the most important goals in this _____, in comparison to other _____ is our dedication and commitment to:

      a. Keep costs under control.
      b. Analyze our costs and revenues carefully, to keep costs under control and to selectively generate new services or enter new markets. (Analyzer)
      c. Insure that people, resources and equipment required to develop new services and new markets are available and accessible.
      d. Make sure that we guard against critical threats by taking whatever action is necessary.

6. In contrast to other _____, the skills (competencies) which our managerial employees possess can be best characterized as:
      a. Analytical: their skills enable them to both identify trends and then develop new service offerings or markets.
      b. Specialized: their skills are concentrated into one, or a few, specific areas. (Defender)
      c. Broad and entrepreneurial: their skills are diverse, flexible, and enable change to be created.
      d. Fluid: their skills are related to the near-term demands of the marketplace.

7. The one thing that protects my organization from other _____ is that we:
      a. Are able to carefully analyze emerging trends and adopt only those which are proven potential. (Analyzer)
      b. Are able to do a limited number of things exceptionally well.
      c. Are able to respond to trends even though they may possess only moderate potential as they arise.
      d. Are able to consistently develop new services and new markets.

8. More so than many other _____, our management staff tends to concentrate on:
      a. Maintaining a secure financial position through cost and quality control measures. (Defender)
      b. Analyzing opportunities in the marketplace and selecting only those opportunities with proven potential, while protecting a secure financial position.
      c. Activities or business functions which most need attention given the opportunities or problems we currently confront.
      d. Developing new services and expanding into new markets or market segments.

9. In contrast to many other _____, my organization prepares for the future by:
      a. Identifying the best possible solutions to those problems or challenges which require immediate attention.
      b. Identifying trends and opportunities in the marketplace which can result in the creation of service offerings or programs which are new to the industry or reach new markets. (Prospector)

    c. Identifying those problems which, if solved, will maintain and then improve our current service offerings and market position.

    d. Identifying those trends in the industry which offer other _____ have proven possess long-term potential while also solving problems related to our current service offerings and our current customer needs.

10. In comparison to other _____, the structure of my organization is:

    a. Functional in nature (i.e. organized by department – marketing, accounting, personnel, etc.) (Defender)

    b. Service or market oriented (i.e. specific departments and/or business units have marketing or accounting responsibilities).

    c. Primarily functional (departmental) in nature; however, a service or market oriented structure does exist in newer or larger service offering areas.

    d. Continually changing to enable us to meet opportunities and solve problems as they arise.

11. Unlike many other _____, the procedure my organization uses to evaluate our performance are best described as:

    a. Decentralized and participatory encouraging many organizational members to be involved.

    b. Heavily oriented toward those reporting requirements which demand immediate attention.

    c. Highly centralized and primarily the responsibility of senior management. (Defender)

    d. Centralized in more established service areas and more participatory in newer service areas.

As a defender Airlineco would not tend to search outside their narrow domain for new opportunities. This orientation is evidenced by Airlineco utilized existing technology already being used in the industry that was proven to be accepted. Defenders tend to ignore developments outside of industry and aggressively pursue prominence in their chosen markets. By waiting to see if the technology becomes accepted at the customer level Airlineco allows itself to better understand the opportunity. If an opportunity exists to lower costs without interruption to their market they will pursue them aggressively. In interacting with Airlineco the investigator cannot help but think

that while they speak the customer satisfaction mantra the history of fiscal issues generates an environment that is truly focused on cost cutting. Since SST presents an opportunity to reduce costs, and this appears to the motivation, the benefit of a more satisfied customer is an ancillary benefit. A benefit of being a defender vis-à-vis a prospector is the protection against investing large sums of resources to find the new market niche or technological solution. In view of the fact that Airlineco is continuously seeking cost cutting measures the strategic orientation of waiting to see if a technology is approved can assist in managing the financial statements and will require a less detailed return on investment (ROI) type calculation. If the technology proves unsuccessful they can avoid the cost of designing and developing the SST. Defenders look to stable structure and process (Miles & Snow, 1978, p.29) and this can limit their ability to implement new SST. However, as Miles and Snow postulate managers in defender organizations are usually evaluated on efficiency which would encourage the use of more efficient SST-type technology. Once the market's reaction is understood and there is a clear financial savings Airlineco can pursue the opportunity.

In this case the online reservation system was first introduced by competing airlines. Airlineco analyzed the opportunity and chose to implement the technology. The result of the implementation was that Airlineco was unable to meet their cost reduction objectives due to the complexity of the reservations. While easy reservations were completed over the web the more complex reservations and those not comfortable with the internet continued to book via the call center operation. Airlineco has been able to maintain a flat level of employees in their reservation call center rather than increasing personnel and this helped lower future expected costs of the organization. Airlineco's

behavior and attitude towards the implementation of an online reservation system is what the Miles and Snow strategic typology would expect.

Self-Service and the Resource-Based View

The development of an online reservation system was a result of other airlines offering a solution and the opportunity for Airlineco to further reduce costs of operations. Airlineco does not believe the solution is rare or difficult to imitate therefore the online reservation system does not meet the necessary criteria for a long-term competitive advantage. Airlineco understands that the act of having self-service programs is mainly in an attempt to reduce cost. If increased customer satisfaction occurs than they are very happy but what Airlineco wants to avoid is customer dissatisfaction. The Airlineco executives' view the customer selection of air travel being made first on price but often prices tend to be similar across all airlines. As a result the choice of what airline to choose becomes based on customer service and convenience (i.e. arrival and departure times). Assuming competitive prices across a number of competing airlines a customer will choose an airline they are most satisfied with who offers the most convenience, and will not choose airlines where they are dissatisfied regardless of the convenience. The resource-based view seeks to identify companies who develop resources that garner competitive advantage and the development of an online reservation system does not meet the criteria. Airlineco does not pursue an online self-service reservation system in order to gain a competitive advantage nor do they believe that it could succeed in obtaining this goal. The options available for competing companies to match either

through copying the system or by higher more employees is much too easy to ever create competitive advantage.

Conclusions

Airlineco is a nearly one hundred year old company and has undergone many changes through its years of existence. Airlineco comments that due to the high cost of airplanes and other operating costs the pressure on high levels of passenger volume and low cost is necessary to remain competitive. The investigator acknowledges there are likely many more costs and issues involved than the two continuously commented about but the goal of this case is not on the analysis of airline operations. Rather the purpose of this case is to better understand why Airlineco pursued SST and how they implemented the technology. As a result the fact that Airlineco focused on the need for increased ease of travel (to increase passenger volume) and the cost cutting makes it the most important aspect of the case. SST development is growing and a deeper understanding of strategic decision making process is the purpose of the case.

This case reflects the growing pressure of the benefits SST can generate given companies need to remain competitive. The case further reflects the increase in customer satisfaction that can be gained from implementing SST. The ability of Airlineco to move from a call center based reservation system to an online system without customer discontent is telling. Without formal before and after customer satisfaction scores dedicated solely to the reservation process it is difficult to be certain of the customer satisfaction. However, the ability to move from a resource delivery method (i.e. free call center reservations) to a replacement method (i.e. pay for call center employees) without a decline in passenger travel seems to support Airlineco's confidence.

Another interesting finding in the case study is given the investigator was able to unearth that senior customer service executive level personnel believe that customers typically view air travel as a commodity. As such customers are less interested in multiple customer-service personnel interactions and instead want the fastest and most efficient delivery of the service. This finding is important for industries where customers are seeking only a service to accomplish something greater. For example during the interview the Airlineco executive mentioned the high-touch method of a rental car company. The executive was "annoyed" by the length of time it took to receive a rental car and the number of different service people she was forced to interact with. The rental car company is known as the most personal company to rent from but as the Airlineco representative highlights this is not what she wants during the process of renting a vehicle. Instead she wants the car as quickly as possible so that she may get the destination as fast and as timely as possible. No one rents a car without having a destination, just like no one flies without having to be somewhere. In both cases the more time it takes to get to where the consumer is going the less satisfied the customer becomes. For air travel, like the rental car example, time is a precious resource. The more time spent during the process of service the longer it takes to arrive at the destination. Contrast the rental car example to a funeral home and one can quickly see why some services demand high touch while other service interactions require low touch.

The growth of the use of kiosks at airports is another indication at the consumers desire to minimize the time it takes to complete the process of flying to a destination. Kiosks must continue to advance in the number of steps it can complete (i.e. move from a 2nd level echelon to a higher level such as 3 or 4). When customers check luggage they

still must interact with a service company representative to obtain the luggage label. During the interview the author learned that kiosks that are able to print luggage labels are in development.

Airlineco is a defender according to the Miles and Snow strategic typology and the launch of SST for call center reservations accurately reflects this typology. However during the interviewing Airlineco was focused on finding other SST's for the business. It will be interesting to see if they begin to move up the continuum from a defender to more of an analyzer and follow the more aggressive approach unlike a defender.

The focus for Airlineco is not on competitive advantage but rather avoiding competitive disadvantage, and in some sense on surviving in a highly competitive market. The company has already endured one bankruptcy and seems to better understand cost control. Given they are using a third party database for reservations available to all of the competitors it does not generate a competitive advantage to Airlineco nor do they expect it to generate an advantage. Still, the lesson from delving in depth into an industry that has installed many SST's has important implications. Airlineco has been able to reduce call center staff by over 50% in a seven year period while increasing self-reported satisfaction levels. The taxonomy positioning, and in particular the successful transfer from a resource to a replacement route can be used as a model for other similar industries.

CHAPTER VII

SUMMARY AND FUTURE RESEARCH

According to the Miles and Snow strategic typology organizations adopt certain strategies in response to environmental change. In the context of this research Miles and Snow (1978) was used to examine the question if the adoption of self-service technology by organizations will follow the Miles and Snow typology. Through case study methods the investigator was able to develop an in-depth understanding of the firm-level decision process to move towards self-service solutions. The result is a deeper comprehension of the corporate behavior of an organization. The three case studies in this research; Airlineco, Printerco, and Bankco each represent separate industries and separate typologies according to the Miles and Snow typology (Conant et al., 1990). By utilizing a case study methodology the investigator has been able to understand how and why each of these companies pursued self-service solutions. The path to deploy SST was much different in two of the three cases where the only exception was the prospector developing its own solution while the defender and analyzer imitated existing offering. Yet the taxonomy positions of the given companies indicate a very close pattern.

Final Thoughts and Conclusions

The cases uncovered a variety of different internal implications as companies move towards SST. The implications appear to be mostly independent of the Miles and Snow typology and rather seem to focus on the role of SST within a strategic setting. Some implications like the potential for lost employment seems stronger in the defender case (Airlineco) but occurs in the analyzer (Bankco) case as well. Resistance at the

engineering level seems strongest in the prospector category (Printerco) but this may be the result that they manufacturer very expensive capital goods, versus Bankco and Airlineco who do not manufacturer. Interestingly the lack of understanding of the purpose of developing and deploying the SST seems highest in the prospector. The understanding of the purpose of the SST seems to be clear at Airlineco but generates the corresponding union concern for lost jobs. Within Airlineco the union for the employees seems to work against the efficiency of the company while at Printerco the SST is questioned more on purpose then on protection of jobs. In all cases there seems to be some concern with exposure to job duty performance within the three companies. During all three cases the main concern with developing SST came directly from the departments that were most influenced. At Printerco concern came from service employees and the engineering staff. At Bankco concern came from the cash management group and the bank branches themselves who were in line to lose walk-through corporate customers and therefore transaction volume. Last, at Airlineco the call center employees and middle managers were concerned as their need within the reservation process appeared to be diminishing. In all of the cases the concerns of influenced employees sound reasonable but this is on an individual level rather than the overall firm strategy. As a result future research is necessary to continue to identify internal resistance towards the movement of SST and to determine if patterns exist, particularly if they could eventually be related back to the Miles and Snow strategic typology. In addition, further case study research is needed to investigate the root cause of the concern; is it firm-level concern as appeared on a limited basis at Printerco, or is it individual concern as occurred in all three cases in this research.

Contrasting the finding of internal resistance towards the development of SST within a company is the discovery that at higher levels (e.g. executive, senior management) SST is widely accepted and well received. By interviewing multiple layers of individuals the case study allowed for different perspectives within the same organization. As a result one finding is the reflection of internal resistance at the staff level (as noted above) while another finding is strong support for SST at higher levels. There was not a single person who held a senior level position in any of these companies that the investigator spoke to that was concerned about their own job security due to the SST. In fact at the senior management level the investigator could not find a single negative comment regarding the launch of the SST. When the issue of SST was discussed the answers always reverted back to the "employees" may be concerned, or "we may eliminate some jobs" but never their own. This may contribute to the overwhelming support for SST at the higher levels of companies. Additionally, it is possible that as you attain greater levels within a company you are asked to look at the broader corporate strategy and this perspective may lead to a different outlook than a typical employee tasked with a daily job. Regardless it became apparent to this investigator that at higher levels the support for SST is greater than at lower levels. This finding should be expanded beyond case study methodology into survey methodology where larger volumes of data collection and more generalization can occur from the analysis.

Next, the ability to have a prior understanding of how the SST interacts with target customers (or businesses) is nearly impossible without another company, within the same industry, already having the SST. At Printerco the amount of effort exerted to

design, develop, and deploy the SST was a long process with many uncertainties. For Bankco and Airlineco it was easier because the technology already existed within their industry and it was essentially copied. In questioning both Bankco and Airlineco about other similar types of SST, outside of their industry, the answers were sparse and inaccurate. For example both Airlineco and Bankco compared their SST to over-the-web retail sales such as Amazon.com. The problem with an answer such as Amazon.com to compare online web banking and online airline reservations is that the self-service applications are not truly comparable. Yes, they both share the feature that they are over-the-web – and this is what the representatives from Bankco and Airlineco focused on – but the similarities beyond this one variable are weak to nonexistent. Printerco, in developing its own, never before created, solution had to make a number of decisions with very limited amounts of information. By using discussions with customers as well as its internal strategy Printerco designed the SST in hopes of what it would eventually look like, feel like, and act like. There was no roadmap. The resulting solution was arrived at by careful planning, detailed research, and a bit of luck.

Fourth, the inability to compare self-service products is a direct result of the lack of an organized taxonomy within SST. The taxonomy needs to be broad and robust to provide a comparison for researchers to identify and study like applications across different industry settings. Simultaneously the taxonomy must allow the professional community to understand different applications of self-service to foster new development and build upon existing SST. The discovery from the initial literature review led to the creation of the self-service taxonomy located in appendix A.

For researchers the taxonomy represents a breakthrough to categorize different industry level SST applications into like categories. By developing the taxonomy, a step-by-step process has been created for the practitioner to follow in order to design, develop, and deploy SST in their organizations. By studying the methods in which SST is applied the research community can begin to analyze, and then predict, expected results regardless of the industry setting in which they are used. One no longer needs to compare Bankco's automated teller machine against Bank of America's. Rather, a researcher can study the positive and negative attributes of an automated teller machine versus that of a self-service parking garage machine. Conclusions prior to the development of a new SST can be formulated based on the success factors of other SST in non-competing industries. The understanding of why one SST is successful in one firm but not in another competing firm, within the same industry, can be more robust. For example leadership support of the SST or internal product management talent may allow one firm to be successful with a SST while another, in the same industry, may fail. The taxonomy contained in this research is one of the most significant contributions to the study of SST in relation to the firm-level decision process. Future investigation should continue to analyze self-service applications, categorize them in the taxonomy, and perform cross-industry and cross-category analysis. Research should also continue to improve the taxonomy as new technology creates new applications of self-service.

A fifth discovery is that the companies involved in this study are continuously searching for new ways to efficiently deliver service. In this context the term efficiency means greater service at lower costs where greater service is defined by the service company usually based on metrics such as higher customer satisfaction or increasing

repeat purchases. Led by the Airlineco, the group as a whole is supportive of the movement towards self-service. This does not mean that they plan to develop their own SST but rather that the companies are focused on watching the competitive landscape. This finding leads to the possibility that the development of self-service is likely to grow rapidly in the coming years as more companies seek efficient ways to deliver service and customers begin to request a self-service delivery solution. As more companies become aware of new self-service opportunities other competing companies will follow.

Given this research covers three separate industries, and three separate Miles and Snow types, future research should perform more encompassing investigations to determine if there is a generalizable trend across a broad spectrum of industries and companies. The table below represents a visual of the coverage of this research.

Table 4
Research coverage of industry sectors and typology

Industry Sector[1]	Miles and Snow (1978)			
	Reactor	Defender	Analyzer	Prospector
Aerospace				
Automotive				
Banking			X	
Chemicals				
Computer h/w and s/w				
Drugs				
Electronics				
Energy				
Food and Beverage				
Health Services				
Insurance				
Leisure				
Manufacturing				X
Media				
Real Estate				
Retail				
Telecommunications				
Transportation		X		
Utilities				
- - - - -				

1 - The list of industry sectors is only a partial list of all potential research sectors.

Researchers should seek to better understand the drivers for SST within firms so that they can contribute to the predictability of future SST development and the potential elimination of service jobs before they occur. The research surrounding the focus on SST could lead to important implications for developing countries that have begun to build an economy on the outsourcing of service jobs from developed economies. If SST has the possibility to eliminate offshore service labor the developing countries would want to be cognizant of this trend to avoid significant negative consequences to its economy. Future research could study developing countries where a large percentage of employment is through the in sourcing of service to determine if SST is a concern.

Next, Bankco considers itself a fast-follower and is categorized as an analyzer according to Miles and Snow typology. Yet, Bankco seems competitively unaffected by the decision to wait to use SST until the application gains acceptance from its customer base. The same can be said for Airlineco. Printerco meanwhile acknowledges they can only obtain a short-run advantage by being the first to develop SST. This leads the researcher to question whether there is any first-mover advantage to developing SST. The increasing number of customers using Bankco's self-service products strongly supports Bankco's plan to take a wait and see approach to new technologies. Further research should study companies that were the first to offer self-service solutions and determine if they obtained any first-mover advantage and how much different the cost of implementation was vis-à-vis competitors who delayed. All three cases reveal that the first mover is able to tap into the satisfaction of customers first but the SST is often quickly imitated by the competition. Further research should seek to improve the

awareness of whether the cost of the investment in the early stages is worth the increased satisfaction and lower operating cost in the short-term. A stronger comprehension of the first-mover advantage, if applicable, would allow for an improved understanding of the development of the SST.

A seventh discovery is that the companies in the cases are quite savvy regarding revenue generation and protection during SST deployment. In both the Printerco and Airlineco case customers who prefer to use the SST are allowed and save thereby encouraging customers to utilize a service that will benefit both parties in the transaction. However, Printerco and Airlineco chose to treat customers differently when a set of the customers are uncomfortable using the technology. Airlineco has been able to charge customers for using a live person thereby increasing revenue by taking a previously free service of direct interaction with customers and now charging for the service. Printerco has chosen to make the service unavailable to customers and rather tie the SST into larger service contracts, thereby encouraging companies to continue to purchase contracts. The example above illustrates that the case studies identified the flexibility SST offers to service providers. The ability to utilize the SST in accordance with the corporate strategy was apparent for the prospector, analyzer, and defender. Further research should analyze if SST is consistently a useful strategic tool for driving specific customer behavior as is the case in Airlineco and Printerco.

Eighth, a summary of the taxonomy positions of the self-service offerings outlined in the cases reflect similar positions in firm strategic behavior for these *applications* of self-service. However, the number of cases is not sufficient to conclude whether the Miles and Snow typology has any correlation to the taxonomy position. It

appears, as summarized below, that the taxonomy position of the SST in the three case

studies is similar with the exception of the kiosk delivery method. There are some

variations, such as the preventative maintenance model utilizing a replacement strategy,

but similarities throughout the applications appear.

Printerco:
(Field service EDSON): pull-customer site-mid/high echelon (3 to 4)-resource
(Preventative Maintenance): push-customer site-high (4)-replacement

Bankco:
(Cash management): pull-customer site-high echelon (4)-resource strategy
(Remote deposit): pull-customer site-high echelon (3-4)-resource strategy

Airlineco:
(Online reservation): pull-customer site-high echelon (4)-replacement strategy.
(Kiosk): pull-service site-medium echelon (2-3)-resource.

Given this finding more research needs to be completed to determine if further

differentiation is necessary to make the taxonomy even more valuable to researchers and

business executives. All are web-based technologies that require the customer to choose

to use them. As a result the first two factors are the same. With the use of web-based

self-service growing rapidly (Bitner, Ostrom, & Meuter, 2002) there may be a need for

additional factors to increase the amount of differentiation. One possible additional

factor to the taxonomy would be to utilize a scale for the complexity of the task the

customer completes. For example in the case of Printerco the customer is directed to

complete field service type tasks on large highly engineered capital goods (printing

equipment). While in the case of Bankco the customer is merely completing simple tasks

such as scanning checks (remote deposits) or entering and viewing transfer of corporate

assets. The difficulty level of the tasks the customer must complete to fulfill the self-

service duty appears to play a role in the development and deployment of SST. Further

research is necessary to determine whether a fifth factor is necessary. Regardless, the taxonomy position of Bankco and Printerco suggests that while they are different applications in different industries both companies can learn from the experience of the other.

Next, the cases reveal that strategically all three companies, regardless of Miles and Snow strategic typology; prefer using SST rather than employing additional human resources. An increase in the number of service employees could potentially equalize the benefit of SST but the cost would be great and the results may not be as good. For example even with more service technicians it is not possible for Printerco to arrive at a customer site to correct an issue at the speed at which the internet can assist in correcting the problem. Given the geographic presence of Printerco and the limited resources it is not fiscally possible to provide onsite service within four hours except in major metropolitan areas, and even then it is not guaranteed if the service technicians are already at other job sites. The internet, however, provides instant service. The case of Airlineco revealed that even if they wanted to add more call center representatives to process reservations the customers would prefer to use the online system and cannot afford to staff up with no wait time. At Bankco the customers have preferred using the self-service system for their corporate transactions. The trend of customers preferring SST has important implications for the future development of self-service products. The cases are only a small sample and focus on the study of the strategic behavior of the organization but lend credibility to the likelihood that SST development and use will increase as suggested in the book *The Support Economy* (Zuboff & Maxim, 2002). More research focusing directly on customer desires to use SST would be beneficial.

An analysis through comparing the answers between companies on the Miles and Snow typology paragraph method reveals that there is a great deal of differentiation in answers. Only one of the eleven questions was answered identical and in four of the case the answers were all different. Below is a summary of the answers for each question.

(A) On four of the eleven questions all three companies answered differently (2, 4, 6, 10).

2. In contrast to other _____ , my organization has an image in the marketplace as:
    a. Offers fewer, selective services which are high in quality (Airlineco)
    b. Adopts new ideas and innovations, but only after careful analysis. (Bankco)
    c. Reacts to opportunities or threats in the marketplace to main or enhance our position.
    d. Has a reputation for being innovative and creative. (Printerco)

4. In comparison to other _____, the increase or losses in demand which we have experienced are due most probably to:
    1. Our practice of concentrating on more fully developing those markets which we currently service. (Airlineco)
    2. Our practice of responding to the pressures of the marketplace by taking few risks.
    3. Our practice of aggressively entering into new markets with new service offerings and programs. (Printerco)
    4. Our practice of assertively penetrating more deeply into markets we currently serve, while adopting new services only after a very careful review of their potential. (Bankco)

6. In contrast to other _____, the skills (competencies) which our managerial employees possess can be best characterized as:
    a. Analytical: their skills enable them to both identify trends and then develop new service offerings or markets. (Bankco)
    b. Specialized: their skills are concentrated into one, or a few, specific areas. (Airlineco)
    c. Broad and entrepreneurial: their skills are diverse, flexible, and enable change to be created. (Printerco)
    d. Fluid: their skills are related to the near-term demands of the marketplace.

10. In comparison to other _____, the structure of my organization is:
    a. Functional in nature (i.e. organized by department – marketing, accounting, personnel, etc.) (Airlineco)

    b. Service or market oriented (i.e. specific departments and/or business units have marketing or accounting responsibilities). (Printerco)

    c. Primarily functional (departmental) in nature; however, a service or market oriented structure does exist in newer or larger service offering areas. (Bankco)

    d. Continually changing to enable us to meet opportunities and solve problems as they arise.

(B) On four of eleven questions Bankco and Airlineco answered the same (1, 3, 7, 11).

1. In comparison to other _____ the services we provide to our members are best characterized as:

    a. Services which are more innovative, continually changing and broader in nature throughout the organization. (Printerco)

    b. Service which are fairly stable in certain units/departments and markets while innovative in other units/markets.

    c. Services which are well focused, relatively stable and consistently defined throughout the organization and marketplace. (Bankco, Airlineco)

    d. Services which are in a state of transition, and largely based on responding to opportunities or threats from the marketplace or environment.

3. The amount of time my ____ spends on monitoring changes and trends in a marketplace can best be described as:

    a. Lengthy: We are continuously monitoring the marketplace. (Printerco)

    b. Minimal: We really don't spend much time monitoring the marketplace.

    c. Average: We spend a reasonable amount of time monitoring the marketplace. (Bankco, Airlineco)

    d. Sporadic: We sometimes spend a great deal of time and at other times spend little time monitoring the marketplace.

7. The one thing that protects my organization from other _____ is that we:

    a. Are able to carefully analyze emerging trends and adopt only those which are proven potential. (Bankco, Airlineco)

    b. Are able to do a limited number of things exceptionally well.

    c. Are able to respond to trends even though they may possess only moderate potential as they arise.

    d. Are able to consistently develop new services and new markets. (Printerco)

11. Unlike many other _____, the procedure my organization uses to evaluate our performance are best described as:

a. Decentralized and participatory encouraging many organizational members to be involved.

b. Heavily oriented toward those reporting requirements which demand immediate attention.

c. Highly centralized and primarily the responsibility of senior management. (Bankco, Airlineco)

d. Centralized in more established service areas and more participatory in newer service areas. (Printerco)

(C) The remaining three cases reveal that:

(i) Printerco and Bankco answered the same in one question (8).

8. More so than many other _____, our management staff tends to concentrate on:

a. Maintaining a secure financial position through cost and quality control measures. (Airlineco)

b. Analyzing opportunities in the marketplace and selecting only those opportunities with proven potential, while protecting a secure financial position.

c. Activities or business functions which most need attention given the opportunities or problems we currently confront.

d. Developing new services and expanding into new markets or market segments. (Printerco, Bankco)

(ii) Printerco and Airlineco answered the same in one question (9).

9. In contrast to many other _____, my organization prepares for the future by:

a. Identifying the best possible solutions to those problems or challenges which require immediate attention.

b. Identifying trends and opportunities in the marketplace which can result in the creation of service offerings or programs which are new to the industry or reach new markets. (Printerco, Airlineco)

c. Identifying those problems which, if solved, will maintain and then improve our current service offerings and market position. (Bankco)

d. Identifying those trends in the industry which offer other ___ have proven possess long-term potential while also solving problems related to our current service offerings and our current customer needs.

(iii) In one case all three companies answered identically (5).

5. One of the most important goals in this _____, in comparison to other _____ is our dedication and commitment to:
   a. Keep costs under control.
   b. Analyze our costs and revenues carefully, to keep costs under control and to selectively generate new services or enter new markets. (Printerco, Bankco, Airlineco)
   c. Insure that people, resources and equipment required to develop new services and new markets are available and accessible.
   d. Make sure that we guard against critical threats by taking whatever action is necessary.

Another finding in the case is that all three companies have expanded the self-service technology to other, mainly complimentary, offerings to customers. The three cases suggest that once a company begins to use SST successfully they will seek additional offerings of self-service. Further research should focus on the frequency of secondary self-service offerings. The research should also consider whether the Miles and Snow typology continues once a company launches a successful SST, regardless of its strategic typology prior to the initial self-service launch.

The pursuit of a competitive advantage, as defined by RBV of the firm, was not found to exist with SST. Even Printerco, the prospector, does not believe that they can maintain a resource that is valuable, rare, impossible to imitate, and non-substitutable. While the RBV was discounted the depth of the case studies provided interesting insights into the company philosophy. For instance, Bankco (analyzer) felt that as a fast-follower they reduced any development of a potential strategic liability vis-à-vis larger banks yet did create an advantage over smaller regional banks. While the smaller regional banks do not currently have the capability to obtain a large portion of Bankco's market share they can take small pieces. By offering a SST that is too expensive for smaller regional banks to offer Bankco has created separation for customers who would have previously considered the smaller bank. At the same time Bankco has been able to compete on an

equal level, relative to SST, to Bank of America and other top-5 banks. This finding opens the possibility that SST can create a part-industry competitive advantage, or stated differently, a strategic liability for smaller industry competitors. Therefore, advances in SST could reduce the number of competitors within an industry. From an organizational perspective this may create an incentive to develop new and expensive SSTs.

Airlineco (defender) launched self-service to create fast, efficient, and hassle free experience. The online reservation system has allowed them to increase customer satisfaction by reducing wait time. Always under heavy pressure to reduce costs Airlineco felt self-service reservations would reduce its cost of filling airplane seats without the direct assistance of Airlineco employees. Airlineco does not market its online reservation system as a reason to fly which is a direct contradiction to Printerco. Printerco (prospector) developed its field service based self-service product to increase efficiency at the customer and company level, position its products as innovative, and to assist in training and development of the employees. Printerco actively markets the self-service product as a solution for customers to increase printing capacity through faster uptime; something no other industry competitor could offer.

The case study analysis revealed that all three companies use SST, and all agree that it will not generate competitive advantage in accordance with the theory of RBV of the firm. In fact the strategic purpose of the SST is quite different in the three cases. This leads the investigator to propose that further studies should identify a set of variables, outside of the Miles and Snow typology used in this study, that assist researchers in determining the behavior of companies in deciding to utilize SST. One important research question should be whether companies are utilizing SST to avoid a

strategic liability, or a competitive disadvantage. One of the driving forces towards SST may well be that companies are facing increasing competitive pressure to use SST or risk having internal cost structure that is uncompetitive. If, as Airlineco explicitly states, SST generates lower costs and greater customer satisfaction then companies that never utilize SST may become both cost and customer satisfaction uncompetitive.

Finally, the investigator hypothesized that the method and behavior of firms when adopting SST technology is directly linked to the expected firm behavior as postulated in the Miles and Snow (1978) strategic typology. The results suggest that this statement was true. Printerco, a prospector, was the first to launch a self-service based solution for field service management in their industry. Bankco, an analyzer, acted as a fast-follower when launching corporate online management and remote deposit capability. Bankco followed the lead of a few key competitors, notably Bank of America and Wachovia. Airlineco, the defender, utilized third-party software and heavy cost cutting pressure to deploy an online reservation system. They began to use online reservations only after it was widely accepted. Each company initiated the self-service product in the method as predicted by the Miles and Snow typology.

This research studied three different industry segments and therefore further research should determine if Miles and Snow strategic typology is an accurate predictor of the deployment of SST by industry competitors. A larger group of companies using self-service technology compared to the company's Miles and Snow strategic typology would be beneficial to determine whether Miles and Snow could be generalized to SST. A positive finding would indicate that there is predictability in which companies, within an industry setting, will likely develop and deploy the SST, and in what order.

The adoption of SST as it relates to Miles and Snow typology and competitive advantage were the main focus of the paper. However, during the process of evaluation it was determined that an organized taxonomy of SST was necessary to compare similar applications across different industries and typologies. The result of this research is three detailed cases with twelve specific findings. The case studies were beneficial as a first step but further research is necessary in many areas, therefore the author has suggested potential future research projects throughout the conclusion. The taxonomy may need to be expanded and should be further researched. However, without a taxonomy of SST in existence already the research makes an important contribution by creating a classification scheme for researchers focused on self-service, marketing, corporate strategy, strategic behavior, and organizational behavior.

The research is not without limitations. First, the number of case studies is not large enough to allow for greater generalizations. While the case method was used because it offers a great way to dive deep into the details of the strategic decisions the findings should not be used as generalizable. A second limitation is that only one company from three industries has been selected. More companies from the same industry will help identify patterns, if existing, within specific industries. Next, the research is limited in relation to the number of industries. This research covers airline, banking, and manufacturing of capital goods sectors only. Further research is needed to expand the number of industries to cross analyze possible development trends, or lack thereof, in SST. Fourth, the Miles and Snow typology includes only one case from each of the three main orientations. More research is needed to understand the development patterns of prospectors, analyzers, and defenders. Therefore, an increase in the number

of studies in each of the categories would help future researchers predict outcomes of technology adoption of self-service. Fifth, the research is limited by the author's development of the taxonomy to compare and categorize the SST. The taxonomy is the first to be introduced for SST but more than likely can be improved. Further development of the taxonomy will benefit all future researchers who follow. Another limitation is without controlled conditions conclusions about cause-and-effect relationships cannot be drawn. The intent was only to describe behavior, not to explain the behavior. Last, the case study detail relied on retrospective data, recollections of past events and is therefore subject to the problems inherent in the memories of the people who provided the detail.

APPENDIX A

SELF-SERVICE TAXONOMY

The taxonomy of self-service technology is divided into four distinct and separate

factors. The first two factors; the delivery method of the technology, either pushed or

pulled, and the location of the technology, either at the customer site or the service site

are adapted from Dabholkar (1994). Factor 3 measures the level of customer

involvement in the process. In other words in each service encounter between the service

company and the customer there are a number of steps that must be completed in order to

fulfill the service. In some instances this can be very few steps while in other cases there

can be many steps involved. For example the act of activating a credit card takes very

few steps and can be accomplished by a call to an automated voice system, answering a

few questions (i.e. credit card number, mother's maiden name) and the credit card will be

activated. In some service instances the process is much more complex such as field

service support where the customer must first call into the service company's telephone

engineering group, the service company must then troubleshoot the problem, request

parts, await the customer's submission of a purchase order, ship the parts and dispatch

field resources. Factor 4, the final factor, of the taxonomy is whether the technology

implementation is intended to "replace" existing interactions or whether it is intended to

be a "resource" to existing interactions whereby some aspect is eliminated (i.e.

administrative tasks) or reduce volume. This concept is adapted from Selnes & Hansen

(2001), Schultze & Orlikowski (2004) and Bhappu & Schultze (2006).

As a result the four elements of the taxonomy are listed below:

(1) Is the technology pushed to the end user or is it pulled by the end user?

(2) Is the technology used at the customer site or at the service location?

(3) How extensive, to what level, is the customer's involvement in the overall

process?

(4) Does the self-service technology replace existing service or does it act as a

resource to the existing service?

The interaction of the four factors creates 48 potential combinations of where the

self-service design may reside.

		Echelon 1	
	Customer Site		
Push		Echelon 2	Resource
	Service Site		
Pull		Echelon 3	Replacement
	Both Sites		
		Echelon 4	
2	x 3	x 4	x 2

Figure 3. Taxonomy factor interaction

No one strategy is articulated to be better than any other but rather each strategy

has its own unique aspects depending on the goals and objectives of the company or the

organization. The self-service taxonomy is both deep and broad enough to capture all

existing self-service technologies and applications as well as future SST that have yet to

be invented. The goal of this taxonomy is to develop a model of knowledge organized in

a way that all users, whether academic researchers or business professionals, can use with

clarity and ease. Some companies may find that what they perceive to be the goal of their

strategy does not result in the outcome they believed they would achieve. For example

early adopters of interactive voice response (IVR) technology realized that excess

customer dissatisfaction was created by the forced nature of with pushing buttons on a telephone without easy access to a live person (Bitner, Brown, & Mueter, 2000). While in other cases companies may be achieving tremendous results without fully comprehending why this is occurring. It is expected that this taxonomy will be tested, modified and updated, as is the case in science, and that it will continue to evolve and improve. For business professional the goal is to enable them to define where in the universe of self-service solution they reside, as well as their competitors, and where other self-service solutions exist in an attempt to analyze and understand the universe in a logical and organized framework. The level of business professional that needs to understand their companies self-service position varies depending on the size and hierarchy structure of a company but usually resides in an executive and/or senior management level position. The result is to not only understand their current company/organization situation within the larger self-service universe but also to present a logical thought process to consider new self-service opportunities. Below is an explanation of each of the four major categories of the taxonomy.

(1) Push or Pull Technology:

Dabholkar (1994) first classified TBSS into three dimensions based on who delivers the service, where is the service delivered and how the service is delivered. This taxonomy factor focuses on how the service is delivered. Consumers will respond differently depending on how the technology is presented to them and it is important that companies understand the delivery method is a vital item.

The first step in the taxonomy is to determine whether the technology is being pushed to the customer or whether the technology is being pulled by the consumer. For example a passenger who took a recent flight waited in a line to check his luggage and was given the option of using a live person behind the ticket counter or a self-service kiosk which allowed him/her to check-in without any assistance. He/She chose to use the self-service kiosk and therefore *pulled* the self-service application. The passenger had flown other airlines recently where the customer service representative forced the passenger to use the self-service kiosks. This employee would direct the next person in line to move ahead to the nearest kiosk with no available behind-the-counter check-in representation. As a result this service was *pushed* onto the consumer. Self-service applications can be created to force (push) customers to use the technology or they can be created to be requested (pull) by customers.

(2) Location of technology: Customer site or service site

The next major level of classification within the taxonomy is the location of the self-service technology. Dabholkar's (1994) classification provides the dimension with additional work by Anselmsson (2001) for examples for this level. The technology is located at the customer site when the consumer uses the technology from their home or office. Examples include internet shopping (retail shopping away from the brick-and-mortar store), conducting financial transactions from your home or office, using the telephone to access bank records or order movie tickets, and distance education through the web. The technology is located at the service site when the consumer needs to travel to the service company location to use the technology. Some common examples include

pay at the pump gas, airline check-in kiosks at the airport, blood pressure machines at the grocery store, automated ticket machines, validation machines and ATMs. Technology located at the service requires some travel by the consumer in order to utilize the self-service.

Discussion on the interaction of the first two elements of the taxonomy

The first two levels of the taxonomy provide broad delivery choices for the service company. This taxonomy is not intended to suggest which elements are better or worse as these are determined by the industry setting in which they exist. Instead these two elements together provide choices for the service company in how they want to present their service. Companies can first choose to push the technology, have the technology pulled, or some variation of both – they then can decide to have this technology at the customer site or at the service site. In some cases the company has flexibility in their offerings. Returning to the airport check-in example the airline can choose to push the technology by not offering employees behind the counter to help with check-in or they could establish kiosks with the goal of having customers pull the technology. Rather than wait in line some customers will choose to use the self-service kiosk.

Once this push/pull decision has been made the service company must decide whether to provide the service at the customer site (remotely) or at the service site. Airlines kiosks are at the service site, whether they are pushed or pulled. However, airlines have become increasingly savvy in their delivery of self-service because you can now check-in online from home or work and print your boarding pass. As a result of

online check-in airlines continue to maintain a pulled self-service system but have created a situation where the technology resides at both the service site (through kiosks) and at the customer site (through the internet). Therefore, the location of the technology could be at the service site, at the customer site, or both. Pushing and pulling the technology cannot happen simultaneously as pushing or pulling are mutually exclusive situations. As a result when the technology is pulled by the customer he or she has made a choice to go get the technology. When pushing occurs it is a reflection of no choice if the consumer wants the service – they must use the technology.

Steps one and two: External decision factors

The first two factors of the taxonomy reflect the delivery method of the technology. As a result I have titled this the external decision factors. Once this decision is made the service company must decide whether the technology will reside at the consumer site, the service site or both. In a tree diagram the image looks something like this:
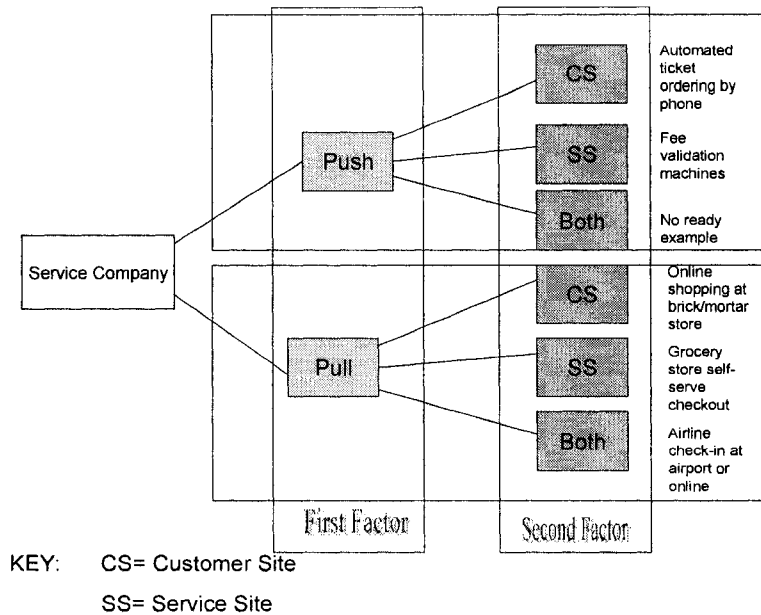
Service Company

Push

CS — Automated ticket ordering by phone

SS — Fee validation machines

Both — No ready example

Pull

CS — Online shopping at brick/mortar store

SS — Grocery store self-serve checkout

Both — Airline check-in at airport or online

First Factor

Second Factor

KEY: CS= Customer Site
        SS= Service Site

Figure 4. External decision factors of taxonomy

In total the service company has six methods in which to deliver the self-service offering to their customers, as shown by the chart above. Examples are provided for current self-service applications that fall into the six possibilities. The consumer will only be aware of these external factors not the internal factors which represent the remaining elements of the taxonomy. Therefore it is at this point that service companies must decide what forms are appropriate given their industry and product mix for the consumer. The remaining two elements of the taxonomy; the level of customer involvement, and replace or resource route are both what the author consider as internal factors. These elements to a large extent are hidden from consumers and instead eliminate resources from the cost structure of a company. The larger the reduction of costs throughout the service company process without a negative affect on the consumer the more beneficial the strategy

will be for the service company (Normann, 1992). However, extend these

internal factors too far, such that the consumer participates in an unsatisfactory

level of steps, then the service company risks decreasing customer satisfaction

(Meuter, Curran, & Surprenant, 2004). Still these are considered internal factors

because the direction of the company, with respect to these elements, further

classifies self-service technologies beyond the simplified view of the end user.

As Porter (1980, 1985) and Rogers (1995) indicate innovation can often be driven

to improve profitability. Reducing costs is one way to improve profitability all

else being equal. While the same is true if a company can increase revenue while

maintaining the existing cost.

(3) Customer involvement in the overall process:

The next element of the taxonomy is to gauge how many steps this technology

can or will remove from the current process. Returning to the airline check-in

example provides for a beneficial situation in which to highlight this component

of the taxonomy. Prior to the advent of self-service check-in kiosks anyone who

arrived at the airport would approach the airline counter to check-in. These

customers would be serviced by the agent behind the counter and once finished

could proceed. With self-service kiosks customers can now check-in without the

assistance of any physical employee. Within the operations of the airline there are

a number of steps that must be completed in order to complete the act of checking

a customer into the system. A certain number of these steps can be eliminated by

the use of self-service technology – the greater the number of steps in the process

that are eliminated the greater the opportunity to reduce cost. Some self-service technologies can completely remove any personal service. Bank tellers can be eliminated by customers depositing, transferring, and withdrawing funds from automated teller machines (ATMs), or through the internet, all the while increasing the service offering 24 hours a day, seven days per week. However, deposits to an ATM must be verified to be entered into the banking system. As a result withdrawals from an ATM remove the teller and the posting of the transaction but deposits need an extra step thereby not reducing as many steps.

In order to make this component of the taxonomy manageable I have established four different definitions of customer involvement in the process. The fours levels are:

(1) Echelon 1: The number of steps of the entire customer fulfillment process that the self-service technology completes is low. In effect from 1-25% of the process steps are completed or replaced by self-service technology.

(2) Echelon 2: The number of steps of the entire customer fulfillment process that the self-service technology completes is less than half but more than a quarter. In effect from 26-50% of the process steps are completed or replaced by self-service technology.

(3) Echelon 3: The number of steps of the entire customer fulfillment process that the self-service technology completes is quite high, at least half, but no more than three quarters. In effect from 51-75% of the process steps are completed or replaced by self-service technology.

(4) Echelon 4: The number of steps of the entire customer fulfillment process

that the self-service technology completes is very high. In effect from 76-

100% of the process steps are completed or replaced by self-service

technology.

The chart below represents a graphical view of the varying levels within the customer
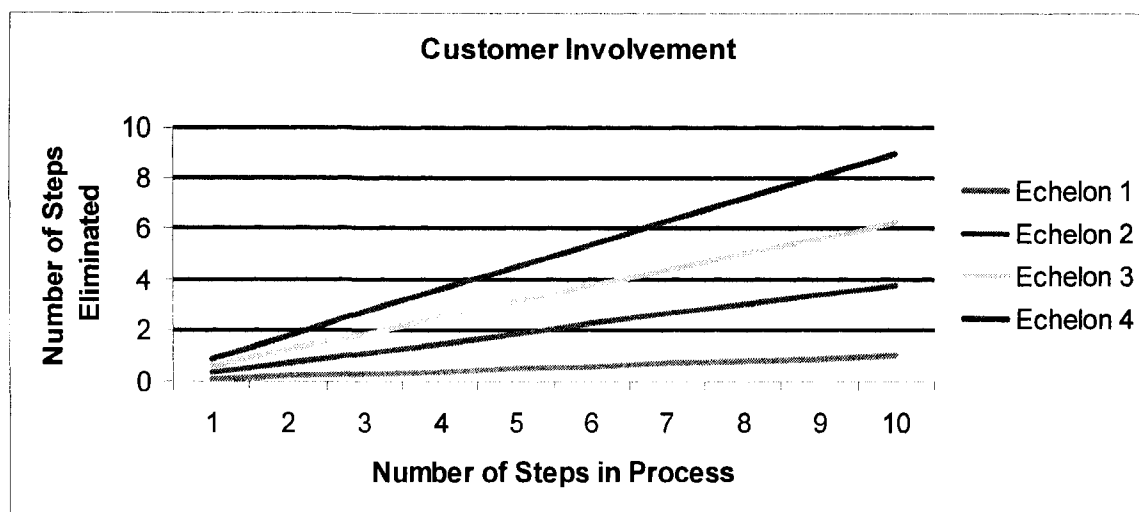
involvement classification:

Customer Involvement

Figure 5. Customer involvement by echelon

(4) Replacement or Resource Route

Selnes and Hansen (2001) penned the term resource model or replacement model to

represent the different methods for implementing SST. The replacement model can be

used to replace personal interactions with arm's length transactions executed via the

technology (Bhappu & Schultze, 2006). This technology replaces existing means to

service the customer and, as the authors identify, remove the social connection between

customer and service provider. In the resource route the technology can be used to

execute simple tasks thereby freeing the service provider's time to deal with more complex tasks (Bhappu & Schultze, 2006). The resource model can eliminate less strenuous tasks thereby reducing company costs through an increase focus on more complex tasks while at the same time handling a volume of issues that would otherwise be unachievable with the current level of resources. The resource model could be deemed as a complement to current service offerings rather the replacement route which is more closely linked to the elimination of current methods in favor of a current method.

While the prior literature has identified the replacement model and the resource model there is an additional strategy whereby a company can create a resource model with the purpose of eventually moving to a replacement model once the customer is accustom and comfortable with using the model. However, I have not created a hybrid route (or model) purposely because any launch of resource could eventually become a replacement but it cannot be a replacement model until the current offering is eliminated. For instance it is impossible to be a compliment resource to nothing. Therefore the technology is either a resource, meaning in addition to the current resource, or a replacement – a complete elimination of the prior offering. The ability to book airline travel over the internet has all but eliminated the need for a travel agent. While some travel agents continue to exist the deployment of easy to use online airline travel was developed as a resource to consumers to avoid paying travel agent fees. Consumers who choose to use the internet to book travel has rapidly increased and the concept of self-service travel arrangements is nearing a replacement model rather than the resource model in which it was originally designed (Christinasson & Sporrek, 2004).

Discussion on the last two elements of the taxonomy: Internal factors

The final two elements of the taxonomy - level of customer involvement and replacement or resource model – represent internal choices made by the company on how they want to position their operational structure given the corporate strategy they pursue. The level of customer involvement is variable with a variety of steps along the continuum of the process that could or could not be performed by the customer. The service company must decide at what level the customer contribution, the co-production, begins and ends. Many simple transactions such as validating credit cards can be easily achieved at a high contribution rate without risk to customer satisfaction and market share concerns thereby making the decision somewhat easier on companies. Some self-service applications, such as capital equipment service, can have varying degrees of self-service. The service company can eliminate very few steps, as simple as an automated telephone answering system in order to properly route the calls, all the way to a complete automatic speech recognition system (ASR) that is programmed to ask and answer questions. The level of customer involvement is defined by the corporate and operational strategy of the service company. The service company must make a strategic decision based on the cost of the investment in the technology, the amount of ongoing cost savings by implementing the technological solution, the risk to customer satisfaction, and any other self-service benefits and risks in order to properly identify the level of customer co-production. As a result I consider the third element of the taxonomy as an internal decision factor.

The second internal decision factor, and the final element of the taxonomy, is whether to implement a solution that replaces the current service offering or whether the solution is a resource to the current service offering. Strategically a company must decide whether they eventually will pursue an elimination of the current service solution in an attempt to replace with some new idea. The replacement strategy contains many risks and can be consciously avoided if the service company deems the risk too great. The resource model route acts as a complement to the current service offerings and likely will offer less short-term financial benefit for a company. Strategically the service company may deem that eventually costs will be reduced and they can utilize a strategy of resource to replacement. For example in the travel industry the investment in self-service online booking of airline flights (as well as hotels and cars) allowed an additional resource in which customers could quickly make their own reservations. At the time this was a resource available to the consumer. Over a period of several years, as people became more comfortable with internet reservations, the travel agent industry dwindled. While travel agencies still exist today the volume of traditional reservations has declined (Christinasson & Sporrek, 2004). Strategically the dissemination of new self-service technology needs to be viewed through the lens of Barney's resource-based view and Schumpeter's discovery and action. The approach, based on Barney or Schumpeter, is one that the use of new technology should place the company in a stronger market position by lowering cost, increasing profit, developing new demand, increasing customer satisfaction or a combination of more than one. If the company can generate a long-term sustainable asset through their self-service product the company will enjoy excess profits *vis a vis* the competition. The entrepreneurial discovery of new and

innovative self-service solutions to current problems allows companies to prosper. Once

self-service is deemed to present a solution to an existing company the company will then

make an internal decision on how to position this technology – to replace existing or to be
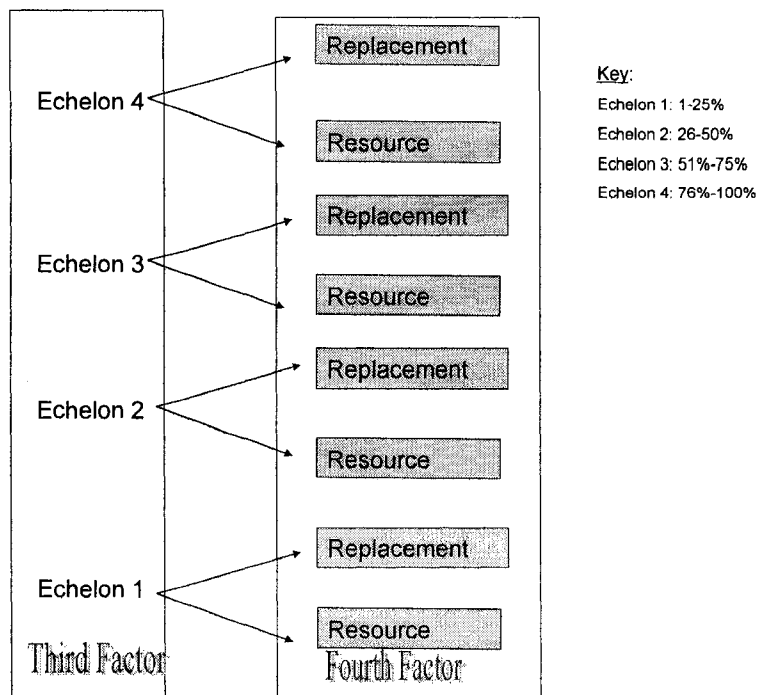
a resource to an existing.

Figure 6. Internal decision factors of taxonomy

Self-Service taxonomy: Summary of Forty-eight (48) dimensions

The self-service taxonomy results in 48 different dimensions as outlined below.

Factor (1): Push or Pull (2 possible results)

Factor (2): Customer site, Service site or both (3 possible results)

Factor (3): Echelon level one through four (4 possible results)

Factor (4): Replacement or Resource model (2 possible results)

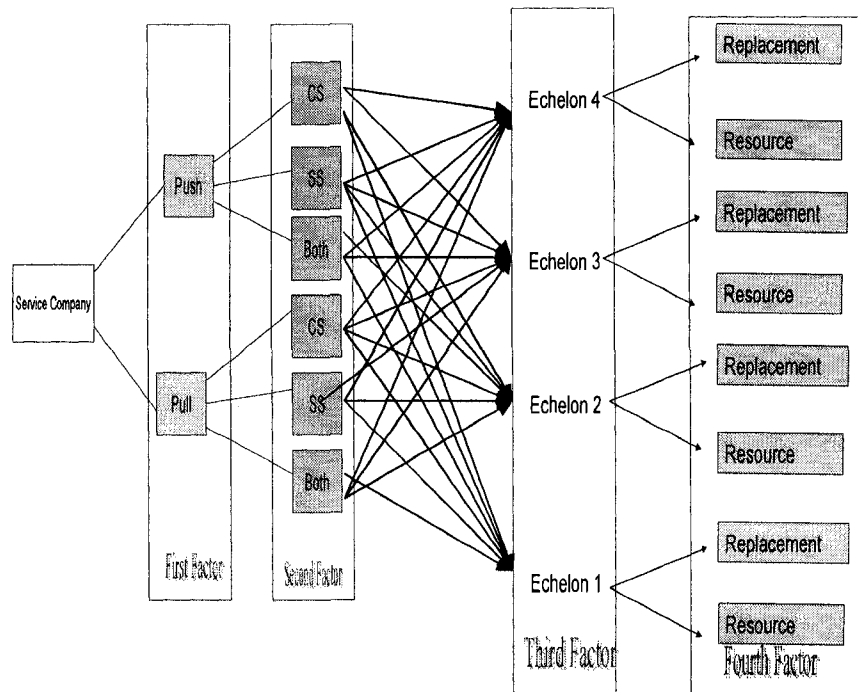Total: (2) x (3) x (4) x (2) = 48 possible dimensions.

Figure 7. Graphical view of complete taxonomy

Online ordering of digital photographs has become increasingly popular with the success of digital cameras. Digital photography and the method to turn your digital images into photographs present a nice way to review the self-service taxonomy.

Companies such as Shutterfly, Ofoto, Miller's lab and others offer a self-service where customers can upload the images they want to print. The customer can then crop, rotate and color manage the image and select which files they want printed. The positioning of the online photo stores to print and ship digital images outlined above represents a (1) Pull system (i.e. customer grabbed the technology), and (2) was located at the customer site (i.e. computer internet connection). Shutterfly (or similar company) has removed several steps in the process due to the self-service technology. For instance

there is no need for a customer service person to answer the telephone, no need for a person to manage the files and no need for an operator to prepare the files in queue. However, the online studio would still need to have an employee collect the prints, place them in an envelope and mail them. Therefore the online studios would likely fall in between Echelon 2 and Echelon 3 whereby three of the five or six steps have been completed by the customer. In addition the online studio can either use the replacement model or the resource model. For online-only companies such as Shutterfly and Ofoto they have a business model that is one of replacement – they do not offer another resource – you can not shop at their store or send negative images to be developed. However, an online studio such as Miller's Professional Imaging Lab offers both an online system as well as work with and accepts negatives (though they likely will make them digital). A physical location such as Miller's also can perform color management and file preparation. Therefore Miller's offers a "resource" to customers to use their self-service product. The online (customer site) and kiosk (service site) production of digital images represent distinct sections of the taxonomy and both represent different strategic options for the company.

The online ordering of digital photographs is just one small and simplistic example of the encroachment of self-service into consumer's everyday lives. The three case studies contained in this research further detail this growing phenomenon. Each case will show in detail the strategic positioning and decision making of each company and the taxonomy location of their respective self-service solution. These case studies provide an in-depth look at the how and the why as companies pursue self-service solutions within their enterprise.

Summary

The goal of this section is to present a roadmap for business professionals to design, develop and deploy the proper self-service solution to the proper customer at the proper time. Companies will continue to develop self-service solutions and researchers will continue to study the results. But, the existing literature falls short on assisting business professionals in building and comparing self-service solutions. Researchers do not have a taxonomy (or classification) to compare like applications of self-service across industries. This taxonomy is the direct result of a shortage in the existing literature and developed to assist future researchers and business professionals.

APPENDIX B

MILES AND SNOW QUESTIONAIRE

A multi-item scale for measuring strategic types (Conant, Mokwa, & Varadarajan, 1990).

Each answer between a-d represents one of the four strategic types – prospectors,

analyzers, defenders and reactors. The list at the end indicates the answer that

corresponds to each answer. The answer key is not part of the instrument and is provided

here for information only.

1. In comparison to other _____ the services we provide to our members are best characterized as:
      a. Services which are more innovative, continually changing and broader in nature throughout the organization
      b. Service which are fairly stable in certain units/departments and markets while innovative in other units/markets.
      c. Services which are well focused, relatively stable and consistently defined throughout the organization and marketplace.
      d. Services which are in a state of transition, and largely based on responding to opportunities or threats from the marketplace or environment.

2. In contrast to other _____ , my organization has an image in the marketplace as:
      a. Offers fewer, selective services which are high in quality
      b. Adopts new ideas and innovations, but only after careful analysis.
      c. Reacts to opportunities or threats in the marketplace to main or enhance our position.
      d. Has a reputation for being innovative and creative

3. The amount of time my ____ spends on monitoring changes and trends in a marketplace can best be described as:
      a. Lengthy: We are continuously monitoring the marketplace.
      b. Minimal: We really don't spend much time monitoring the marketplace.
      c. Average: We spend a reasonable amount of time monitoring the marketplace.
      d. Sporadic: We sometimes spend a great deal of time and at other times spend little time monitoring the marketplace.

4. In comparison to other _____, the increase or losses in demand which we have experienced are due most probably to:
     a. Our practice of concentrating on more fully developing those markets which we currently service.
     b. Our practice of responding to the pressures of the marketplace by taking few risks.
     c. Our practice of aggressively entering into new markets with new service offerings and programs.
     d. Our practice of assertively penetrating more deeply into markets we currently serve, while adopting new services only after a very careful review of their potential.

5. One of the most important goals in this _____, in comparison to other _____ is our dedication and commitment to:
     a. Keep costs under control.
     b. Analyze our costs and revenues carefully, to keep costs under control and to selectively generate new services or enter new markets.
     c. Insure that people, resources and equipment required to develop new services and new markets are available and accessible.
     d. Make sure that we guard against critical threats by taking whatever action is necessary.

6. In contrast to other _____, the skills (competencies) which our managerial employees possess can be best characterized as:
     a. Analytical: their skills enable them to both identify trends and then develop new service offerings or markets.
     b. Specialized: their skills are concentrated into one, or a few, specific areas.
     c. Broad and entrepreneurial: their skills are diverse, flexible, and enable change to be created.
     d. Fluid: their skills are related to the near-term demands of the marketplace.

7. The one thing that protects my organization from other _____ is that we:
     a. Are able to carefully analyze emerging trends and adopt only those which are proven potential.
     b. Are able to do a limited number of things exceptionally well.
     c. Are able to respond to trends even though they may possess only moderate potential as they arise.
     d. Are able to consistently develop new services and new markets.

8. More so than many other _____, our management staff tends to concentrate on:
     a. Maintaining a secure financial position through cost and quality control measures.

    b. Analyzing opportunities in the marketplace and selecting only those opportunities with proven potential, while protecting a secure financial position.

    c. Activities or business functions which most need attention given the opportunities or problems we currently confront.

    d. Developing new services and expanding into new markets or market segments.

9. In contrast to many other _____, my organization prepares for the future by:

    a. Identifying the best possible solutions to those problems or challenges which require immediate attention.

    b. Identifying trends and opportunities in the marketplace which can result in the creation of service offerings or programs which are new to the industry or reach new markets.

    c. Identifying those problems which, if solved, will maintain and then improve our current service offerings and market position.

    d. Identifying those trends in the industry which offer other ____ have proven possess long-term potential while also solving problems related to our current service offerings and our current customer needs.

10. In comparison to other _____, the structure of my organization is:

    a. Functional in nature (i.e. organized by department – marketing, accounting, personnel, etc.)

    b. Service or market oriented (i.e. specific departments and/or business units have marketing or accounting responsibilities).

    c. Primarily functional (departmental) in nature; however, a service or market oriented structure does exist in newer or larger service offering areas.

    d. Continually changing to enable us to meet opportunities and solve problems as they arise.

11. Unlike many other ____, the procedure my organization uses to evaluate our performance are best described as:

    a. Decentralized and participatory encouraging many organizational members to be involved.

    b. Heavily oriented toward those reporting requirements which demand immediate attention.

    c. Highly centralized and primarily the responsibility of senior management.

    d. Centralized in more established service areas and more participatory in newer service areas.

Response key

Answer	A	B	C	D

Question 1	P	A	D	R
Question 2	D	A	R	P
Question 3	P	D	A	R
Question 4	D	R	P	A
Question 5	D	A	P	R
Question 6	A	D	P	R
Question 7	A	D	R	P
Question 8	D	A	R	P
Question 9	R	P	D	A
Question 10	D	P	A	R
Question 11	P	R	D	A

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