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A Dissertation

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Internet Strategy: An Integrated Complement to an Organization's Existing Business

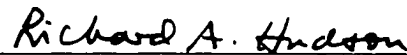Practices

By

Charles H. Apigian

Submitted as partial fulfillment of the requirements for the Doctor of Philosophy in

Manufacturing Management

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An Abstract of

Internet Strategy:
An Integrated Complement to an Organization's Existing Business Practices

Charles H. Apigian

Submitted as partial fulfillment of the requirements for

The Doctor of Philosophy degree in Manufacturing Management

The University of Toledo

May 2003

Organizations have struggled with the implementation of Internet technology. They have tried to analyze current technology and looked to incorporate the Internet based on compliance to customers, supplier, and competitor's standards. This approach, a technology driven approach, does not take into account the competitive advantages of a firm. Therefore, the need to reverse the paradigm of an Internet strategy approach is needed to implement Internet technology to gain a competitive advantage. The Internet itself is not a competitive advantage, however when used as a tool to complement existing business practices, a sustained competitive advantage may be achieved. This is a business driven approach to Internet strategy.

This research developed and measured a construct for Internet strategy, based on a business driven approach. This was achieved through an exhaustive review of strategy and strategic alignment literature at the business and functional level. With a solid basis

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from the strategy literature, companies were interviewed to determine the key aspects of an Internet strategy. From this information, a construct for Internet strategy was developed and measured along with Internet performance.

The research was then tested using a survey for data collection. The survey measured an organization's business, marketing, operations, and Internet strategy for its relationship to each strategy and Internet performance. The entire data collection was conducted via the Internet through an email to 5217 IT professionals. A click-through response of 689 was received, with actual responses of 265. Of the 265 responses, 257 were deemed usable. The data collected was put through a rigorous statistical analysis to test for content, construct, criterion-related validity, as well as reliability and sampling adequacy. Based on this analysis, a structural equation model was developed, based a hypothesized business-driven approach to Internet strategy. The results from the structural model show a significant relationship between an integrated Internet strategy and performance. The results also showed that an Internet strategy is significantly influenced at the functional level of an organization and the direct relationship between business strategy and Internet strategy is not significant. The overall model had very good fit, which showed that the data is a close replication of the theoretical model that was hypothesized for this research.

This research showed that an Internet strategy that is influenced from the functional level of an organization, such as marketing or operations, could have a significant impact on measures that are necessary for Internet success. Therefore, a business driven approach to an Internet strategy can lead to a high level of Internet performance.

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Chapter One

Introduction

Organizations have viewed the use of the Internet as an opportunity to introduce new ways to reach different markets and customers, as well as improve products, processes, and other modes of conducting business (Rangan and Adner 2001). However, the adoption of the Internet has not been a smooth transition for organizations. The attempt of implementing an Internet strategy into existing processes to gain a competitive advantage has left managers and organizations with a daunting task. Initially, corporate executives and strategists had to determine whether to invest in the Internet (Teo and Tan 1998; Chang and Cheung 2001), today their decisions are much more complex. "The key question is not whether to deploy Internet technology – companies have no choice if they want to stay competitive – but how to deploy it" (Porter 2001), and companies must now focus on what the Internet means for their business and competitive strategy (Willcocks and Plant 2001). How a company can leverage the speed, accessibility, connectivity, and information of the web and Internet technologies is fast becoming an integral part of corporate strategy.

The Internet has potentially significant payoffs (Barua, Konana, Whinston and Yin 2001), such as relationship enhancement, revenue expansion, and internal cost and time reduction (Sawhney and Zabin 2001). However, the Internet alone is not a

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competitive advantage, nor should it require a radically different business model or approach (Porter 2001). The use of the Internet, coupled with proven principles of strategy, will be required for effective Internet use. Therefore, companies that will succeed will be those that use the Internet as a complement to their current practices and business strategy.

How can a company develop a strategy to use the Internet, based on proven strategies, if the technology changes at such a rapid pace? If not properly developed or monitored, an Internet initiative may be obsolete before it is even deployed. Therefore, a dynamic strategic approach, which assumes rapid changes in technology, should be implemented for an organization to stay on course to Internet deployment regardless of changes. This approach takes an overall view of the Internet and initiates a strategy that will complement their existing business practices. An Internet strategy should be business-driven, instead of technology-driven, which has hindered many companies in the initial stages of Internet deployment. This research develops a framework for Internet strategy that allows companies to focus their initiatives to specific areas that are strategically aligned to the company's business and functional strategies.

1.1   Importance of Research

Many of the first companies that attempted to utilize the Internet, including many dot-com ventures, competed with a lack of strategic focus, and neglected fundamental business practices that have worked for thousands of companies in the past. Companies pursued market share at all costs, rather than focusing on ways to be profitable with the use of the Internet. They felt that if they gained initial market share, customers would be

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willing to be loyal due to high barriers to switching. However, as most companies have found out, the Internet has no true barriers to switching to a competitor, in fact, the barriers may have been reduced with the inception of Internet technology. Therefore, companies were spending millions of dollars on Internet technology and then competing based solely on price, which drove down the value of their products within their industry. Initially, companies cannibalized their own sales revenue by offering an additional option with no distinct advantage to use their system and with the new opportunity to switch to a competitor rather easily. The cannibalization of revenues also led to reduced profit or value for their products. Companies forced the implementation of the use of the Internet by investing in every known technology that they thought was feasible, instead of investing in technologies that are right for their business (Porter 2001).

This lack of strategic focus has cost organizations a considerable amount of money with no added value (Kalakota and Robinson 2000). Therefore, deploying the correct or properly aligned Internet strategy is valuable to an organization. To understand the right type of strategic approach, it is also important to know about the misconceptions of the Internet.

1.1.1 Approaches to Strategy

Rangan and Adner (2001) defined seven misconceptions of the Internet (See Table 1.1). Some of their findings include the overestimation of first mover advantages, going global prematurely, sacrificing focus for customer solutions, heavy reliance on partner leverage, and ignoring Internet-sector differences. Other keys to strategy include treating technology as strategy and diluting strategic fit for reach.

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Table 1.1 Misconceptions of the Internet

Misconception	Questions Managers Should Ask
1. Overestimating first-mover advantages	Would we enter the business and procure attractive returns even if our likely rivals were already in the market?
2. Going global prematurely	To what extent do we lead in our home market, understand the market abroad, and have competitive advantages over our rivals?
3. Unintentionally sacrificing focus in the desire of "customer solutions"	To what extent will developing complements in house call for expertise we don't have?
4. Ignoring Internet-sector differences	To what extent have we tailored our products and production advantage to the sector in which we operate?
5. Relying unguardedly on partner leverage	To what extent will our partners' interest diverge from our own?
6. Treating technology as strategy	To what extent are we doing something just because new technology means we can do it instead of doing what we should do?
7. Unintentionally diluting fit in the pursuit of reach	To what extent would the pursuit of the reach opportunity under consideration disrupt the core of our activity?

(Rangan and Adner 2001)

For Internet implementation, according to Rangan and Adner (2001), the last two misconceptions that were mentioned have led many organizations to fail to realize any type of competitive advantage (Numbers 6 and 7 of Table 1.1). First, organizations have assumed that what is technologically feasible will enhance their organization. This technology-driven approach to strategy does not take into consideration the business processes or products that may be enhanced. It instead looks at what type of technology is available and if it possible to incorporate into their organization, then it must be an opportunity for a competitive advantage (See Figure 1.1.1). This rationale is based on an assumption that any type of technology is a competitive advantage. For example, a company may envision the use of wireless technology as a possibility in their organization, and they may feel the use of this technology will help their employees communicate more effectively. However, the implementation of wireless technology may give new ways to communicate, but does it help their organization respond to the

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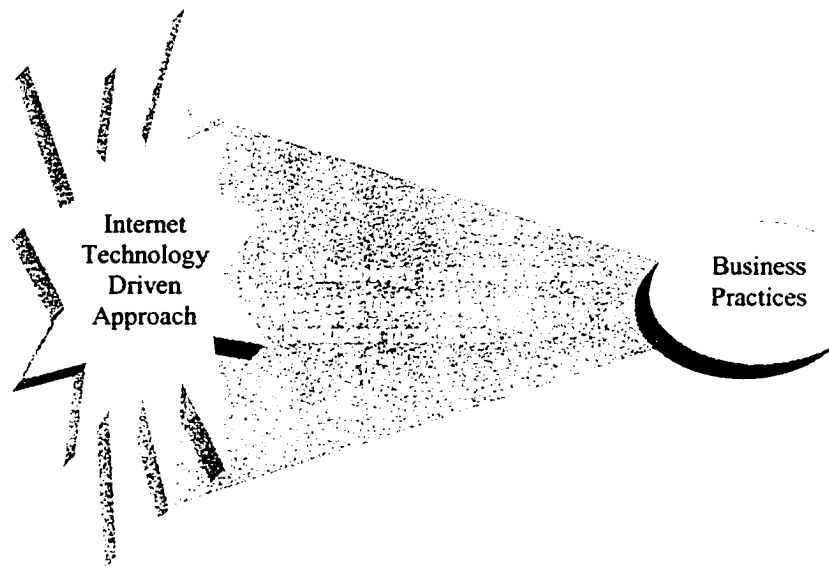
Figure 1.1.1: Technology-Driven Approach

needs of their customers or deliver a quality product in a timely manner? Without an initial analysis of an organization's business processes, a technology-driven approach looks at existing Internet technologies and tries to make them fit their organization. Technology and strategy should be strong complements, not substitutes (Rangan and Adner 2001).

Many organizations rushed into investing in the Internet because of what was foreseen as vast opportunities and limited time to cash in on the experience. With stock valuations at unheard of prices in the late 1990's, everyone thought that without a ".com" on the end of their name, they would become extinct in the near future. This led to the technology-driven approach of Internet strategy (see Figure 1.1.1), instead of a more traditional business-driven strategy (see Figure 1.1.2). A business-driven approach

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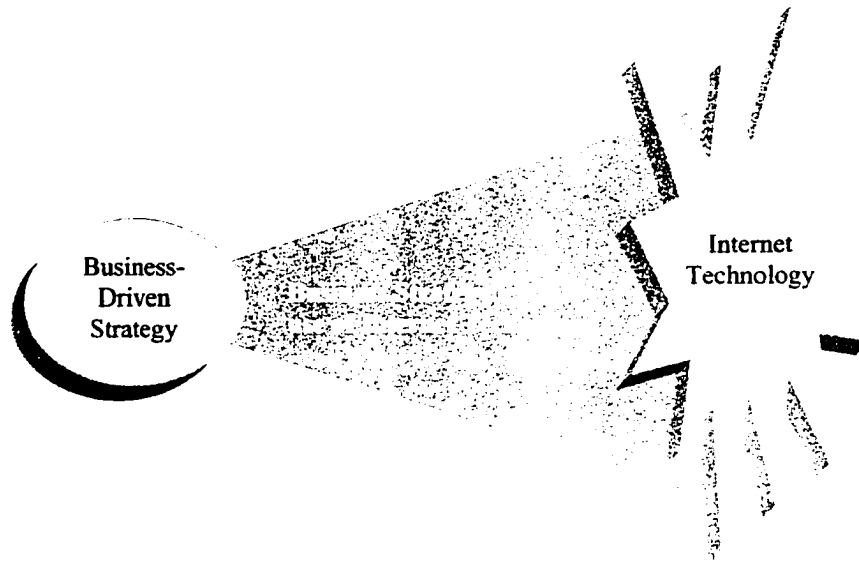
Figure 1.1.2: Business-Driven Approach to Internet Strategy

examines an organization's internal business strategies and then looks to incorporate the best possible technologies available in order to enhance what is currently working for them in the marketplace. This approach may be more rigorous to attain and may not reach the market as soon as the latter but it can lead to a sustainable competitive advantage.

The lack of a business-driven strategy has led companies to competitive convergence, an undermined structure of their industry, and a reduced likelihood of ever gaining a competitive advantage with the Internet (Porter 2001). Unless a business's Internet strategy can deliver real value to their customers, allow for trade-offs, and is custom tailored to their distinct competitive business advantages in a dynamic way, the Internet will not be a useful technology to businesses and the overall business environment.

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This research developed a framework that is based on a business-driven approach to Internet strategy. By determining what a company does well and how they are structured at the business and functional levels, an Internet strategy can be developed. An Internet strategy should be developed prior to investigating any technological issues or implementing any type of Internet technologies. In the past, this step has been ignored and has led companies to a misaligned Internet strategy that adds cost instead of value to their organization. A focused Internet strategy, prior to any technological issues, will guide a company in a general direction that will enable a company to structure their use of the Internet with their existing business practices.

1.2   Problem Statement

The use of the Internet is not going to go away. Most doubters have focused on the recent demise of dot-com companies, even though they only accounted for 10% of all Internet generated revenue (Barua et al. 2001). The breadth of opportunities will change the way companies conduct business and how they view future implications of the economy and new technologies. The premise of this research is:

"How to develop an Internet strategy that will add value instead of cost to

an organization based on existing business and functional strategies."

Economic value is defined as the gap between price and cost (Porter 2001). If a strategy does not increase the price of a product or service, or if it does not reduce the cost to produce a product or service, then it does not add value to your organization. In order to add value to an organization, there must be a competitive advantage in using the

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Internet. In a strategic context, a competitive advantage may be pursued in two distinct ways: operational effectiveness and strategic positioning (Porter 1996).

1.2.1 Operational Effectiveness

Operational effectiveness refers to performing a task that is common in an industry, but your company performs the task better, cheaper, or faster. The Internet has helped many companies gain an operational advantage, but due to low barriers for replication, their competitors have been able to reduce the gaps quickly and more efficiently. Therefore, operational effectiveness is a short-term advantage that brings competitors to the same common ground, but not differentiation.

1.2.2 Strategic Positioning

Strategic positioning refers to the attempt to gain a cost advantage or price premium by competing in a distinctive way. Strategic distinctiveness is not as easy to achieve as operational effectiveness, but if attained, competitors will have a hard time replicating or surpassing this advantage. An example of a company that has shifted from operational effectiveness to a strategically positioned advantage is Amazon.com. Originally, they were a company that offered books at a discounted price. This operational advantage was based on low capital investment and low overhead. However, Amazon.com realized that large book retailers, such as Barnes and Noble and Borders, could easily replicate the operations that gave them an advantage, plus they had the capital and warehousing to surpass any of Amazon.com's initial advantages. To overcome this threat, Amazon.com changed their strategic view to a service oriented

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organization that offers a complete customer experience in buying books, CDs, electronics, etc (Applegate, Austin and McFarlan 2002). This change in strategic position allowed Amazon.com to differentiate their company based on factors other than price, which will enable them in the future to become more profitable. Amazon.com turned a profit for the first time in the 4th quarter of 2001, with a favorable outlook for 2002. This recent progress can be attributed to aligning their Internet strategy with their business strategy of the organization.

By developing an Internet strategy that is strategically aligned with a company's overall business strategy, a firm may develop or enhance a competitive advantage that may be hard to replicate, such as the unrivaled customer experience at Amazon.com.

> *"When a company's activities fit together as a self reinforcing system, any competitor wishing to imitate a strategy must replicate the whole system rather than copy just one or two discrete product features or ways of performing particular activities."*
> *(Porter 2001)*

1.3 Research Objective

The purpose of this research is to develop validated measures of Internet strategy and its performance, which is based on a business-driven approach. This infers the internal analysis of existing strategies and levels of strategic alignment within an organization. In order to implement a strategy that will incorporate the use of the Internet as a complement to existing business practices, organizations should review their existing business and functional strategies and decide on which aspects of their business can be improved with Internet technology (Feeny 2001). With most of the research in Internet

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strategy conceptual, the empirical studies have focused on Internet adoption (Teo and Tan 1998; Chang and Cheung 2001), with little research on the effective deployment of the Internet. This research will empirically measure and establish relationships among key constructs of business, functional, Internet strategies, and their overall performance based on four distinct Internet performance measures: relationship enhancement, revenue expansion, cost reduction, and time reduction (Sawhney and Zabin 2001).

To develop a clear understanding of measures of existing strategies a review of the literature was conducted. There is also a tremendous amount of literature that describes new business models and directions that companies can follow to reap the benefits of the Internet. However, there is little evidence of any of these strategies or models providing any success in a business environment. A thorough review of the strategy literature will establish a basis for effective Internet use.

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Chapter Two

Review of Literature

This research is based on several areas of strategy and Internet literature. First, it was important to know what encompasses the Internet and the history of its inception. This helped us analyze its evolution into the business environment and where it might be heading. Second, understanding the basic fundamentals of strategy and how to achieve a competitive advantage is important for defining the necessary components of business strategy. Third, all relevant literature on the use of the Internet in business was reviewed to understand key aspects of this technology that may positively enhance a company's strategic position. With the Internet in its infancy, it was important to delineate between propositions in the Internet literature that have already failed, which includes a substantial amount of literature prior to the year 2000. Therefore, a careful selection as well as interviews of existing businesses was used to determine a good base of knowledge pertaining to the Internet for this research.

A final aspect of theory that was reviewed includes literature to establish the link between business and Internet strategy. This link is important to align business practices and the Internet, which is essential to a business-driven approach to Internet strategy. Therefore, a look at relevant strategic alignment literature was conducted to determine appropriate constructs in business strategy as well as functional strategy and also on how

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to measure these constructs and strategic alignment. The following sections are a detailed review of these findings.

2.1 Internet

To understand how to effectively use the Internet in business applications, it was necessary to understand the aspects that comprise Internet technology, as well as its past and future implications. The Internet has been defined by many different terms including e-business, e-commerce, and the web, but few have grasped the entire concept of Internet technology. *The Internet is a technology that enables the transmission of multimedia digital information on a common communication channel* (Applegate et al. 2002). This includes much more than the World Wide Web, which is only a platform for creating and storing information, the internet also includes peer to peer networks, XML technology, FTP, electronic mail, wireless technologies (Wi-Fi), and anything else that allows computers or other devices to deliver information or data (Robert and Racine 2001). Therefore, although many of the key aspects of business practices refer to the web, an Internet strategy includes all aspects of electronic data transfer.

Sawhney and Zabin (2001) define e-business as "the use of electronic networks and associated technologies to enable, improve, enhance, transform, or invent a business process or business system to create superior value for current or potential customers". Although, it has been proposed that e-business will become extinct (Fingar, Aronica and Maizlish 2001), the definition that Sawhney and Zabin propose contradicts the death of electronic networks. However, although the platform that may be used in the future may change from the most commonly used World Wide Web to a different technology, the

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type of platform should not affect an Internet strategy or the use of a technology to transmit data. Therefore, although the term e-business may not stand the test of time (Sawhney and Zabin 2001), the transmission of data will be around for the long term (Sharma 2002).

2.1.1 History of the Internet

The origins of the Internet can be traced back to one individual, J.C.R. Licklider (Waldrop 2000). In August of 1962 he wrote about the opportunity to form a "Galactic Network" of globally interconnected computers through which everyone could quickly access data and programs from any site (Leiner, Cerf, Clark, Kahn, Kleinrock, Lynch, Postel, Roberts and Wolff 1997). At the Advanced Research Project Agency (ARPA), which was formed in 1958 by the government to develop technologies with long term potential, his vision was quickly put into development. In 1968, Larry Roberts designed the first architecture for an Interface Message Processor (IMP), which would be known as ARPANET. With the architecture for the ARPANET in place, a small firm, Bolt, Beranek, and Newman, was contracted by Frank Heart, director of ARPA, to deliver the network by Labor Day of 1969. They were able to deliver by the required date and the first Internet was developed. It was a network between four universities: UCLA, UC-Santa Barbara, Stanford University, and University of Utah (Smith 1999). The first Internet, ARPANET, became very popular with research facilities and in 1971, Ray Tomlinson wrote two programs that allowed ARPANET users exchange messages or use email. These programs were the first to use the @ sign for email addresses (Moschovitz, Poole, Schuyler and Senft 1999).

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Soon after its inception government agencies also started using ARPANET, but the general public did not hear of its use until 1975, when rumors spread about a network that the government was using to relocate files (Moschovitz et al. 1999). In 1978, the Computer Bulletin Board System (CBBS) was created for the general public to use, but the first public Internet access did not occur until 1986, when Tom Grudners at Case Western Reserve University established Cleveland Free-Net.

The World Wide Web was not invented until 1991 by Tim Berness-Lee at the Centre European pour la Recherche Nucleaire (CERN) in Geneva. With the establishment of the World Wide Web and the increased popularity of the PCs, the use of the Internet has increased dramatically over the years. It is also assumed that commerce on the Internet did not start until 1994 (Moschovitz et al. 1999).

The debut of Internet commerce is still less than 10 years old, with the Internet now in existence for over 30 years (Smith 1999). Therefore, to say that e-business has been around for a long time is not quite accurate. E-business or Internet commerce is still in its infancy, and the era of its existence has not yet been determined.

2.1.2 Internet Era

If you look through history, there are several parallels that can describe different eras in business (Arthur 2002). There are five distinct eras in business since 1760, Industrial Revolution, Railway Revolution, Steel and Electricity Revolution, Manufacturing Age, and Information Age (See Table 2.1). Each of the past eras followed a similar pattern of three distinct phases (Perez 2002).

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Table 2.1 Eras of Business Commerce

Era	Years	Description
Industrial Revolution	1760 – 1820	Replaced handcrafting with machinery and brought the factory and mail system.
Railway Revolution	1825 – 1875	Connecting of commerce and the coming of steam power.
Steel and Electricity Revolution	1875 - 1920	Age of massive engineering and the electrification of the economy.
Manufacturing Age	1910 – 1970	Brought mass production and automobiles and cheaper goods.
Information Age	1970 - Present	Age of the digital everything, the Web, and interconnected commerce.

(Arthur 2002)

An era begins with a new technology that spurs the innovation and development of a completely new cluster or era. During this first phase, highly innovated technicians start small companies based on new ideas and initially excel. With a lack of government regulation, they compete intensely, with many of the first innovators highly successful. (Similar to what happened in the car industry in the early 1900's or the beginning of the Manufacturing Age.) Then the promise of enormous profits looms and the public starts to speculate and invest in the new technologies. (Which happened extensively in the 1920's in the U.S.) When many of the promises do not hold true or are not profitable, there is a catastrophic correction in the economy. (In the Manufacturing Age it started in 1929 with the stock market crash.) This then leads to the next phase of an era.

The middle phase sees a sustained growth in technology. After a crash, the technology is the driver of growth and the period is one of prosperity and confidence. (Similar to the 1950's and 1960's.) Normally, large companies and oligopolies develop and reign during these years of growth. (Ford and General Motors were the main drivers of growth.) This confidence leads to a maturation of the technology and production moves from its natural origin to foreign sites that can make it at a cheaper cost, which is

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the final phase. (In the 1970's Japan led the rise of foreign competition.) Profits become low and the economy is ripe for a new revolution, which starts the process all over again.

Throughout history, each era has some striking similarities to the three phases described above. Each started with speculative exuberance, followed by a crash, then a strong build-out period, and finally maturation. If the Information Age will hold true to prior history, then we have just ended the 1st phase of the era and we are heading into the middle phase of sustained growth. Since 1970, we have seen a tremendous outburst of innovations, starting with the commercialization of the microprocessor. Small companies continued to be started with new inventions throughout the 1980's. In the 1990's the public poured their life savings into companies that looked to have tremendous profit potential. However, when profits were nowhere to be found, the stock market and the information technology revolution crashed. Now in 2002, we may be seeing the beginning of a long and sustained growth in the economy, which is driven by the transmission of information or the Internet. Therefore, the possibilities for future profits and opportunities may be plentiful.

As part of the initial stages of Internet commerce, Kalakota and Robinson (2001) defined three types of developments since 1994. The first development for organizations was a presence on the Web. From 1994 to 1997, companies tried to make sure that they had a website so that they had some type of Internet presence. The next development, from 1997 to 2000, included the ability to buy and sell over the Internet. In most cases, this was the transferring of order taking from paper to electronically ordering over the Internet. Companies that were quick to develop a way of online transactions found their companies with a short-term advantage over their competitors. The next development,

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from 2001 to present, is a focus on how the Internet can be profitable for a business. This shifted the focus of increased revenues with the Internet to improve the profit margin. To accomplish this in the future, companies will have to incorporate strategy with the use of the Internet.

2.2   Strategy

A strategy is defined as the determination of the basic long-term goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals (Chandler 1962). It is carried out through the development and implementation of a company's strategic plan or competitive strategy (Brush 2000). Porter (1980) states that competitive strategy involves positioning a business to maximize the value of capabilities that distinguish it from its competitors. This positioning, if conducted correctly, will lead to a competitive advantage. A competitive advantage grows fundamentally out of the value that a firm is able to create for its buyers, which exceeds the firm's cost of creating the product (Porter 1985). Value is what buyers are willing to pay, which is created by a competitive advantage. A superior value is from lowering prices and providing the same benefits to customers as competitors or providing unique benefits that more than offset a higher price (Porter 1985). Therefore in order to achieve superior value, an organization must position itself through strategy to achieve a competitive advantage. The need for strategy throughout an organization is imperative for a sustainable competitive advantage.

Researchers have identified three levels of strategy (Fine and Hax 1985): corporate, business, and functional. Corporate strategy deals with the policies and plans that a corporation utilizes to manage a set of businesses or products (Grant 1995).

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Business strategy is defined as the way in which a single business firm or an individual business unit of a larger firm competes within a particular industry (Bowman and Helfat 2001) and how they achieve a competitive advantage in a particular industry (Slater and Olson 2001). Functional strategy describes how a company's departments or functions, such as marketing, finance, engineering, operations, and human resources, will support corporate and competitive strategy (Brush 2000). The role or level of the Internet is not quite clear in literature, but it has been referred to as a powerful set of tools that can be used to support a business or function and carry out a specific strategy (Weill and Vitale 2001). Therefore, an Internet strategy is not one of the three levels of strategy, but an underlying complement to existing strategies. Figure 2.2 shows a view of the levels of strategy and its relationship to the Internet.
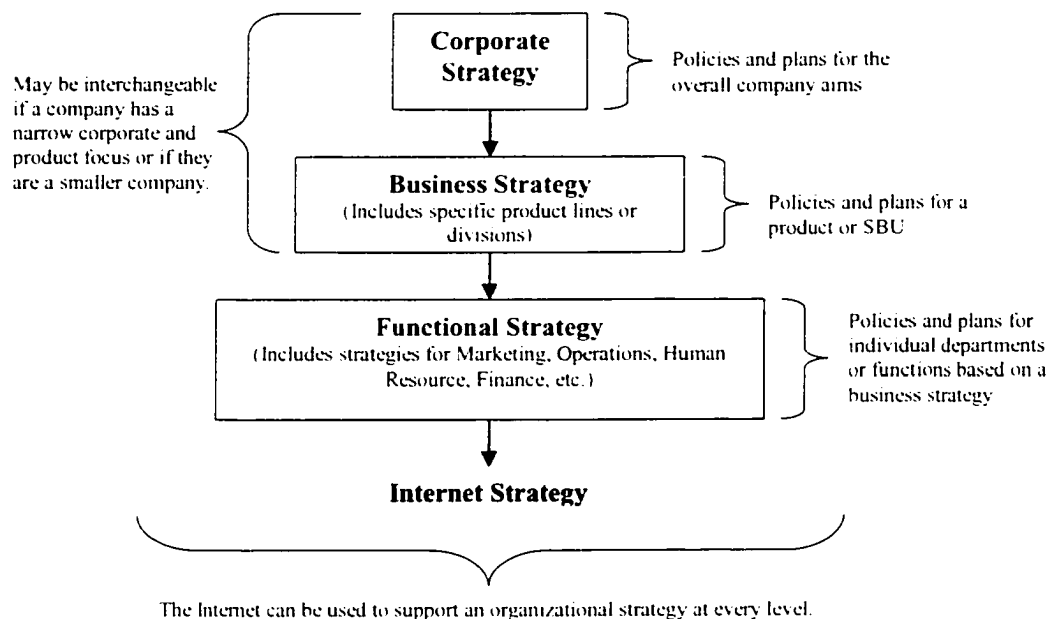
Figure 2.2 Levels of Strategy and the Internet

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The origins of corporate strategy can be traced back to Peter Drucker (1954), where he asked basic business questions and developed the concept of 'management by objectives'. This philosophy advocates that managers should be focused on the common goal of a corporation and be judged on their contributions to its performance, which is the underlying foundation of corporate strategy. The literature on corporate strategy became popular in the late 1970's (Mintzberg 1979), with the culmination of generic strategies (Porter 1980) and organizational structures (Miles and Snow 1978) that preach corporate positioning and organizational structure to attain a sustainable competitive advantage.

The link between strategy and structure has been identified as crucial in the literature (Drucker 1954; Drucker 1974; Miles and Snow 1978). However, initially, frameworks were lacking until the late 1970's with the development of different proposed structures that were based on strategic positioning. Strategic positioning based on corporate structures has been categorized in the literature in two distinct ways: taxonomies and typologies (Hambrick 1984). Taxonomies are a nominal classification of types, which extract constructed types of organizations through inductive logic (McKelvey 1982; Miller and Friesen 1986a). Taxonomies have been derived empirically through cluster analysis (Miller and Friesen 1986a; Miller and Friesen 1986b; Miller and Roth 1994) and they have also been conceptually derived (Hambrick 1984; Drazin and Van de Ven 1985; Van de Ven and Drazin 1985; Gresov 1989; Venkatraman and Prescott 1990). Empirically derived taxonomies look at different constructs of an organization, such as their manufacturing competence, and then specify types of organizations based on the data that was collected. Therefore, taxonomies are data driven in most cases instead of theory driven classifications.

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A typology is a theory driven approach to organizational structure and refers to conceptually derived interrelated sets of ideal types (Doty and Glick 1994). This implies that organizations may not be a distinct ideal type, but the closer to the ideal type the better organizations will perform (Snow and Hrebiniak 1980). To be a theory driven typology, it must meet three specific criteria. First, constructs must be identified. Second, relationships among these constructs must be specified, and lastly, these relationships must be falsifiable or testable (Doty and Glick 1994). A typology can be constructed in two different ways: theoretical or empirical specification. Theoretical specification is done by developing ideal profiles that represent ideal types of organizations (Miles, Snow, Meyer and Coleman 1978; Mintzberg 1979; Mintzberg 1983; Segev 1989). This has been used extensively in the literature with the use of statements of the ideal types (Gupta, Karimi and Somers 1997; Slater and Olson 2001). The alternative approach is possible if two of the ideal types are endpoints of a continuum. This type of specification may be empirically derived based on a linear scale (Doty, Glick and Huber 1993). The use of empirical specification has been used successfully in the literature (Govindarajan 1988), but can be used only when a linear scale is possible. This type of specification, if plausible, can be very effective because of its implication for statistical analysis (Doty 1990).

To carry out a specific strategy, based on an organizational structure, all aspects of an organization must be working as one cohesive unit, which can be measured through strategic alignment. To identify strategic alignment, a company should have a particular structure, which is then dictated throughout the entire business. Most taxonomies and typologies are based on business strategy, as opposed to corporate strategy, since

business units within an organization may differ strategically. Therefore, most of the work on strategic alignment has been done at the business level.

2.3   Business Strategy

Business strategy refers to a single business or an individual business unit of a larger firm. Companies develop certain structures or techniques that enable them to strategically position their organization to attain a competitive advantage. Empirical evidence has shown that a company that chooses a distinct structure or strategy for their organization will outperform their industry (Hambrick 1983).

Business structure or strategies have been proposed and tested that categorize companies based on their strategic focus. Two of the more dominant typologies that have emerged are by Miles and Snow (1978) and Michael E. Porter (1980).

2.3.1   Porter's Generic Strategies

Porter (1985) states that "competitive advantage is at the heart of any strategy, and achieving competitive advantage requires a firm to make a choice – if a firm is to attain a competitive advantage, it must make a choice about the type of competitive advantage it seeks to attain and the scope within which it will attain it". Therefore, Porter (1980) proposed three generic strategic approaches for companies to outperform other organizations in their industry; overall cost leadership, differentiation, and focus. Porter (1980) points out that the optimal type may differ between industries, but companies that lack a strategic focus or try to be "all things to all people" are on a road to strategic mediocrity. This would leave organizations strategically "stuck in the middle" and be

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guaranteed a future of low profitability. Therefore, trade-offs are required in order for a company to position itself in one of the three types, which represents taxonomies as opposed to a typology, based on its mutually exclusive nature. To make trade-offs, a business will normally have to choose a strategy similar one of three generic strategic types.

Differentiation

Differentiation is attained when a company is perceived as unique in its industry along some dimensions that are widely valued by buyers (Porter 1985). A company will select one or more unique characteristics that are perceived as important by buyers and position itself to meet those needs. This type of strategy is hard to replicate, and can lead to a high level of competitive advantage.

Cost Leadership

To achieve cost leadership, a company tries to become the low-cost provider in its industry (Porter 1985). A cost leadership role requires aggressive measures for efficient-scale facilities and supply chain activities, rigorous cost reduction from experience and economies of scale, and cost minimization in areas such as sales, marketing, R&D, etc. (Miller and Friesen 1986a). In a highly evolving industry, this could be detrimental, but in mature markets or commodity type markets, it has a tendency to be an optimal solution.

Focus

The last type is quite different from the first two types. It involves focusing on a particular buyer, product line, or geographical market. Instead of achieving their objectives industry wide, similar to differentiation and cost leadership, a focus strategy is

built around serving a particular market very well. Although this type is not as common, it can be a highly profitable strategy (Porter 1980).

Several researchers have found empirical support for the existence of generic strategies (Hambrick 1983; Miller and Friesen 1986a; Miller and Friesen 1986b). Descriptions and framework for generic strategies have been tested against performance (Vickery and Droge 1993; Ward, Bickford and Leong 1996; Yamin, Gunasekaran and Mavondo 1999; Devaraj, Hollingworth and Schroeder 2001). Empirical specifications have also been used in the industry and have been found to show that companies perform at a higher level when one of the three generic strategies is attained (Dess and Davis 1984). Researchers have proclaimed, by extensive research and analysis, that Porter's (1980) generic strategies are the dominant paradigm in literature (Miller and Dess 1993; Kumar, Subramanian and Strandholm 2002). The framework has also been used to show strategic alignment between business and functional strategies (Kotha and Vadlamani 1995; Slater and Olson 2000).

2.3.2 Miles and Snow (1978) Typology

Miles and Snow (1978) developed a dynamic and comprehensive framework that addresses the alternative ways in which organizations define and approach their product and market domains and construct structures and processes to achieve success in those areas. The premise of their research was based on three pivotal ideas (Miles and Snow 1978).

1. Organizations act to create their environments.
2. Management's strategic choices shape the organization's structure and process.
3. Structure and process constrain strategy.

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Based on patterns of behavior that they witnessed in four different industries, Miles and Snow (1978) noticed four types of organizations that emerged. These strategic types of organizations make up the framework for the Miles and Snow (1978) typology.

Prospectors

Prospectors continually seek to locate and exploit new product and market opportunities. They tend to take more risks in emerging markets. They also will advocate for change and uncertainty to which their competitors must respond. This type of organization values being "first in" in new product market areas even if not highly profitable.

Defenders

Defenders tend to be the polar opposite of prospectors. They attempt to seal off a portion of a market to create a stable set of products and customers. With a narrow focus, they tend to not have to change structure, technology, or methods, but instead put all of their attention on improving existing processes. This type of organization does this by offering higher quality, superior service, lower prices, etc.

Analyzers

Analyzers tend to occupy an intermediate position between prospectors and defenders, by normally being "second in" in a new product market, while protecting a stable set of products. They will minimize risk while maximizing the opportunity for profit. This balanced approach can be highly profitable, but is not easy to achieve (Miles et al. 1978).

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Reactors

Reactors have an inconsistent or unstable strategy on how to address issues, and are organizations that do not fit one of the other three types. This type lacks a set of response mechanisms, which it can consistently put into effect when faced with a changing environment. This produces a constant state of instability. This type is normally not profitable and unless an organization exists in a protected market or monopoly, it cannot continue at this state without changing to one of the three ideal types (Miles et al. 1978).

The Miles and Snow (1978) typology has been used extensively in the field to show that a strategic focus will lead to higher performance (Snow and Hrebiniak 1980; Hambrick 1983). The literature has also used the Miles and Snow (1978) typology for strategic alignment with functional strategies (McDaniel and Kolari 1987; Tavalokian 1989; Sabherwal and Chan 2001; Slater and Olson 2001), with manufacturing strategy the exception. The linear nature of the ideal types, with defenders and prospectors at polar ends and analyzers at a relative midpoint, allows for empirical specification (Doty et al. 1993), which enables a high level of statistical analysis. The Miles and Snow (1978) typology is an effective measure for strategic alignment and allows for a dynamic approach.

2.4   Functional Strategies

Strategic alignment is defined as the extent to which the functional mission (marketing, operations, etc.), objectives, and plans support and are supported by the business mission, objectives, and plans (Hirschheim and Sabherwal 2001). The

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importance of strategic alignment has been well documented (Quinn 1977; Hambrick 1983; Luftman and Brier 1999), and a look at the functional strategic alignment literature is important to this research for two reasons. First, in order to identify a basis for Internet strategic alignment for business-driven approach, support must be built from other areas of literature. Second, the link between functional strategies and the Internet must be established, since the Internet supports different functions of an organization.

There are several functions of an organization that have distinct strategies. In any organization, an independent strategy may be developed in research and development, marketing, engineering, information systems, manufacturing, human resources, etc. (Hill 2000). However, at this point in the development of the Internet, some functions of an organization may have of greater influence on performance. The link between information systems (IS) and the Internet is quite important, due to its relative close relationship. Feeny (2001) conceptualized three key attributes for opportunities in an Internet environment: e-operations, e-marketing, and e-services (See Figure 2.4). The e-services attribute pertains directly to how the Internet can help an organization, but without the other two key attributes, the services would not be useful. "In practice, the e-operations and e-marketing layers require the most urgent attention and provide the most certain rewards. As so many dot-com companies have demonstrated, if you have e-vision but a single marketing approach and a poor fulfillment capability, you don't really have a business" (Feeny 2001). Therefore, two of the functional areas of an organization that are key to Internet deployment are marketing and operations. In a business setting, a well aligned marketing or operations and business strategy has been shown to lead to higher

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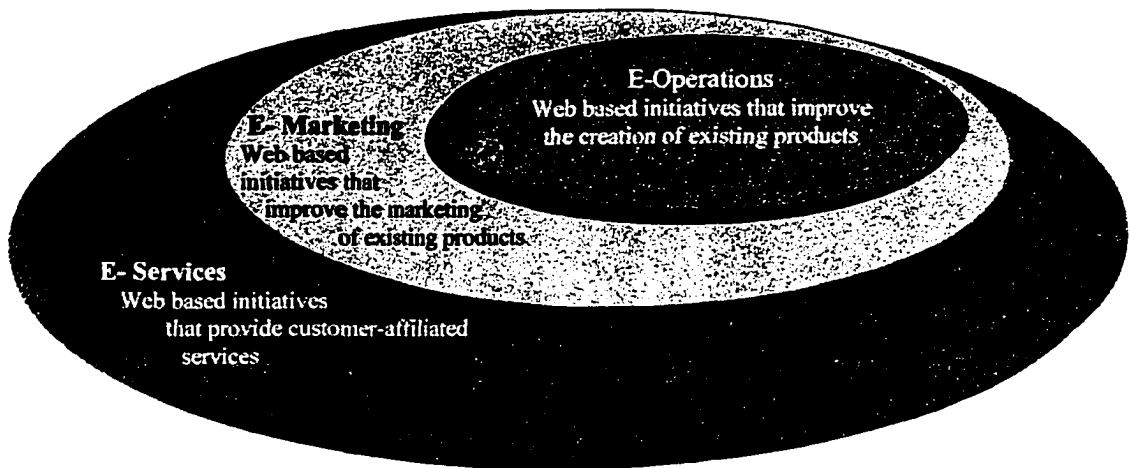
Figure 2.4 E-Opportunity (Feeny 2001)

performance (Walker and Ruekart 1987; Ward et al. 1996; Ward and Duray 2000; Slater and Olson 2001). The following is relevant literature on strategic alignment within the functional strategies, based on the functions that influence the use of the Internet from a strategic standpoint: marketing, operations, and information systems.

2.4.1 Marketing Strategic Alignment

Strategic alignment in the marketing field has long been proposed as highly critical to the success of an organization (James and Hatten 1995; Varadarajan and Jayachandran 1999). The marketing field was one of the first to propose using the Miles and Snow (1978) strategic typology and Porter's (1980) generic strategies as a basis for alignment with the marketing function (Walker and Ruekart 1987). Walker and Ruekart (1987) proposed a framework based the competitive advantage and intensity of product/market development. They also proposed that defenders and prospectors from the Miles and Snow (1978) typology were at polar ends of a continuum, with prospectors at the high end of product/market development and defenders at the low end. Walker and

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Ruekart (1987) also identified two types of defenders, low cost defenders and differentiated defenders. Empirical evidence has supported these propositions (Slater and Olson 2001), by developing strategic taxonomies that when strategically aligned with this hybrid business strategy of Miles and Snow (1978) typology and Porter's (1980) generic strategies will lead to optimal performance (Slater and Olson 2000). Other literature has used a theoretical specification of the Miles and Snow (1978) typology and compared different marketing characteristics, such as personal selling, advertising, public relations, etc. (McDaniel and Kolari 1987; Slater and Olson 2001).

2.4.2 Operations Strategic Alignment

Operations strategy includes both manufacturing and supply chain management issues. Although the literature has not included a distinct investigation of the Miles and Snow (1978) typology and strategic alignment, the need for such research has been well documented (Skinner 1969; Cleveland, Schroeder and Anderson 1989; Ward, Leong and Boyer 1994; Kim and Arnold 1996; Bozarth and McDermott 1998; Ward, McCreery, Ritzman and Sharma 1998; Boyer and McDermott 1999). Porter's (1980) generic strategies have been used extensively in empirical research, with good support for their findings (Dess and Davis 1984; Miller and Friesen 1986a; Miller and Friesen 1986b; Herbert and Deresky 1987; Parker and Helms 1992; Green, Lisboa and Yasin 1993; Miller and Dess 1993; Yamin et al. 1999; Devarj et al. 2001). Hambrick (1983) found general support for the three generic strategies. Dess and Davis (1984) established the construct validity of Porter's (1980) generic strategies and concluded that firms pursuing one of the Generic strategic types exhibited superior performance.

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Other research has established the link between manufacturing and business strategy, as well as performance. Ward, et al. (1998) used competitive priorities of quality, delivery, flexibility, and cost to empirically test the relationship between manufacturing strategy and performance with favorable support. Other research has used similar constructs along with a measure of business strategy and found that a strategically aligned manufacturing and business strategy will lead to better performance (Vickery and Droge 1993; Kotha and Vadlamani 1995). Miller and Roth's (1984) taxonomy used eleven competitive capabilities to develop three clusters of manufacturing strategies: marketeers, caretakers, and innovators. Their paper's use of competitive capabilities, which has since been retested (Kathuria 2000; Frohlich and Dixon 2001), has been influential in other research as a basis for manufacturing strategy, but few taxonomies have been developed, compared to the focus of most of the literature which has included testing the relationship of constructs, such as cost, quality, flexibility, and delivery to performance (Roth and Miller 1992; Vickery and Droge 1993; Ward et al. 1998; Hill 2000).

Supply chain management has a sufficient hole in the research literature pertaining to the use of taxonomies or typologies and performance (Tan 2001). Therefore, the relationship between supply chain and business strategy has not been empirically explored, but supply chain management has been empirically tested in relation to performance (Tan, Kannan, Handfield and Ghosh 1999), and supply chain alignment has been identified as an important aspect of strategy (Lee 2002). Other work in the field has included a look at the integration of suppliers and customers (Frohlich and Westbrook 2001), and purchasing practices and integration (Narasimhan and Das 2001).

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Table 2.4.3 Framework for Aligning Marketing and Manufacturing Strategies

Step	Description	Type of Strategy
1	Elicit marketing's view of the market and identify its strategic initiatives.	Business Strategy
2	Establish marketing's view of the market in terms of customer requirements and verify that the views on customer needs are correct both in terms of perspective and emphasis.	Marketing Strategy
3	Check manufacturing's performance against those customer requirements for which it is solely or partly responsible.	Pre Marketing-Manufacturing Strategic Alignment
4	Compare current and future manufacturing investments and development, with customer requirements for which it is solely or partly responsible.	Manufacturing Strategy
5	Identify the investments and developments necessary to resolve the differences between customer requirements and manufacturing performance.	Post Marketing-Manufacturing Strategic Alignment
		(Berry, Hill and Klompmaker 1999)

Supply chain integration and competitive priorities of manufacturing have led to optimal performance, which are the two key components of operations strategy.

2.4.3 Marketing and Operations Strategic Alignment

Berry, Hill, and Klompmaker (1995) found that firms are unable to debate some key strategic issues. Part of this lack of debate includes the alignment of two key functions of an organization: marketing and manufacturing. They found that marketing and manufacturing (operations) not only need to work, but work well together. For this to occur, they proposed a customer-driven approach to manufacturing. Other research has empirically tested the relationship between marketing and operations with favorable results (Whybark 1994; Weir, Kochhar, LeBeau and Edgely 2000). Berry, Hill, and Klompmaker (1999) proposed a framework and methodology for aligning marketing and manufacturing strategies (See Table 2.4.3). This framework clearly showed the relationship between business, marketing, and manufacturing, which implies that

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marketing directly influences the manufacturing or operations of an organization (Berry, Hill and Klompmaker 1995; Prabhaker 2001).

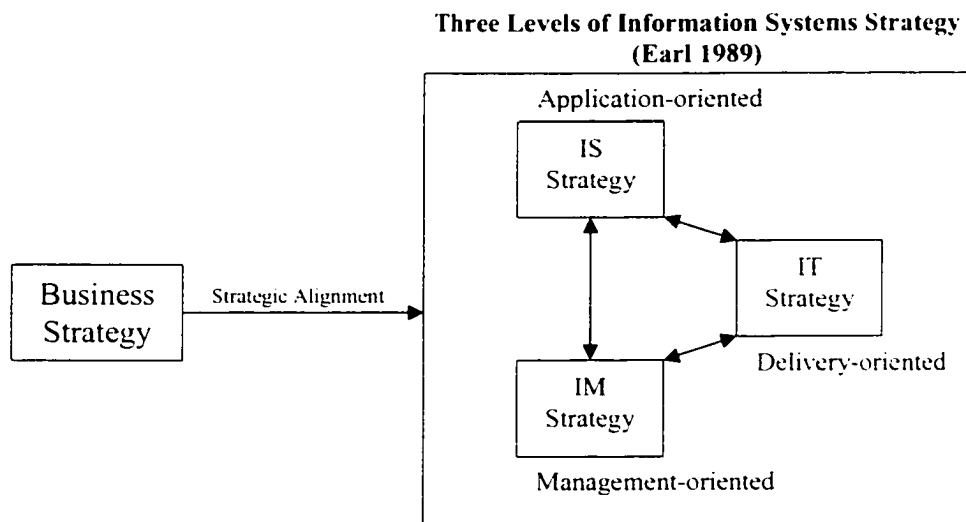### 2.4.4 Information Systems Strategic Alignment

The information systems (IS) management function has distinguished three components of strategy (Earl 1989): information systems (IS) strategy, information management (IM) strategy, and information technology (IT) strategy (See Figure 2.4.4). It is important to make this distinction when looking at information systems and its relationship to the Internet.

IS strategy pertains to what a company should do with technology. It focuses on the business applications or systems of IT and aligning this development with business needs. There has been an extensive amount of research concerning IS strategy (Chan, Huff, Barclay and Copeland 1997; Gupta et al. 1997; Sabherwal and Chan 2001) and its alignment with business strategy(Luftman and Brier 1999; Hirschheim and Sabherwal 2001).

IM strategy, according to Earl (1989), is concerned mainly with the roles and structures for the management of IS. It focuses primarily on the relationships between specialists and users and between the corporate entity and business units. It is also concerned with management controls for IS, management responsibilities, performance measurement and management processes. The link between IM strategy and business strategy has been empirically tested with favorable results (Ragu-Nathan, Ragu-Nathan, Tu and Shi 2001).

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IT strategy is concerned primarily with technological policies. It pertains to the architecture of a system including risk attitudes, vendor policies, and technical standards. IT professionals are generally responsible for developing this strategy, but in many cases top management is involved to ensure the alignment of business strategy with the 'delivery' of information technology. Even though the importance of top management's involvement with IS strategy is critical, there is a lack of literature pertaining to the IT strategy as defined by Earl (1989).

The Internet can be viewed as the delivery vehicle of the information system (IS) of an organization (Earl 1989). The IS literature has recently looked into taxonomies and strategic alignment as a way of improving performance. Venkatraman's (1989) STROIB strategy types has been used for IS alignment (Chan and Huff 1993), which has also been converted into the strategic types of Miles and Snow (1978) and its alignment to IS (Sabherwal and Chan 2001). Both papers supported the proposition that strategic alignment between IS and business strategy will lead to better performance. Other research has used strategic typologies and taxonomies and IS, which have also supported

Three Levels of Information Systems Strategy
(Earl 1989)

Figure 2.4.4 Information Systems Strategy and Business Strategy Linkages

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strategic alignment (Tavalokian 1989; Venkatraman, Henderson and Oldach 1993; Gupta et al. 1997; Teo and Ang 1999; Teo and King 1999). Therefore, if strategic alignment between IS and business leads to better performance, Internet strategy will also have similar results due to its nature of the delivery of information systems or IT strategy.

2.4.5 Other Functional Strategic Alignment

Other functions of an organization that have tested for strategic alignment include human resources (Balkin and L. 1990; Rajagopalan 1997; Gratton, Hope-Hailey, Stiles and Truss 1999; Santos 2000; Soliman and Spooner 2000; Koys 2001) and administrative strategy (Govindarajan and Fisher 1990; Floyd and Woodldridge 1992; Powell 1992). Research has also looked at the link between other functions of an organization, such as IS and manufacturing (Wu and Ellis 2000). Although, other functions such as finance and human resources should be strategically aligned to operations and marketing, this research focuses on the areas of an organization that are deemed most critical to Internet use in an organization (Feeny 2001).

2.5 Internet Strategy

The use of the Internet for business application has only been around since 1994 (Moschovitz et al. 1999). Therefore, the breadth and depth of the literature is not quite up to the levels of other types of strategy (Geyskens, Gielens and Dekimpe 2002). The early research looked at the adoption of using the Internet in a business environment (Teo and Tan 1998; Walczuch, Van Braven and Lungren 2000; Chang and Cheung 2001). The next phase of Internet research included a look at the impact the Internet will have on business applications (Kenney and Curry 1999; Avlonitis and Karayanni 2000) and future

directions of Internet technologies (Shaw 1999; Gatticker, Perlusz and Bohman 2000). This stream of research looks at the marketing aspect of the Internet and lacks an analysis of the impact of the Internet on internal operations and supply chain management (Morgan 1996; Willcocks and Plant 2001), but frameworks were developed to show key aspects of marketing and business in which the Internet will have an impact (Froehlich 1999; Mahadevan 2000; Porra 2000). Wilcocks and Plant (2001) indicated that there are four drivers in using Internet marketing: technology, brand, service, and market. Other research has identified processes, information orientation, and systems integration as key drivers to Internet marketing (Earl and Khan 2001). This early research has led to the need for empirical research on Internet strategy.

Internet strategy has been a highly contested area of research, with a need for empirical research (Amit and Zott 2001). Many have argued that the Internet will and has changed the way organizations should approach strategy (Aldridge, Forcht and Pierson 1997; Hackbarth and Kettinger 2000; Tapscott, Ticoll and Lowy 2000), with technology no longer an afterthought in forming business strategy but rather the cause and driver (Kalakota and Robinson 2000). With the recent failure of many dot-com start-ups and Internet strategies within existing businesses, recent literature has looked at integrating the Internet with current business practices (Venkatraman 2000; Porter 2001; Robert and Racine 2001; Weill and Vitale 2001). Venkatraman (2000) proposed five steps for a dot-com strategy, which is based on current business models (See Table 2.5.1). Although, the order of the steps resembles a technology view of Internet strategy, the need for alignment is addressed. The literature pertaining to integrated strategies has been conceptual and with few overall frameworks that identify items and constructs for

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Table 2.5.1 Five Steps to a Dot-Com Strategy

Steps	Level of Strategy
1. What's your strategic vision for the dot-com operations?	Internet
2. How do you govern the dot-com operations?	Internet
3. How do you allocate key resources for the dot-com operations?	Business
4. What's your operating infrastructure for the dot-com operations?	Business
5. Is your management team aligned for the dot-com agenda?	Business
	(Venkatraman 2000)

an Internet strategy. Shama (2001) developed a framework that includes key elements of an Internet marketing strategy: target customers, product, pricing, promotion, and distribution. Sadowski et al. (2002) indicated three factors of strategic use: communication requirements, intensity of competition, and support and incentives.

Applegate, Austin, and McFarlan (2001) identified six e-business models that encompass the different applications that the Internet offers: focused distributors, portals, producers, infrastructure distributors, infrastructure portals, and infrastructure producers. Although the academic literature develops frameworks for Internet strategy (Bakry and Bakry 2001; Bauer and Colgan 2001; Shama 2001; Sadowski, Maitland and van Dongen 2002), they have not been empirically tested. Also, a measurable construct has not been proposed. Therefore, a need to develop a measure for Internet strategy and empirical research is needed.

Key components of Internet strategy have been conceptualized in the practitioner literature (Gascoyne and Ozcubukco 1997; Brush 2000; Kalakota and Robinson 2000; Robert and Racine 2001; Sawhney and Zabin 2001). Gascoyne and Ozcubukcu (1997) were one of the first to indicate a need to align an Internet strategy with business goals, however their approach leans more toward a technology-driven approach. Brush (2000) takes a more business-driven approach and Robert and Racine (2001) identified that the

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Table 2.5.2 Building Blocks to an Internet Strategy

Area of Concentration	Weill and Vitale (2001) Atomic Models	Robert and Racine (2001) E-nablers	Tapscott, Ticoll, and Lowy (2000) New Models of Wealth Creation
Marketing	• Whole of Enterprise • Direct to Customer	• Build to Order • One to One Marketing • Dynamic Pricing • Market Exchanges	• Agora
Distribution	• Intermediaries	• Producer Direct • Channel Integration	
Efficiency	• Content Provider • Shared Infrastructure	• Aggregators • Product Rebundling • Market Knowledge	• Aggregation • Distributive Network
Customer Relationship	• Full Service Provider • Virtual Community	• Customer Self Service	• Value Chain
Supplier Relationships	• Value Net Integrator	• Syndication • Portals	• Alliances

(Tapscott et al. 2000; Robert and Racine 2001; Weill and Vitale 2001)

first imperative of an Internet strategy is to clarify business strategies. The practitioner literature also includes classifications for Internet strategies (Tapscott et al. 2000; Robert and Racine 2001; Weill and Vitale 2001). This literature indicates Internet models as building blocks for an Internet strategy and a business should choose the building blocks that best suit its organization (See Table 2.5.2). This literature is helpful in determining key constructs of an Internet strategy. Based on the types of atomic models (Weill and Vitale 2001), e-nablers (Robert and Racine 2001), and models of wealth creation (Tapscott et al. 2000), five categories of strategic Internet use become prevalent: marketing, distribution, efficiency, customer relationship, and supplier relationship. These areas of concentration encompass the aspects of an organization that the Internet can strategically have an impact.

The use of the Internet in strategy and business may be in its infancy. But, reviewing this literature, as well as the business and functional strategy literature, a research model is proposed that develops an integrated Internet strategy model.

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Chapter Three

Theoretical Framework for Internet Strategy and Hypothesis Development

In order to develop and test a measure of Internet strategy, a review of literature and interviews with companies in Northwest Ohio and Southern Michigan were conducted. The development of an Internet strategy construct should be based on the overall strategy of an organization, which includes business and functional level strategy. Since strategies may vary between business units within an organization, this research will look at an organization at the business level. This look at business, functional, and Internet strategy incorporated into a theoretical framework indicates a business-driven approach to Internet strategy and its effect on Internet performance (See Figure 3.1).
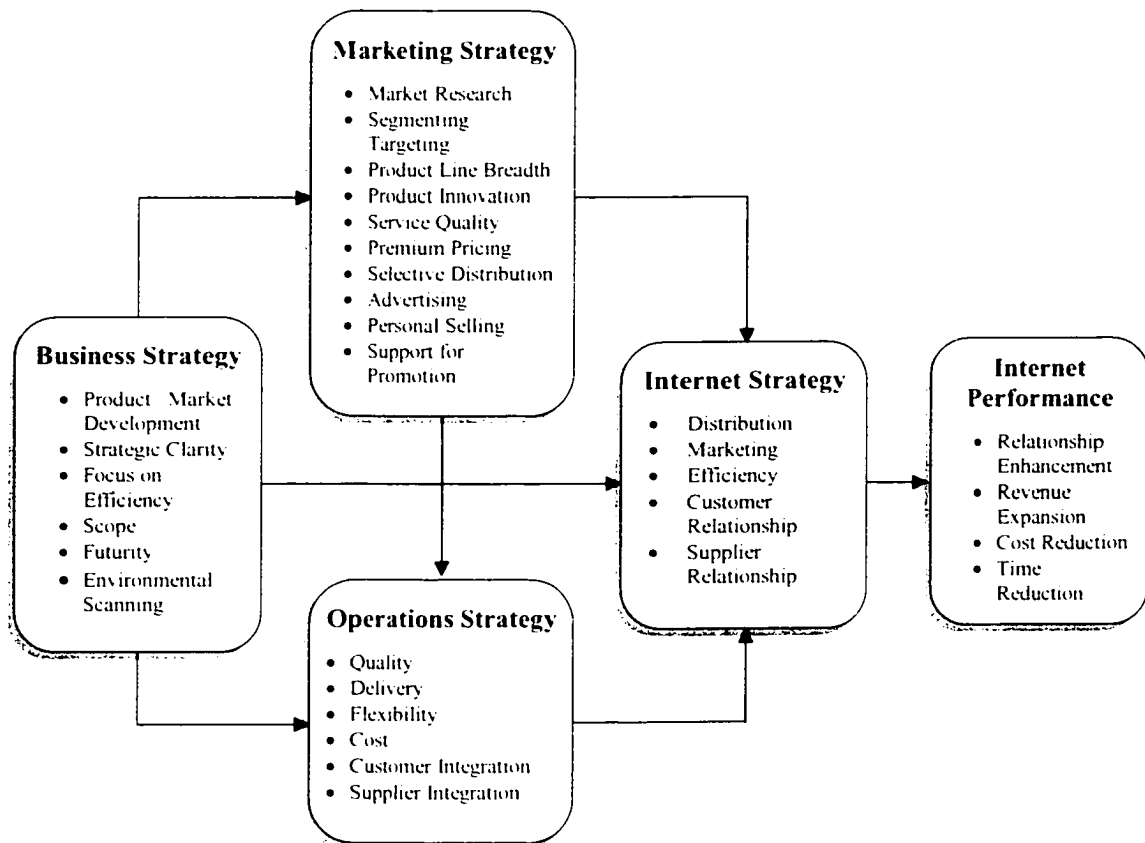
3.1   Theoretical Framework

This framework identifies relationships between different strategies within an organization and how they relate to Internet strategy and Internet performance. It proposes that a strategically aligned Internet strategy will lead to Internet performance, which is comprised of revenue expansion, relationship enhancement, cost reduction and time reduction. Upon conducting a rigorous review of literature, it was concluded that to measure strategic alignment in a comprehensive model, each construct would incorporate

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empirical specification. The empirically specified constructs are based of specific

dimensions of strategy that are incorporated at the business or functional level.

Since significant research has been conducted on strategic alignment in areas that

are presented in Figure 3.1. such as business, marketing, and operations. validated

constructs were adopted from prior research. The other constructs will follow the same

criteria for measurement and were validated prior to statistical analysis.

According to the theoretical framework (Figure 3.1), which was developed for

this research, business strategy determined specific functional and Internet strategies.

The functional strategies that were used were marketing and operations, as proposed by

Figure 3.1: Theoretical Framework for Internet Strategy

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Feeny (2001), also determined Internet strategy. Through Internet strategy, a company can achieve a high level of Internet performance. The following is a description of each construct and its relevance to Internet strategy and strategic alignment.

3.2   Business Strategy Measure

Business strategy has been measured in two different ways in the literature: theoretical and empirical (Doty 1990). Theoretical specification has used descriptions of types and asked respondents to select the description that best represents their organization (Gupta et al. 1997; Slater and Olson 2001). This type of specification has been used to show differences between types and also indicate performance by category. However, the statistical analysis that can be used is limited and it also assumes that all organizations in each category are at the same varying degree. For example, if two organizations choose a description that is similar to their organization, but one is a true classification of the strategic type and the other is only slightly similar, it assumes that both are the same. Hambrick (1983) found that the closer to a true strategic type (prospector, analyzer, or defender), the higher the level of performance. Therefore, a need to identify the classification and the degree of closeness to the true strategic type will improve the validity and reliability of the measures. To avoid this type of problem, the use of empirical specification can be used to show the varying degree of strategic types. With dimensions used to determine constructs for strategy, a high level of business strategy based on product/market development, focus on efficiency, scope, futurity, and environmental scanning will lead to a high level of marketing strategy that consists of market research, segmenting, product line breadth, etc. Research has been

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conducted to test the similarities and differences between both theoretical and empirical specification, and it was found that empirical specification, which included context, structure, and strategy was a better fit (Doty et al. 1993). This research will empirically specify the business strategy construct, with theoretical specification also measured to check for criterion-related validity.

As mentioned before, a linear scale will be used to identify the level of strategy within each area. Literature that has used this approach (Doty 1990), identifies that a strategy has polar ends of orientation with many organizations falling between these ends. For instance, the Miles and Snow typology was used by Doty (1990) and identified prospectors at one polar end of the scale and defenders at the other end of the scale. Analyzers were at the midpoint. Therefore, based on their research, a high value for business strategy will resemble the prospector ideal type, a low value will resemble the defender ideal type, and analyzers will score in the middle of the scale. The items that were used included product/market development, focus on efficiency, strategic clarity, scope, futurity, and environmental scanning. Since the measures have been validated and had positive results, this research used the dimensions proposed and validated by Doty (1990). The following is a description of the dimensions of business strategy.

Product/Market Development is the extent to which an organization focuses on developing new products or services or finding new markets for existing products or services.

Focus on Efficiency is defined as the extent to which the organization attempts to compete in the marketplace by being the most efficient producer in a given market.

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Strategic Clarity assesses the extent to which an organization had a clearly articulated strategy and mission.

Scope is referred to as the extent to which an organization attempts to serve a more diverse set of customers/clients or to offer a broader range of products/services than competitors.

Futurity is the extent to which the organization relies on long range planning and formal forecasting procedures.

Environmental Scanning is defined as the extent to which the organization monitors and collects information from the external environment.

The empirically specified construct for business strategy will be used to show a relationship between itself and marketing strategy, operations strategy, and Internet strategy.

3.3   Marketing Strategy Measure

Marketing strategy has been well documented that when strategically aligned with business strategy, the company will perform better (McDaniel and Kolari 1987; Slater and Olson 2000; Slater and Olson 2001). The construct for marketing strategy that was developed in previous research included items that fall into four categories of marketing: market analysis, product determination, service, and promotion (McDaniel and Kolari 1987; McKee, Varadarajan and Pride 1989; Varadarajan and Clark 1994; Slater and Olson 2001).

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Market analysis is comprised of areas that incorporate research and segmenting of markets. This category of marketing strategy is usually initial analysis for new products or services, such as market research, target markets, or segmenting markets.

Product determination includes aspects of marketing that make-up the types and number of products to produce and the price that should be incorporated. Items that would be included in this type of marketing category are the breadth of product line and the number of new products or innovations to introduce. Another item of product determination would be the pricing scheme, such as low cost or price premium.

Service comprises mostly aspects of marketing that are after the sale. The quality of service includes timeliness, consistency, and ability to solve problems and provide post-sale service. Other aspects of service include the distribution of product.

Advertising is comprised of the ability to reach potential and current customers in a proficient manner. This includes mass marketing with media advertising, direct mail, integrated marketing communications programs, and public relations. Another aspect of advertising is personal selling and support for promotion. Although a more personal approach to marketing, personal selling includes aspects such as highly knowledgeable salespeople, use of internal sales force, and performance measures for salespeople. Advertising has also been measured with support by internal marketing personnel's ability to support and promote products and service.

Slater and Olson (2001) empirically tested the relationship between marketing and business strategy. The items used to identify marketing were compared to the Miles and Snow (1978) typology and include ten marketing competencies. These marketing

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competencies, as prescribed in the four categories of marketing strategy, are the following:

- *Market Analysis*
    1. Market Research
    2. Segmenting / Targeting

- *Product Determination*
    3. Product Line Breadth
    4. Product Innovation
    5. Premium Pricing

- *Service*
    6. Service Quality
    7. Selective Distribution

- *Advertising*
    8. Advertising
    9. Personal Selling
    10. Support for Promotion

Slater and Olson (2001) found that each of these items, when empirically measured had a high measure of marketing strategy it lead to a business strategy that was indicated a high level, therefore:

H1:   Business strategy has a direct positive relationship with marketing strategy.

3.4   Operations Strategy Measure

Operations strategy has been conceptually determined that four elements comprise manufacturing competitive priorities: cost, flexibility, delivery, and quality. This has been empirically tested as it applies to performance (Kim and Arnold 1996; Ward et al. 1998; Ward and Duray 2000; Devarj et al. 2001), with each showing distinct

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characteristics against performance. Ward et al. (1998) defines each of the competitive priorities as the following.

Quality has been portrayed in different functions, such as engineering, marketing and manufacturing, as having different definitions. Eight dimensions of quality include performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality (Garvin 1987). The traditional observance of quality in manufacturing is a conformance to quality.

Cost in manufacturing refers to direct production costs, productivity, capacity utilization, and inventory reduction. Although in many instances, manufacturing does not set pricing or try to compete solely on price.

Delivery in a timely manner (on-time) is the ability to deliver according to a promised schedule. A company may not be able to compete on cost or quality, but reliable delivery, even if the promised date is in the future can serve as a competitive capability. In some cases, reliable delivery is not enough and the speed of delivery is key to winning an order.

Flexibility has been conceptualized with having seven dimensions: product mix, volume, changeover, modification, rerouting, material, and sequencing (Gerwin 1993). The ability to have a flexibility product or process mix can allow a company to compete at high level.

These four elements make up the competitive priorities of manufacturing. However, from a strategic perspective, the Internet can enhance more than the priorities of manufacturing. The opportunity for enhancements in supply chain integration should not be ignored. Therefore a complete operations strategy is made up of the four elements

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of manufacturing competencies, and also supplier and customer integration at the operations level (Frohlich and Westbrook 2001).

Supplier integration involves backward coordination of information technology and the flow of data from customers to suppliers (Trent and Monczka 1998).

Customer integration involves coordinating and integrating the forward physical flow of deliveries and information between suppliers, manufacturing, and customers (Saunders 1997).

If a company places a considerably higher importance on operations, a strategically aligned organization will also have a high level of business strategy. Therefore, it can be hypothesized that:

> *H2: Business strategy has a direct positive relationship with Operations strategy.*

The link between marketing and operations has been known for some time (Berry, Hill and Klompmaker 1999; Weir, Kochhar, LeBeau and Edgeley 2000). Researchers have supported a customer driven manufacturing strategy (Berry, Hill and Klompmaker 1995), which implies that looking at a company's external environment and defining what the customer wants should lead to an operations strategy. Therefore, a high level of marketing should coincide with a high level of operations, and it is also hypothesized that:

> *H3: Marketing strategy has a direct positive relationship with Operations strategy.*

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3.5 Internet Strategy Measure

With literature lacking in empirical evidence on Internet performance and strategic implications, the construct for Internet strategy had to be developed based on other aspects and perceptions. Although, Internet strategy has been conceptually discussed (Amit and Zott 2001; Earl and Khan 2001; Porter 2001; Applegate et al. 2002) and its importance to business strategy is essential for effective use (Kalakota and Robinson 2000), no constructs have been previously developed. Therefore, companies were interviewed and asked about their strategic use of the Internet. With these interviews, as well as recent literature, items were generated to develop a construct for Internet strategy. The areas of concentration that were concluded from this in-depth review include marketing, distribution, efficiency, customer relationship, and supplier relationship (Table 2.5.2).

Marketing in regard to Internet strategy includes the ability to reach potential customers. This includes the ability to reach new geographical locations, customers, markets directly and indirectly through intermediaries. The level of importance that an organization places on its effective use of the Internet on marketing usage is the key to this construct.

Distribution in Internet strategy includes the ability to provide and track products in an efficient and cost effective manner. Distribution can be conducted through intermediaries, retailers, and also the ability to distribute product directly, and the Internet can improve communication the track information in real time to improve the response to their customers.

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Efficiency is the use of the Internet to reduce the cost of doing business. This includes the reduction of time and cost to process orders, administrative costs, materials costs, time and cost to place orders. Efficiency also includes the ability to identify and utilize the most cost efficient materials and services. Therefore, the way that the internal operations of an organization are affected by the use of the Internet is considered in this construct.

Customer Relationship enhancement is the ability to improve relationships or responses to current customers. To improve the relationship with customers, a company may offer complementary products, be the primary point of contact in their industry, communicate directly, and be able to clearly understand their wants and needs. The use of the Internet can also improve the response to a customer's needs, which improves service.

Supplier Relationship pertains to the communication and integration of suppliers in everyday plans and processes. This can occur when a company shares and integrates production plans and information, improves communication, and is able to receive real time information from their suppliers.

Since many of the Internet strategy dimensions relate directly to each functional and business level construct. If the efficiency of an Internet strategy is important to an organization, then it should coincide with the high level of operations strategy (ex. quality, delivery, cost, and flexibility) as well as business strategy (focus on efficiency, etc.) and marketing strategy (service quality, selective distribution, etc.). Therefore, it can be hypothesized that:

H4:   Business strategy has a direct positive relationship with Internet strategy.

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H5: *Marketing strategy has a direct positive relationship with Internet strategy.*

H6: *Operations strategy has a direct positive relationship with Internet strategy.*

This leads us to an integrated model that shows how a strategically aligned business, marketing, operations, and Internet strategy will lead to higher performance (Figure 3.6). Therefore, the performance measures that will be used for this research should be discussed.

3.6   Internet Performance Measures

With the Internet being relatively new in field of business, performance is not an easy item to measure. Financial measures will not be a good indicator of Internet success, due to the fact that most companies have not reached a level where they are reaping financial success based on Internet use. However, very distinct measures can be used that companies can easily relate to and see a difference in a relatively short period of time. Sawhney and Zabin (2001) stated that all Internet initiatives are categorized in four sets of performance measures: revenue expansion, relationship enhancement, cost reduction, and time reduction.

Revenue Expansion

This dimension refers to the increase in revenues based on the use of the Internet. This can be achieved by expanding into new geographical locations, becoming more visible and easily accessible to current and new customers.

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Relationship Enhancement

Relationship enhancement is the improvement of communication and relationships based on the use of the Internet. The use of Internet may make it easier for customers, suppliers, employees, and the community to give feedback and communicate on a more frequent basis.

Cost Reduction

This dimension is a more readily achievable dimension, since a reduction in costs may be instantaneous with the incorporation of a new strategy. The use of the Internet could reduce the transactions costs between customers and suppliers as reduce the cost to communicate. The use of Internet may also reduce internal costs with real time information being readily available throughout an organization.

Time Reduction

Information can travel via the Internet almost immediately to any given destination; therefore an element of time is an aspect of Internet performance. The use of the Internet to reduce the time to place or receive orders as well as reduce the time to process orders is key to this dimension.

At a high level of Internet performance the improvement of relationships and increased sales and market coverage may occur. At a less strategic view of Internet performance, the reduction of time and cost may have immediate results. Therefore, a construct was developed to measure these four areas of performance, which then allows us to hypothesize that:

> *H7:   Internet strategy will have a direct positive relationship on Internet Performance.*
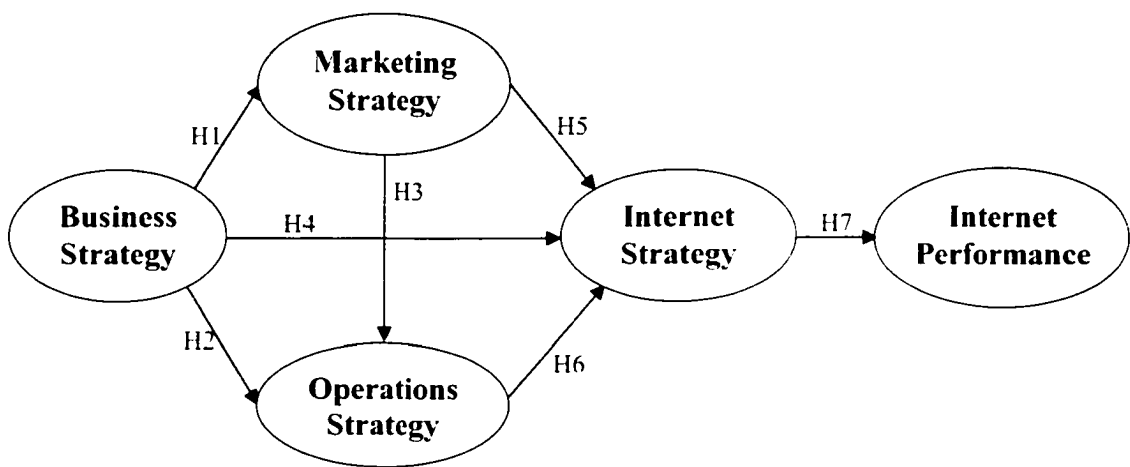
Figure 3.6: Hypothesized Internet Strategy Model

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Chapter Four

Research Methodology

To test the hypotheses derived for the Internet strategy model (Figure 3.5), a large-scale survey approach was used. In order to develop a valid and reliable instrument to use for a survey, certain critical steps were followed for proper development. Since the premise of this research is on the strategic use of the Internet, this study incorporates many principles of Internet use. Therefore the Internet was used to collect data, but prior to utilizing the Internet for data collection; instrument development and validation were conducted.

4.1 Instrument Development

The constructs for this research were developed by a rigorous review of the literature, which included reliable measures that have been used in past research for business, marketing, and operations strategy. For the business strategy construct for this study, the validated tool used by Doty (1990) was used. The marketing strategy construct used the measures from Slater and Olson (2001) who have conducted numerous studies on marketing strategy. Their construct developed 10 items relevant to marketing that were compared directly to the Miles and Snow (1978) typology. For an operations

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strategy construct, measures of the core competencies from manufacturing (quality, flexibility, delivery, and cost), as well as supplier and customer integration were used. A study conducted by Ward et al. (1998) used a validated measure for the four core competencies of manufacturing, and a study, conducted by Frohlich and Westbrook (2001), validated a measure for supplier and customer integration. Thus, the combination of these two studies will allow this research to derive an operations strategy construct.

The constructs for business, marketing, and operations have been validated and proven reliable by previous studies (Doty 1990; Ward et al. 1998; Frohlich and Westbrook 2001; Slater and Olson 2001). However, a construct that was developed specifically for this study was validated for content, construct, criterion-related validity (Kerlinger 1986). Internet strategy and performance are two constructs that were developed specifically for this study. Therefore, they were validated prior to a full scale survey. The original items were developed based on interviews and relevant literature (Robert and Racine 2001; Sawhney and Zabin 2001; Weill and Vitale 2001; Applegate et al. 2002). Interviews with area business executives were conducted to gain valuable insight into what truly matters within their business. CEOs and IT professionals were interviewed from industries such as printing, wholesale, manufacturing, and business services. From these interviews, it helped solidify the items used to develop an Internet strategy and to measure Internet performance.

The Internet strategy and performance constructs were purified and validated prior to a large-scale survey for content validity. The first step after developing items for these constructs was to allow experts in the business and academic field to review them for clarity and content. Three academic professors, a President of an Internet Strategy

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Table 4.1 Initial Number of Items for Each Dimension

Internet Strategy	
Marketing	13
Distribution	5
Efficiency	8
Supplier Relationship	6
Customer Relationship	9
Internet Performance	
Relationship Enhancement	5
Revenue Expansion	5
Cost Reduction	6
Time Reduction	7

Marketing firm and a Vice President of Systems at Ford Motor Company were used to review the original items for purification. Their insight and analysis was incorporated into each item and allowed for modifications, deletions, and additions. The dimensions and initial number of items for each dimension is presented in Table 4.1.

4.2 Scale Development

After the initial review by experts in the field, a Q-sort was conducted for the new constructs, Internet strategy and Internet performance. Since the business, marketing, and operations strategy constructs have been previously validated, they were not included in the Q-sort process. A Q-sort also ensures content validity and clarification of each item and dimension that make up the Internet strategy and performance measures constructs (Moore and Benbasat 1991). The steps used are similar to the techniques set forth by Davis (1986, 1989). This technique asks pairs of respondents to sort items into construct categories and then compares the results for domain coverage (Davis 1986; Davis 1989). The placement of items into these specific categories assesses the convergence and divergence for each construct. If a particular item is consistently placed

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with the related construct or dimension, then it shows convergent validity with the target construct and discriminant validity with other constructs (Moore and Benbasat 1991).

4.3   Sorting Procedures

The Q-sort was setup in three pairs of judges, with each set of two conducted at the same time for three different rounds. Each item was placed on a 3 X 5 index card and given to each judge in random order. The judges then placed each index card in the category that they felt best represented the item. Each category was labeled by the dimension name, such as marketing, distribution, efficiency, etc.

The judges that were used included a Chief Operating Officer of an auto supplier and a Vice President of Operations for the first round. The second round included a General Manager of an automotive distribution plant and a Manager of information systems. Each of the individuals from Round 2 worked for Ford Motor Company. The last round included an Internet Marketing Executive and a Consultant in business systems and productivity.

4.4   Inter-rater Reliabilities

To assess the reliability of the Q-sort procedure, two different measurements were used. The first type of measurement assesses the level of agreement between judges in categorizing the items for each dimension and construct. A measure for inter-judge agreement is Cohen's Kappa (Cohen 1960). This technique compares the number of items that the judges agreed belong in each dimension (f_o) and the frequency of agreements between judges that may occur by chance (f_c) in the following equation.

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$$k = \frac{f_o - f_c}{N - f_c}$$

Although there is not an agreement of the required scores for Cohen's Kappa, it has been assumed that a score of at least 0.65 is acceptable (Jarvenpaa 1989; Moore and Benbasat 1991). Landis and Koch (1977) indicated that a score above 0.75 is considered excellent, a score between 0.40 and 0.75 is considered fair to good, and a score less than 0.40 is considered poor.

The second measure for reliability of classification and validity is an analysis of the items placed in the correct target construct. The agreement between actual placement and theoretical placement is a qualitative indicator of convergent and discriminant validity (Moore and Benbasat 1991). The higher the number of items placed correctly in the target construct, the higher the probability that the inter-judges agreed on placement. Also, a high degree of correctness in placing the items in the correct target construct provides a high degree of construct validity and a high potential for good reliability scores (Moore and Benbasat 1991). This measure also does not have a required score for acceptance, but is considered good if higher than an 80% placement.

4.5   First Round Sorting and Results

For each round of sorting, the method used was similar to the technique described in section 4.3. After each round, the scores for inter-judge and actual were computed for each construct (See Table 4.5.1 and 4.5.2). To calculate the Cohen's Alpha frequencies observed and expected were determined. Observed frequencies (f_o) are counted based on

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Table 4.5.1 Inter-Judge Raw Agreement Score (Round 1)

Internet Strategy Hit Ratio = 75.6% Internet Performance Hit Ratio = 91.3% Overall = 81.2%	Judge 1										
	Marketing	Distribution	Efficiency	Supplier Relationship	Customer Relationship	Relationship Enhancement	Revenue Expansion	Cost Reduction	Time Reduction	Total	% of Accuracy
Marketing	**6** (2.20)				3					9	66.7%
Distribution	4	**5** (1.34)			2					11	45.5%
Efficiency			**8** (1.76)	1						9	88.9%
Supplier Relationship				**5** (0.73)						5	100%
Customer Relationship					**7** (2.05)					7	100%
Total for Internet Strategy	10	5	8	6	12					41	
Relationship Enhancement						**5** (1.22)				5	100%
Revenue Expansion							**5** (0.73)		1	6	83.3%
Cost Reduction								**6** (1.37)	1	7	85.7%
Time Reduction									**5** (0.73)	5	100%
Total for Internet Performance						5	5	6	7	23	

Note:
Values in bold is the frequency of agreement of both judges (f_o)
Values in parenthesis is the frequency of agreement by chance (f_e) (Ex. (9 X 10) 41 = 2.20)

the agreement of placement for items in each dimension between the two judges. Expected frequency is the sum of the values that based on the total of the corresponding Column (C) and Row (R), would be expected by chance. The row i and corresponding column i are used for each dimension.

$$frequency \text{ exp} ected\ (f_e) = \sum \frac{C_i \times R_i}{N}$$

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4.5.2 Actual and Theoretical Raw Agreement Score (Round 1)

Item Placement Scores											
	Actual										
Internet Strategy Hit Ratio = 78.0% Internet Performance Hit Ratio = 94.8% Overall = 85.0%	Marketing	Distribution	Efficiency	Supplier Relationship	Customer Relationship	Relationship Enhancement	Revenue Expansion	Cost Reduction	Time Reduction	Total	% of Accuracy
Marketing	15	4			7					26	57.7%
Distribution		10								10	100%
Efficiency			16							16	100%
Supplier Relationship			1	11						12	91.7%
Customer Relationship	4	2			12					18	66.7%
Total for Internet Strategy	19	16	17	11	19					82	
Relationship Enhancement						10				10	100%
Revenue Expansion							10			10	100%
Cost Reduction							1	11		12	91.7%
Time Reduction								2	12	14	85.7%
Total for Internet Performance						10	13	11	12	46	

Therefore, the calculated Cohen's Kappa for Internet strategy, Internet performance, and combined Overall for Round 1 are the following.

Cohen's Kappa for Internet strategy (Round 1)

$$k = \frac{f_o - f_c}{N - f_c} = \frac{(6 + 5 + 8 + 5 + 7) - (2.20 + 1.34 + 1.76 + 0.73 + 2.05)}{41 - (2.20 + 1.34 + 1.76 + 0.73 + 2.05)} = \frac{31 - 8.07}{41 - 8.07} = .696$$

Cohen's Kappa for Internet performance (Round 1)

$$k = \frac{f_o - f_c}{N - f_c} = \frac{(5 + 5 + 6 + 5) - (1.22 + 0.73 + 1.37 + 0.73)}{23 - (1.22 + 0.73 + 1.37 + 0.73)} = \frac{21 - 4.05}{23 - 4.05} = .894$$

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Cohen's Kappa Overall (Round 1)

$$k = \frac{f_o - f_c}{N - f_c} = \frac{(31+21)-(8.07+4.05)}{(41+23)-(8.07+4.05)} = \frac{52-12.12}{64-12.12} = .769$$

The results from the first round of sorting indicated adequate convergent and discriminant validity, with an overall Cohen's Kappa of 0.769. The Internet performance construct had an inter-judge ratio of 91.3%, an actual/theoretical agreement ratio of 94.8%, and a Cohen's Kappa score of 0.894. These scores indicate high content validity and a high potential for reliable measures. The Internet strategy construct scores were not as high, with an inter-judge ratio of 75.6%, an actual/theoretical agreement score of 78%, and a Cohen's Kappa score of 0.696. The marketing dimension of Internet strategy was one of the reasons for a low Cohen's Kappa score. Many of its items were placed in customer relationship and distribution, which indicates low discriminant validity. When participants were asked for their reasons for placing marketing items outside the expected category, they indicated that the use of the term "current" customers indicated customer relationship and the distribution placement was due to the use of the word "intermediaries" in marketing questions. The same was true for questions from the customer relationship construct, which misplaced items based on the use of the term customer. To adjust for this lack of clarity in marketing and customer relationship, the items in marketing and customer relationship were reviewed and items were modified, added, or deleted.

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Table 4.6.1 Inter-Judge Raw Agreement Score (Round 2)

		Inter-Judge Agreement Scores										
		Judge 1										
Internet Strategy Hit Ratio = 90.2% Internet Performance Hit Ratio = 91.3% Overall = 90.6%		Marketing	Distribution	Efficiency	Supplier Relationship	Customer Relationship	Relationship Enhancement	Revenue Expansion	Cost Reduction	Time Reduction	Total	% of Accuracy
Judge 2	Marketing	**8** (1.95)									8	100%
	Distribution	1	**4** (0.61)								5	80%
	Efficiency			**7** (1.37)		1					8	87.5%
	Supplier Relationship				**6** (0.88)						6	100%
	Customer Relationship	1	1			**12** (4.44)					14	85.7%
	Total for Internet Strategy	10	5	7	6	13					41	
	Relationship Enhancement						**5** (1.22)				5	100%
	Revenue Expansion						**5** (0.85)	1	1		7	71.4%
	Cost Reduction							**6** (1.02)			6	100%
	Time Reduction								**5** (0.73)		5	100%
	Total for Internet Performance						5	5	7	6	23	

Note:
Values in bold is the frequency of agreement of both judges (f₀)
Values in parenthesis is the frequency of agreement by chance (fₑ) (Ex. (8 X 10) ÷ 41 = 1.95)

4.6   Second Round Sorting and Results

The second round was used to reaffirm the Internet performance construct and measure the modifications of the Internet strategy construct. The same technique was used for the second round, except new judges were utilized. The results were improved from the first round with an overall Cohen's Kappa of 0.882. The results for Internet performance was quite similar to the first round with an inter-judge ratio of 91.3%, an

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4.6.2 Actual and Theoretical Raw Agreement Score (Round 2)

Item Placement Scores											
	Actual										
Internet Strategy Hit Ratio = 89.0% Internet Performance Hit Ratio = 93.1% Overall = 90.7%	Marketing	Distribution	Efficiency	Supplier Relationship	Customer Relationship	Relationship Enhancement	Revenue Expansion	Cost Reduction	Time Reduction	Total	% of Accuracy
Marketing	16				6					22	72.7%
Distribution		10								10	100%
Efficiency			15		1					16	93.8%
Supplier Relationship				12						12	100%
Customer Relationship	1	1			20					22	90.9%
Total for Internet Strategy	17	11	15	12	27					82	
Relationship Enhancement						10				10	100%
Revenue Expansion							10			10	100%
Cost Reduction								12		12	100%
Time Reduction						1	1	1	11	14	78.6%
Total for Internet Performance						11	11	13	11	46	

actual/theoretical agreement ratio of 93.1%, and a Cohen's Kappa measure of 0.896 (See Table 4.6.1 and 4.6.2). This reaffirms the convergent and discriminant validity for the Internet performance construct. Therefore, no modifications, deletions, or additions were deemed necessary.

Cohen's Kappa for Internet performance (Round 2)

$$k = \frac{f_o - f_c}{N - f_c} = \frac{(5+5+6+5)-(1.22+0.85+1.02+0.73)}{23-(1.22+0.85+1.02+0.73)} = \frac{21-3.82}{23-3.82} = .896$$

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Cohen's Kappa for Internet strategy (Round 2)

$$k = \frac{f_o - f_e}{N - f_e} = \frac{(8+4+7+6+12) - (1.95+0.61+1.37+0.88+4.44)}{41 - (1.95+0.61+1.37+0.88+4.44)} = \frac{37-9.25}{41-9.25} = .874$$

Cohen's Kappa Overall (Round 2)

$$k = \frac{f_o - f_e}{N - f_e} = \frac{(21+37) - (3.82+9.25)}{(23+41) - (3.82+9.25)} = \frac{58-13.07}{64-13.07} = .882$$

The Internet strategy construct faired better in this round with the inter-judge ratio increasing from 75.6% to 90.2%. The actual/theoretical agreement ratio also increased from 78% in Round 1 to 89% in Round 2. The Cohen's Kappa value increased to a respectable 0.874. Although the scores were vastly improved, there still were a large number of misplacements for marketing items in the customer relationship dimension (6 out 22 were misplaced, see Table 4.6.2). This showed low discriminant validity, and modifications were still needed. The suggestions from the participants of Round 1 were to modify the questions from marketing and include them as part of the customer relationship dimension. With slight modifications to the items, the constructs were ready for a third sorting round.

4.7 Third Round of Sorting and Results

The third round included two different judges to affirm the modified Internet strategy construct and Internet performance. Since the type of profession is different for the two judges for round three than the other two rounds, the Internet performance construct will be tested a third time to assure convergent and discriminant validity. The

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Internet strategy construct is virtually the same, with modifications to only three items in marketing. Therefore, this round will reaffirm the other dimensions of Internet strategy and test for convergent and discriminant validity.

The third round helped reaffirm prior results and affirm the marketing and customer relationship items. The overall Cohen's Kappa score for Round 3 was an impressive 0.899. The scores for Internet performance actually increased slightly from Round 2, with an inter-judge ratio 95.6%, an actual/theoretical agreement ratio of 98.3%, and a Cohen's Kappa value of 0.942 (See Table 4.7.1 and 4.7.2). These results, as well as the results from Round 1 and Round 2, show good qualitative convergent and discriminant validity, and it can be concluded that the Internet performance construct is ready for a large-scale survey.

Cohen's Kappa for Internet performance (Round 3)

$$k = \frac{f_o - f_c}{N - f_c} = \frac{(5+5+6+6)-(1.09+1.30+1.57+1.83)}{23-(1.09+1.30+1.57+1.83)} = \frac{22-5.79}{23-5.79} = .942$$

Cohen's Kappa for Internet strategy (Round 3)

$$k = \frac{f_o - f_c}{N - f_c} = \frac{(9+4+8+6+10)-(2.44+0.61+1.95+0.88+2.93)}{41-(2.44+0.61+1.95+0.88+2.93)} = \frac{37-8.81}{41-8.81} = .876$$

Cohen's Kappa Overall (Round 3)

$$k = \frac{f_o - f_c}{N - f_c} = \frac{(22+37)-(5.79+8.81)}{(23+41)-(5.79+8.81)} = \frac{59-14.6}{64-14.6} = .899$$

The Internet strategy construct's results also improved with an inter-judge ratio of 90.2%, an actual/theoretical agreement ratio of 91.5%, and a Cohen's Kappa of 0.876.

Table 4.7.1 Inter-Judge Raw Agreement Score (Round 3)

		Inter-Judge Agreement Scores										
		Judge 1										
Internet Strategy Hit Ratio = 90.2% — Internet Performance Hit Ratio = 95.6% — Overall = 92.2%		Marketing	Distribution	Efficiency	Supplier Relationship	Customer Relationship	Relationship Enhancement	Revenue Expansion	Cost Reduction	Time Reduction	Total	% of Accuracy
Judge 2	Marketing	**9** (2.44)	1								10	90.0%
	Distribution		**4** (0.61)			1					5	80.0%
	Efficiency	1		**8** (1.95)		1					10	80.0%
	Supplier Relationship				**6** (0.88)						6	100%
	Customer Relationship					**10** (2.93)					10	100%
	Total for Internet Strategy	10	5	8	6	12					41	
	Relationship Enhancement						**5** (1.09)				5	100%
	Revenue Expansion							**5** (1.30)			5	100%
	Cost Reduction								**6** (1.57)		6	100%
	Time Reduction								1	**6** (1.82)	7	85.7%
	Total for Internet Performance						5	6	6	6	23	

Note:
Values in bold is the frequency of agreement of both judges (f_a)
Values in parenthesis is the frequency of agreement by chance (f_c) (Ex. (10 X 10) 41 = 2.44)

These results are considered quite good (Moore and Benbasat 1991) and ready for a large-scale survey. However, a close analysis of the results indicates that items in the customer relationship dimension lacked discriminant validity. Therefore, these items were deleted.

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4.7.2 Actual and Theoretical Raw Agreement Score (Round 3)

	Item Placement Scores										
	Actual										
Internet Strategy Hit Ratio = 91.5% Internet Performance Hit Ratio = 98.3% Overall = 94.4%	Marketing	Distribution	Efficiency	Supplier Relationship	Customer Relationship	Relationship Enhancement	Revenue Expansion	Cost Reduction	Time Reduction	Total	% of Accuracy
Marketing	17		1							18	94.4%
Distribution		10								10	100%
Efficiency			16							16	100%
Supplier Relationship				12						12	91.7%
Customer Relationship	2	3	1		20					26	76.9%
Total for Internet Strategy	19	16	17	11	19					82	
Relationship Enhancement						10				10	100%
Revenue Expansion							10			10	100%
Cost Reduction								14		14	100%
Time Reduction								1	13	14	92.9%
Total for Internet Performance						10	13	11	12	46	

(The left-side vertical label for the row group reads "Theoretical".)

4.8 Conclusion of Pilot Study

The overall results show an incremental improvement between each of the three rounds (See Table 4.8.1). The high Cohen's Kappa values in Round 3 and extremely accurate placement of items into their correct target category show a relatively high convergent and discriminant validity (Moore and Benbasat 1991). With a few deletions the items for Internet strategy and Internet performance are set and ready for a large-scale survey (See Table 4.8.2). After the final purification of items. another review by experts in the field was conducted to ensure content validity. The constructs for business,

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Table 4.8.1: Summary of Q-Sort Results

Dimension or Construct	Round 1		Round 2		Round 3	
	Inter-Judge	Actual/ Theoretical	Inter-Judge	Actual/ Theoretical	Inter-Judge	Actual/ Theoretical
Marketing	66.7%	57.7%	100%	72.7%	90.0%	94.4%
Distribution	45.5%	100%	80%	100%	80.0%	100%
Efficiency	88.9%	100%	87.5%	93.8%	80.0%	100%
Supplier Relationship	100%	91.7%	100%	100%	100%	91.7%
Customer Relationship	100%	66.7%	85.7%	90.9%	100%	76.9%
Internet Strategy	75.6%	78.0%	90.2%	89.0%	90.2%	91.5%
Cohen's Kappa Internet Strategy	0.696		0.874		0.876	
Relationship Enhancement	100%	100%	100%	100%	100%	100%
Revenue Expansion	83.3%	100%	71.4%	100%	100%	100%
Cost Reduction	85.7%	91.7%	100%	100%	100%	100%
Time Reduction	100%	85.7%	100%	78.6%	85.7%	92.9%
Internet Performance	91.3%	94.8%	91.3%	93.1%	95.6%	98.3%
Cohen's Kappa Internet Performance	0.896		0.894		0.947	
Overall (Strategy and Performance)	81.2%	85.0%	90.6%	90.7%	92.2%	94.4%
Cohen's Kappa Overall	0.769		0.882		0.902	

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Table 4.8.2 Final Number of Items for Each Dimension

Internet Strategy	
Marketing	9
Distribution	5
Efficiency	8
Supplier Relationship	6
Customer Relationship	9
Internet Performance	
Relationship Enhancement	5
Revenue Expansion	5
Cost Reduction	6
Time Reduction	7

marketing, and operations have already been validated with previous studies, and with the good results from the Q-sort for the Internet Strategy and Internet performance measure constructs, a large-scale survey will be conducted to measure the relationships between each of these constructs.

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Chapter Five

Survey Administration and Instrument Validation

A large-scale survey was conducted based on the following steps. First, the right respondents for this study were determined. Since the survey covers four diverse areas of an organization: business, operations, marketing, and Internet strategy, finding the right respondents was more difficult. Second, the mode of data collection was determined and to be consistent with the premise of this research, the Internet was used to reach the respondents. Finally, after collecting data, instrument assessment to show validity, reliability, and sampling adequacy was conducted for all constructs. The business strategy, marketing strategy and operations strategy were also validated, since each was used in a different context. The following is a detailed description of data collection and instrument validation and assessment.

5.1 Data Collection Methodology

For this study, selecting the right respondents was carefully determined. The respondent had to have a detailed knowledge of all areas that pertain to the study. In this study an individual must have detailed knowledge of their business, the marketing strategy of their business, the operations strategy of their business, and the development and intentions of their Internet strategies. Based on extensive conversations with

business executives and researchers, it was determined that it was most important for a respondent to be involved with Internet technologies within their business and have a perception of the business, marketing and operations strategies. Therefore, IT management or IT professionals were targeted as respondents.

The mode of data collection was also very important to the success of this study. With response rates being less than desirable in recent studies (Baruch 1999; Colombo 2000), an alternative approach to data collection was used. Since this research pertains to the use of the Internet, email was used as the primary mode of data collection. The Internet allowed us to reach a broad sample size and give the potential respondents more options to filling out the questionnaire. The use of email for survey research offers lower costs, broader distribution, improved accuracy of data, and faster survey turnaround times (Klassen and Jacobs 2001).

To receive a large number of responses, a sample of over 5,000 IT professionals was used for the first mailing. The use of email lists was selected carefully after a review of all possible options. Through continued analysis of email lists and list management services, it was found that opt-in email lists that continually updated their list (at least monthly) were ideal for an adequate response. Other types of email lists are not as reliable and do not notify individuals that they are on their list. An opt-in list only has individuals that have given the list service permission to use their name. Usually these individuals are part of a specific group or industry that have common interests. Therefore, they are part of an "opt-in" email list to receive related emails to their interests. An added feature that many list management services provide is the opportunity for individuals to fill out a small survey of why they did not respond to the

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email. This helps identify key problems with the email for a second or third mailing. An opt-in email also gives respondents an opportunity to remove themselves from the list at any time, which improves the integrity of the sample. The selection of an opt-in email list for this study was targeted to IT professionals, and encompasses a wide range of companies and industries for generalizability.

The initial mailing was sent to 5217 IT professionals in the United States through an opt-in email list management service, which provided basic demographics and the opportunity for potential respondents to give reasons for not responding. This mailing was also emailed to 150 individuals from the University of Toledo Family Business Center, since they were a vital part of the pilot study and a provider of a grant for this research. The email that the respondent received gave a brief description of the study and then provided a link to a website. They were directed to a website to fill out the survey online (www.business.utoledo.edu/strategy). If they were not interested in filling it out online, they were able to print out a copy, fill it out, and then send it to a mailing address (See Appendix A for samples of an email and web pages).

Responses for email were counted in two distinct ways: actual and click-through. Actual responses are typical of research and were responses to the survey that have been submitted. Click-through responses were the number of individuals that read the email and clicked on the given link. This was calculated from a counter on the web page of the survey. If the click-through rate is relatively high and the actual response is low, then changes should be made to the website. If the click-through response is quite low, then the email sent to respondents should be modified. To our knowledge, a click-through response rate has not been calculated for research, therefore a percentage for what is

considered a high or low click-through has not been determined. This research should help in the quickly expanding literature on email survey and email responses.

For the first mailing a click-through response of 258 was received. Of the 258 click-through responses, 97 submitted a completed survey. Although it cannot be determined if the click-through response is typical, the initial submission of surveys or actual response is typical for email (Klassen and Jacobs 2001). After the first mailing, the list management service provided a non-response report. Many of the reasons for individuals not responding to the survey included not enough time and individuals thought the email was a way of collecting their email address. Individuals have become more protective of their email address and assume that responding to an email will result in being hit with unwanted email (Hill and Monk 2000).

A second email was sent to the same respondents. One addition to the second email was the assurance that the study was for academic reasons and in no way would any personal information, including email address, be sold or used outside of this research. The total of the second click-through response was 338, with an additional 119 actual responses. The second mailing had an increase in responses and it may be attributed to the assurance of privacy.

A third mailing was sent to try to increase the response rate. The same email as the second mailing was sent to the same individuals. The third mailing had a click-through response of 93 and an actual response of 49. This drastic decrease in response for the third email indicates an exhaustive response from this sample.

There were a total of 689 click-through respondents and an actual response of 265 individuals. Of the 265 respondents, 8 were deemed unusable due to incomplete

information. This resulted in a usable response of 257 individuals or a 4.8% response rate. Although this may be lower than expected for research, it is considered normal for email surveys (Dillman 2000). For detailed information on the sample see Appendix B.

5.2   Instrument Assessment

With the collection of 257 respondents for this study, the next step was to assess the measurement of each construct for validity, reliability, and sampling adequacy. Validity is the degree to which a construct or variable is an indicator of a theoretical concept (Carmines and Zeller 1979; Kerlinger 1986). The validation of each construct needs to meet three different aspects: content, construct, and criterion-related validation.

Content validity is the extent to which an empirical assessment reflects a specific domain of content (Carmines and Zeller 1979). This type of validity consists in judgment and is normally assessed at the pilot study stage of research (Kerlinger 1986). In this research, content validity was judged by experts in the field to ensure that the Internet strategy and Internet performance met content validity. This was conducted prior to a Q-sort and conducted again after by individuals in the business and academic field.

Construct validity involves interpreting empirical evidence in terms of how it clarifies a construct of a particular measure (Carmines and Zeller 1979). To achieve this type of validation, two types of construct validity are assessed: convergent and discriminant validity. Convergence means that evidence from different sources or items gathered in different ways all indicate the same or similar meaning of the construct. Discriminability means that one can empirically differentiate the construct from other constructs that may be similar. In this research, to assess construct validity, a factor

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analysis at the dimension level and construct was used. This type of factor analysis is confirmatory and is based on the development of theory and prior research. The dimension level factor analysis ensures convergent validity and the construct factor analysis ensures discriminant validity. A confirmatory factor analysis was also conducted with Structural Equation Modeling, since the measurement error is taken into consideration and gives a more true relationship of the dimensions (Hair, Anderson, Tatham and Black 1998).

Criterion-related validity or is the extent to which a test or measurement corresponds to a criterion (Carmines and Zeller 1979). There are two types of criterion-related validity: concurrent and predictive validity. Correlating a measure and the criterion at the same point in time assesses concurrent validity. Predictive validity is concerned with a future criterion. Comparing each empirically derived strategy construct to a theoretically derived strategic profile for a linear relationship assesses concurrent validity. Predictive validity is assessed by correlating a composite score for each construct, based on the hypotheses proposed in this research.

Reliability is the extent to which an experiment, test, or any measuring procedure yields the same results on repeated trials (Carmines and Zeller 1979). There are a number of ways to make this assessment, such as test-retest and split samples, but the most popular involves internal consistency. For this assessment, an initial corrected item-total correlation (CITC) is conducted for each item and a Cronbach's alpha is evaluated for each dimension and construct.

Sampling adequacy is a last assessment that is necessary prior to statistical analysis. This measure assures that an effective sample size is found as it can be assessed at the factor analysis stage with the Kaiser-Meyer-Olkin (KMO) measure.

5.3   Instrument Assessment Methodology

Gerbring and Anderson (1988) outlined a paradigm for assessing unidimensionality. Unidimensionality of a measure ensures that all items correctly converge on the their theoretically specified construct and they do not factor into other external constructs. thus ensuring convergent and discriminant validity. It will also examine the internal consistency of each item, dimension, and construct, which implies a valid measure for reliability. They identified (1) performing corrected item-total correlation, (2) exploratory factor analysis, and then finally (3) confirmatory factor analysis (Gerbring and Anderson 1988). They stated that corrected item-total correlation and exploratory are good to perform prior to confirmatory factor analysis, but that confirmatory factor analysis is the only true test for unidimensionality. The reason is that confirmatory factor analysis makes possible an assessment of the internal and external consistency criteria of unidimensionality implied by a multiple indicator measurement model (Gerbring and Anderson 1988).

To accomplish this, the statistical package SPSS 10.1 for Windows was used to conduct statistical analysis prior to structural equation modeling. (The confirmatory factor analysis is conducted at the next phase of research with AMOS 4.0 structural equation modeling, which is part of Chapter 6.) The instrument items were first purified and assessed for internal consistency by using the corrected item-to-total correlation

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scores of each item. The CITC is an indicator of how well each item contributes to the internal consistency of each dimension (Cronbach 1951). A general rule of thumb is that a CITC score lower than 0.50 for a particular item indicates removal from the dimension. However, the basis for elimination is also based on the effect the removal will have on the overall reliability of a specific dimension. Therefore, removal of an item was based not only a low CITC score, but also when an "alpha if deleted" score is lower than the overall Cronbach alpha coefficient.

The next step in the process for unidimensionality was to perform a confirmatory factor analysis at the dimension level for convergent validity and at the construct level for discriminant validity. The items not removed during the CITC process were combined into their respective dimensions and analyzed in factor analysis, with the principle component analysis method through a correlation matrix. This widely accepted extraction method was also used with VARIMAX rotation, which gives a clear separation of items at the dimension level. Factor loadings greater than 0.50 are considered very significant (Hair et al. 1998), and are used as a cut-off score. Therefore, items that did not load on a given dimension, or if they had significant cross loadings, were dropped from the study. If a dimension factored into two or more dimensions, then theoretical support was sought to justify the split. If no justification was found, the dimension was dropped from the study. Also, if items loaded on different factors, theoretical justification was sought and applied accordingly.

During the factor analysis step of assessment, a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is calculated. A score above 0.90 is considered excellent, in the 0.80's is considered very good, in the 0.70's is considered average, in the 0.60's is

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considered adequate, and in the 0.50's and lower is considered unacceptable. Therefore, a score below 0.60 is reason to drop the dimension from the study. However, a KMO score cannot be attained for a two-item factor.

To assess overall reliability, the Cronbach's alpha coefficient for each dimension and construct was calculated. An alpha score that is greater than 0.70 is considered to be acceptable (Nunnally 1978). Then the last step in instrument assessment was analyzing criterion-related validity. To accomplish this, a composite score was calculated for each construct. The composite score was then analyzed first against its relationship to the theoretical specification of the Miles and Snow (1978) typology, since two of the constructs, business and marketing, were based on this typology, it was deemed appropriate to use for concurrent validation. A Pearson correlation coefficient is calculated for each hypothesis for predictive validity. If all hypotheses show a significant Pearson correlation, then predictive validity is deemed acceptable.

5.4 Large-Scale Results

Each assessment of validity, reliability, and sampling adequacy was conducted for each construct. The following sections show the development of each construct through the steps that have been detailed. The sections cover the five major constructs: Business Strategy, Marketing Strategy, Operations Strategy, Internet Strategy, and Internet Performance. For each construct, the following information will be given:

1. The initial list of the items for each dimension.
2. The reliability analysis results performed by CITC and Cronbach's alpha coefficient.
3. The dimension level factor analysis results.

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4. The construct factor analysis results with the final Cronbach's alpha coefficients.

5. A final list of items for each dimension.

The step-by-step analysis leads us to the assessment of criterion-related validity, which can only be conducted after each construct has been validated and a composite score is derived.

5.4.1 Business Strategy Assessment

Six dimensions and 15 items in the large-scale survey represented the Business Strategy construct, which was originally developed by Doty (1990). The six dimensions were represented by Product/Market Development (PMD) (3 items), Strategic Clarity (SCLR) (3 items), Futurity (FUT) (2 items), Focus on Efficiency (FEFF) (3 items), Environmental Scanning (SCAN) (2 items), and Scope (SCOP) (2 items). For a look at each item refer to Table 5.4.1.1.

Reliability Analysis

A reliability analysis was conducted for each of the dimensions of Business Strategy (See Table 5.4.1.2). The initial alpha score of 0.8839 shows a high level of overall reliability for the construct and all of the items showed that if deleted would reduce the reliability except SCAN1 and SCAN2. The low CITC scores indicate a hindrance to overall reliability and if removed will improve the alpha score. Doty (1990) measured three aspects of an organization: context, structure, and strategy. The strategy construct included Product/Market Development (PMD), Strategic Clarity (SCLR), Futurity (FUT), Focus on Efficiency (FEFF), and Scope (SCOP). Environmental Scanning was a dimension of structure and was included based on its relevance to marketing. However, since the reliability is quite low, and it was not part of the original

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Table 5.4.1.1 Initial Questionnaire Items for Business Strategy – Large-Scale Survey

Item Number	Survey Items
Strategic Clarity (SCLR)	
SCLR1	The importance your organization currently places on a strong sense of organizational mission
SCLR2	The importance your organization currently places on an explicitly stated organizational strategy
SCLR3	The importance your organization currently places on a clear image of the organization's future
Futurity (FUT)	
FUT1	The importance your organization currently places on long range planning
FUT2	The importance your organization currently places on the use of formal forecasting procedures
Product / Market Development (PMD)	
PMD1	The importance your organization currently places on the development of new markets
PMD2	The importance placed on your organization's strategy to develop new products and/or services
PMD3	The importance placed on your organization's strategy to provide unique products and/or services
Focus on Efficiency (FEFF)	
FEFF1	The importance your organization currently places on a strong entrepreneurial orientation
FEFF2	The importance placed on your organization's strategy to provide low cost products and/or services
FEFF3	The importance placed on your organization's strategy to provide products and/or services in a timely manner
Scope (SCOP)	
SCOP1	To what extent do other organizations in your industry serve a more diverse set of customers/clients then your organization
SCOP2	To what extent do other organizations in your industry offer a broader range of products and/or services than your organization
Environmental Scanning (SCAN)	
SCAN1	To what extent does your organization actively collect information about its external environment.
SCAN2	To what extent does your organization extensively monitor the external environment.

strategy construct, the items SCAN1 and SCAN1 were removed, which increased the alpha score to 0.8932. A final CITC analysis shows that the removal of any other item would not improve the overall reliability, therefore supporting that all items have adequate internal consistency (Table 5.4.1.2).

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Table 5.4.1.2 Reliability Analysis for Business Strategy - Large-Scale Survey

Items	Initial CITC	Initial α if Deleted	Final CITC	Final α if Deleted
Product / Market Development				
PMD1	.5718	.8754	.5601	.8869
PMD2	.6392	.8723	.6392	.8828
PMD3	.5347	.8770	.5309	.8881
Strategic Clarity				
SCLR1	.6491	.8723	.6663	.8818
SCLR2	.6947	.8705	.7216	.8794
SCLR3	.7048	.8699	.7178	.8794
Futurity				
FUT1	.6956	.8700	.7175	.8791
FUT2	.4654	.8806	.4994	.8902
Focus on Efficiency				
FEFF1	.5638	.8758	.5558	.8868
FEFF2	.4950	.8794	.4835	.8914
FEFF3	.6109	.8742	.6184	.8842
Environmental Scanning				
SCAN1	.2843	.8876	Item dropped after purification	
SCAN2	.3367	.8853	Item dropped after purification	
Scope				
SCOP 1	.4930	.8787	.5104	.8888
SCOP2	.4933	.8787	.5085	.8890
Initial Alpha Score = .8839 Final Alpha Score = .8932				

Dimension-Level Confirmatory Factor Analysis

To ensure convergent validity, an initial confirmatory factor analysis was conducted for each dimension (See Table 5.4.1.3). The analysis included five dimensions of Business Strategy, since the items for Environmental Scanning (SCAN1 and SCAN2) did not show internal consistency. A single factor emerged for each of the five dimensions, with the lowest factor loading of 0.784. The reliability at the dimension level was considered good, since they were above 0.70 (Nunnally 1978), and the KMO values were adequate for this study.

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Table 5.4.1.3 Dimension Factor Analysis for Strategy - Large-Scale Survey

Items	Factor Loadings	Sampling Measures
Product / Market Development		
PMD1	.844	$\alpha = 0.7514$
PMD2	.823	KMO = .683
PMD3	.784	
Strategic Clarity		
SCLR1	.884	$\alpha = 0.8750$
SCLR2	.918	KMO = .729
SCLR3	.882	
Futurity		
FUT1	.892	$\alpha = 0.7384$
FUT2	.892	KMO = *
Focus on Efficiency		
FEFF1	.793	$\alpha = 0.7088$
FEFF2	.780	KMO = .674
FEFF3	.826	
Scope		
SCOP 1	.952	$\alpha = 0.8960$
SCOP2	.952	KMO = *

Construct-Level Confirmatory Factor Analysis

Discriminant validity can be checked using construct-level factor analysis. The items of the five dimensions of business strategy were entered into one factor analysis and factors were formed based on an Eigen value of 1 (See Table 5.4.1.4). The items were separated into four factors, with strategic clarity and futurity forming one factor. Since the items for Strategic Clarity and Futurity are theoretically similar, a new factor was formed and kept as part of the Business Strategy construct. This may be explained by the use of IT professionals for this study, which may see these two dimensions as quite similar. All factor loadings for each item were above 0.60. The sampling adequacy was good with an overall KMO value of 0.868 and 68% of variance could be explained by the four dimensions. Reliability was also quite good with a Cronbach's alpha

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**Table 5.4.1.4 Construct Level Factor Analysis for Business Strategy –
Large Scale Survey**

Items	F1: Strategic Clarity	F2: Product / Market Development	F3: Focus on Efficiency	F4: Scope
SCLR1	.746			
SCLR2	.807			
SCLR3	.771			
FUT1	.760			
FUT2	.677			
PMD1		.832		
PMD2		.688		
PMD3		.689		
FEFF1			.614	
FEFF2			.812	
FEFF3			.704	
SCOP 1				.895
SCOP2				.909
Eigen Value	6.017	1.772	1.328	1.087
% of Variance Explained	40.114%	11.812%	8.853%	7.250%
Cumulative % of Variance	40.114%	51.926%	60.779%	68.029%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = 0.868 Cronbach alpha (α) = .8932				

coefficient of 0.8932. Therefore, the four dimensions extracted from the items make up

the Business Strategy construct. For a detailed look at the final items, see Table 5.4.1.5.

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Table 5.4.1.5 Final Questionnaire Items for Business Strategy –
Large-Scale Survey

Item Number	Survey Items
Strategic Clarity (SCLR)	
SCLR1	The importance your organization currently places on a strong sense of organizational mission
SCLR2	The importance your organization currently places on an explicitly stated organizational strategy
SCLR3	The importance your organization currently places on a clear image of the organization's future
SCLR4	The importance your organization currently places on long range planning
SCLR5	The importance your organization currently places on the use of formal forecasting procedures
Product / Market Development (PMD)	
PMD1	The importance your organization currently places on the development of new markets
PMD2	The importance placed on your organization's strategy to develop new products and/or services
PMD3	The importance placed on your organization's strategy to provide unique products and/or services
Focus on Efficiency (FEFF)	
FEFF1	The importance your organization currently places on a strong entrepreneurial orientation
FEFF2	The importance placed on your organization's strategy to provide low cost products and/or services
FEFF3	The importance placed on your organization's strategy to provide products and/or services in a timely manner
Scope (SCOP)	
SCOP1	To what extent do other organizations in your industry serve a more diverse set of customers/clients than your organization
SCOP2	To what extent do other organizations in your industry offer a broader range of products and/or services than your organization

5.4.2   Marketing Strategy Assessment

Ten dimensions and 37 items were used for the Marketing Strategy construct,
which was originally developed by Slater and Olson (2001). The ten dimensions were
represented by Market Research (MRES) (3 items), Segmenting (SEG) (4 items), Product
Line Breadth (LBRD) (3 items), Product Innovation (PIN) (3 items), Premium Pricing
(PP) (3 items), Service Quality (SQ) (5 items), Selective Distribution (SDIS) (2 items),

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Table 5.4.2.1 Initial Questionnaire Items for Marketing Strategy – Large-Scale Survey

Item Number	Survey Items
Market Research (MRES)	
MRES1	The importance your organization currently places on systematically learning about customers
MRES2	The importance your organization currently places on analyzing competitor's objectives and actions
MRES3	The importance your organization currently places on systematically collecting information about industry trends
Segmenting (SEG)	
SEG1	The importance your organization currently places on segmenting of market
SEG2	The importance your organization currently places on systematically evaluating which markets to target
SEG3	The importance your organization currently places on focusing marketing activities on specific segments
SEG4	The importance your organization currently places on attracting new customers
Product Line Breadth (LBRD)	
LBRD1	The importance your organization currently places on offering a broad product/service line
LBRD2	The importance your organization currently places on offering a focused product/service line
LBRD3	The importance your organization currently places developing products/services that have a broad market appeal
Product Innovation (PIN)	
PIN1	The importance your organization currently places on developing innovative new products/services
PIN2	The importance your organization currently places on utilizing early adopters for new product/service ideas and feedback
PIN3	The importance your organization currently places on achieving or maintaining short time from product/service concept to introduction
Premium Pricing (PP)	
PP1	The importance your organization currently places on the use of premium pricing.
PP2	The importance your organization currently places on pricing below industry average
PP3	The importance your organization currently places on the use of price promotions and discounts
Service Quality (SQ)	
SQ1	The importance your organization currently places on providing service with a high degree of consistency and accuracy
SQ2	The importance your organization currently places on responding quickly to customers' requests and problems
SQ3	The importance your organization currently places on clearly understand and communicate with customers
SQ4	The importance your organization currently places on providing superior post-sale service quality
SQ5	The importance your organization currently places on developing long-term relationships with key customers

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Table 5.4.2.1 Initial Questionnaire Items for Marketing Strategy –
Large-Scale Survey (Continued)

Selective Distribution (SDIS)	
SDIS1	The importance your organization currently places on selective distribution through best distributors available
SDIS2	The importance your organization currently places on distribution through a distributor that invests in specialized selling effort or unique facilities
Advertising (ADV)	
ADV1	The importance your organization currently places on achieving above industry average number of impressions through advertising
ADV2	The importance your organization currently places on generating high quality advertising materials
ADV3	The importance your organization currently places on the use of media advertising
ADV4	The importance your organization currently places on the use of Web Internet advertising
ADV5	The importance your organization currently places on the use of direct mail advertising
ADV6	The importance your organization currently places on the use of integrated marketing communications programs
ADV7	The importance your organization currently places on the use of public relations
Personal Selling (PSEL)	
PSEL1	The importance your organization currently places on a highly skilled and knowledgeable sales force
PSEL2	The importance your organization currently places on generating sales through an internal sales force
PSEL3	The importance your organization currently places on maintaining high salesperson to sales manager ratio
PSEL4	The importance your organization currently places on evaluating salesperson performance based on achievement of targets or quotas
PSEL5	The importance your organization currently places on evaluating salesperson performance based on accomplishment of prescribed behaviors
Support for Promotion (PROM)	
PROM1	The importance your organization currently places on providing support to customer contact personnel
PROM2	The importance your organization currently places on the use of 'specialist' marketing personnel who direct their efforts to a well-defined set of activities

Advertising (ADV) (7 items), Personal Selling (PSEL) (5 items), and Support for Promotion (PROM) (2 items). Table 5.4.2.1 shows the items for each dimension.

Reliability Analysis

CITC scores and an overall alpha score were calculated in order to conduct a reliability analysis for each of the dimensions of Marketing Strategy (See Table 5.4.2.2). The initial overall alpha score of 0.9532 shows an extremely high level of overall

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Table 5.4.2.2 Reliability Analysis for Marketing Strategy - Large-Scale Survey

Items	Initial CITC	Initial α if Deleted	Final CITC	Final α if Deleted
Market Research				
MRES1	.6571	.9515	.6617	.9516
MRES2	.6932	.9512	.6971	.9513
MRES3	.6953	.9512	.7042	.9513
Segmenting				
SEG1	.7071	.9511	.7122	.9512
SEG2	.6974	.9511	.7010	.9513
SEG3	.6700	.9514	.6705	.9515
SEG4	.6061	.9518	.6035	.9520
Product Line Breadth				
LBRD1	.4741	.9526	.4653	.9529
LBRD2	.5287	.9523	.5267	.9525
LBRD3	.5894	.9519	.5773	.9522
Product Innovation				
PIN1	.6103	.9518	.6610	.9520
PIN2	.6692	.9514	.6714	.9515
PIN3	.6224	.9517	.6184	.9519
Premium Pricing				
PP1	.4648	.9527	.4624	.9530
PP2	.3882	.9534	Item dropped after purification	
PP3	.5122	.9525	.4935	.9529
Service Quality				
SQ1	.4189	.9529	.4211	.9531
SQ2	.4841	.9526	.4841	.9528
SQ3	.4702	.9527	.4702	.9528
SQ4	.5724	.9521	.5710	.9522
SQ5	.4698	.9526	.4677	.9528
Selective Distribution				
SDIS1	.5166	.9524	.5161	.9526
SDIS2	.5752	.9520	.5745	.9522
Advertising				
ADV1	.6320	.9516	.6289	.9518
ADV2	.6572	.9514	.6584	.9516
ADV3	.5050	.9525	.5050	.9527
ADV4	.5363	.9523	.5360	.9525
ADV5	.5589	.9521	.5644	.9523
ADV6	.6421	.9515	.6461	.9517
ADV7	.5410	.9522	.5433	.9524
Personal Selling				
PSEL1	.6053	.9518	.6115	.9519
PSEL2	.6089	.9518	.6084	.9520
PSEL3	.6703	.9513	.6678	.9515
PSEL4	.6282	.9516	.6323	.9518
PSEL5	.6291	.9516	.6302	.9518
Support for Promotion				
PROM1	.6169	.9517	.6195	.9519
PROM2	.6240	.9517	.6285	.9518
Initial Alpha Score = .9532				
Final Alpha Score = .9534				

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Table 5.4.2.3 Dimension Level Factor Analysis for Marketing Strategy – Large-Scale Survey

Items	Factor Loadings	Sampling Measures
Market Research		
MRES1	.838	α = 0.8483
MRES2	.878	KMO = .701
MRES3	.913	
Segmenting		
SEG1	.846	α = 0.8675
SEG2	.906	KMO = .808
SEG3	.883	
SEG4	.742	
Product Line Breadth		
LBRD1	.797	α = 0.6687
LBRD2	.637	KMO = .561
LBRD3	.879	
Product Innovation		
PIN1	.833	α = 0.8150
PIN2	.881	KMO = .706
PIN3	.848	
Premium Pricing		
PP1	.720	α = 0.6085
PP3	.720	KMO = .500
Service Quality		
SQ1	.878	
SQ2	.878	α = 0.9043
SQ3	.898	KMO = .864
SQ4	.871	
SQ5	.737	
Selective Distribution		
SDIS1	.941	α = 0.8705
SDIS2	.941	KMO = .500
Advertising		
ADV1	.843	
ADV2	.827	
ADV3	.800	α = 0.8705
ADV4	.729	KMO = .879
ADV5	.745	
ADV6	.784	
ADV7	.628	
Personal Selling		
PSEL1	.807	
PSEL2	.777	α = 0.8675
PSEL3	.827	KMO = .849
PSEL4	.839	
PSEL5	.794	
Support for Promotion		
PROM1	.859	α = 0.6412
PROM2	.859	KMO = .500

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reliability, and only one item was indicated as lacking the internal consistency required: PP2. PP2 refers to pricing below the industry average and is opposite of PP1, which pertained to premium pricing. The reliability may have faltered due to being the polar opposite of the preceding question. Therefore, PP2 was removed and a final CITC score was calculated for each item, with none of the items showing an "alpha if deleted" score greater than the final alpha score of .9534.

Dimension-Level Confirmatory Factor Analysis

The unidimensionality and convergent validity were assessed with the use of an factor analysis for each dimension (See Table 5.4.2.3). The analysis included all ten dimensions of Marketing Strategy, with each indicating a single factor. All factor loadings were above 0.70, with two exceptions: LBRD2 (0.637) and ADV7 (0.628). However, these two factors are well above the cutoff score of 0.50, therefore no items were deleted due to reliability scores. The alpha scores at the dimension level were relatively good, with most above 0.80. Three dimensions, Premium Pricing (0.6085), Product Line Breadth (0.6687) and Support for Promotion (0.6412), had low alpha scores and were removed. This can be attributed to the knowledge needed to answer these questions. Slater and Olson (2001) used marketing experts and this study used IT professionals, which did not have the knowledge to give answer in these three dimensions. The other seven dimensions showed high reliability, which indicate that they are easily clarified for an IT professional. Although the removal of three dimensions can be extreme, with seven dimensions left to measure the Marketing Strategy construct, it can be concluded that the content validity is not affected by their removal. Also all

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Table 5.4.2.4 Construct Level Factor Analysis for Marketing Strategy –
Large Scale Survey (1)

Items	F1: Service Quality	F2: Market Analysis	F3: Advertising	F4: Personal Selling	F5: Product Innovation	F6: Selective Distributi on
SQ1	.879					
SQ2	.854					
SQ3	.872					
SQ4	.780					
SQ5	.673					
MRES1		.586				
MRES2		.670				
MRES3		.689				
SEG1		.722				
SEG2		.814				
SEG3		.747				
SEG4		.532				
ADV1			.776			
ADV2			.780			
ADV3			.810			
ADV4			.732			
ADV5			.539			
ADV6			.534			
ADV7			.461			
PSEL1				.758		
PSEL2				.756		
PSEL3				.668		
PSEL4				.725		
PSEL5				.649		
PIN1					.670	
PIN2					.700	
PIN3					.760	
SDIS1						.837
SDIS2						.801
Eigen Value	11.774	3.311	1.682	1.446	1.324	1.027
% of Variance Explained	40.601%	11.419%	5.801%	4.985%	4.567%	3.541%
Cumulative % of Variance	40.601%	52.019%	57.821%	62.805%	67.372%	70.913%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = 0.904 Cronbach alpha (α) = .9449						

four of the main categories are still measured in this construct: Market Analysis, Product

Determination, Service, and Advertising.

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Construct-Level Confirmatory Factor Analysis

Seven dimensions were entered into a construct-level exploratory factor analysis to check for discriminant validity (See Table 5.4.2.4). Of the 29 items that were part of the factor analysis, only one had a factor loading less than 0.50 (ADV7). Therefore, only one item was removed for purification. Market research and segmenting formed one dimension, which, according to the literature, comprised a theoretical market analysis construct. Therefore, the newly formed dimension is kept and labeled Market Analysis.

A second factor analysis was performed without ADV7 and the results showed the six newly formed dimensions with none of the factor loading less than 0.50 (See Table 5.4.2.5). The sampling adequacy was quite high; with a KMO value of 0.903 and 72% of the variance for Marketing Strategy can be explained by the six dimensions. Also, a final look at the reliability shows a high value of Cronbach's alpha value of 0.9450. Therefore, this construct shows high reliability and validity with the given six dimensions. For a detailed look at the final items, please refer to Table 5.4.2.6.

Table 5.4.2.5 Construct Level Factor Analysis for Marketing Strategy – Large Scale Survey (2)

Items	F1: Market Analysis	F2: Service Quality	F3: Advertising	F4: Personal Selling	F5: Product Innovation	F6: Selective Distribution
MRES1	.606					
MRES2	.680					
MRES3	.711					
SEG1	.734					
SEG2	.814					
SEG3	.740					
SEG4	.513					
SQ1		.879				
SQ2		.852				
SQ3		.871				
SQ4		.781				
SQ5		.675				
ADV1			.775			
ADV2			.780			
ADV3			.799			
ADV4			.750			
ADV5			.507			
ADV6			.502			
PSEL1				.759		
PSEL2				.756		
PSEL3				.680		
PSEL4				.736		
PSEL5				.653		
PIN1					.691	
PIN2					.703	
PIN3					.760	
SDIS1						.836
SDIS2						.800
Eigen Value	11.455	3.294	1.682	1.433	1.324	1.021
% of Variance Explained	40.912%	11.764%	6.008%	5.116%	4.729%	3.646%
Cumulative % of Variance	40.912%	52.676%	58.684%	63.801%	68.530%	72.176%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = 0.903 Cronbach alpha (α) = .9450						

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Table 5.4.2.6 Final Questionnaire Items for Marketing Strategy –
Large-Scale Survey

Item Number	Survey Items
	Market Analysis (MKTA)
MKTA1	The importance your organization currently places on systematically learning about customers
MKTA2	The importance your organization currently places on analyzing competitor's objectives and actions
MKTA3	The importance your organization currently places on systematically collecting information about industry trends
MKTA4	The importance your organization currently places on segmenting of market
MKTA5	The importance your organization currently places on systematically evaluating which markets to target
MKTA6	The importance your organization currently places on focusing marketing activities on specific segments
MKTA7	The importance your organization currently places on attracting new customers
	Product Innovation (PIN)
PIN1	The importance your organization currently places on developing innovative new products/services
PIN2	The importance your organization currently places on utilizing early adopters for new product/service ideas and feedback
PIN3	The importance your organization currently places on achieving or maintaining short time from product/service concept to introduction
	Service Quality (SQ)
SQ1	The importance your organization currently places on providing service with a high degree of consistency and accuracy
SQ2	The importance your organization currently places on responding quickly to customers' requests and problems
SQ3	The importance your organization currently places on clearly understand and communicate with customers
SQ4	The importance your organization currently places on providing superior post-sale service quality
SQ5	The importance your organization currently places on developing long-term relationships with key customers
	Selective Distribution (SDIS)
SDIS1	The importance your organization currently places on selective distribution through best distributors available
SDIS2	The importance your organization currently places on distribution through a distributor that invests in specialized selling effort or unique facilities
	Advertising (ADV)
ADV1	The importance your organization currently places on achieving above industry average number of impressions through advertising
ADV2	The importance your organization currently places on generating high quality advertising materials
ADV3	The importance your organization currently places on the use of media advertising
ADV4	The importance your organization currently places on the use of Web Internet advertising
ADV5	The importance your organization currently places on the use of direct mail advertising
ADV6	The importance your organization currently places on the use of integrated marketing communications programs

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Table 5.4.2.6 Final Questionnaire Items for Marketing Strategy –
Large-Scale Survey (Continued)

	Personal Selling (PSEL)
PSEL1	The importance your organization currently places on a highly skilled and knowledgeable sales force
PSEL2	The importance your organization currently places on generating sales through an internal sales force
PSEL3	The importance your organization currently places on maintaining high salesperson to sales manager ratio
PSEL4	The importance your organization currently places on evaluating salesperson performance based on achievement of targets or quotas
PSEL5	The importance your organization currently places on evaluating salesperson performance based on accomplishment of prescribed behaviors

5.4.3   Operations Strategy Assessment

Operations Strategy comprised two separate constructs: Manufacturing Strategy and Supply Chain Integration. Manufacturing Strategy, which was originally developed by Ward et al. (1998), was represented by four dimensions: Quality (Q) (6 items), Delivery (D) (5 items), Flexibility (F) (5 items), and Cost (C) (6 items). Supply Chain Integration, which was developed by Frohlich and Westbrook (2001), was comprised of Customer Integration (CIN) (8 items) and Supplier Integration (SIN) (8 items). Each construct was assessed separately and was aggregated in after construct-level exploratory factor analysis. Tables 5.4.3.1 and 5.4.3.2 show the items for each dimension.

Reliability Analysis

CITC scores and an overall alpha score for each construct were calculated to assess the reliability of each dimension of Manufacturing Strategy (See Table 5.4.3.3) and Supply Chain Integration (See Table 5.4.3.4). The initial alpha score for Manufacturing Strategy was 0.9445, which indicates high overall reliability. Of the items for each dimension, one was found to lack the internal consistency needed to be included

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Table 5.4.3.1 Initial Questionnaire Items for Manufacturing Strategy – Large-Scale Survey

Item Number	Survey Items
	Quality (Q)
Q1	Importance that is attached to having high performance of product in your primary product line
Q2	Importance that is attached to having high durability (long life) of product in your primary product line
Q3	Importance that is attached to having high reliability of product in your primary product line
Q4	Importance that is attached to having easy (cost and time) servicing of product in your primary product line
Q5	Importance that is attached to having promptness in solving customer complaints in your primary product line
Q6	The importance given to conformance of final product to design specification in manufacturing
	Flexibility (F)
F1	Importance that is attached to having a large number of product features in your primary product line
F2	Importance that is attached to having a large number of product options in your primary product line
F3	The importance given to ability to introduce new products into production quickly in manufacturing
F4	The importance given to ability to adjust capacity rapidly within a short time period in manufacturing
F5	The importance given to ability to make design changes in the product after production has started in manufacturing
	Cost (C)
C1	The importance given to lowering production cost in manufacturing
C2	The importance given to increasing labor productivity in manufacturing
C3	The importance given to optimizing capacity utilization in manufacturing
C4	The importance given to reducing inventory in manufacturing
C5	The importance given to each criterion in evaluating a production managers' performance by optimization in cost
C6	The importance given to each criterion in evaluating a production managers' performance by optimization in productivity
	Delivery (D)
D1	Importance that is attached to having short delivery (lead) time in your primary product line
D2	Importance that is attached to having delivery on due date (ship on time) in your primary product line
D3	The importance given to reducing production lead-time in manufacturing
D4	The importance given to each criterion in evaluating a production managers' performance by optimization in on-time delivery
D5	The importance given to each criterion in evaluating a production managers' performance by optimization in production cycle time

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**Table 5.4.3.2 Initial Questionnaire Items for Supply Chain Integration –
Large-Scale Survey**

Item Number	Survey Items
	Supplier Integration (SIN)
SIN1	To what extent do you organizationally integrate activities with your supplier to access to planning systems
SIN2	To what extent do you organizationally integrate activities with your supplier to sharing production plans
SIN3	To what extent do you organizationally integrate activities with your supplier to joint use of EDI/web networks
SIN4	To what extent do you organizationally integrate activities with your supplier to sharing the knowledge of inventory mix levels
SIN5	To what extent do you organizationally integrate activities with your supplier to customize packaging
SIN6	To what extent do you organizationally integrate activities with your supplier to high delivery frequencies
SIN7	To what extent do you organizationally integrate activities with your supplier to sharing use of logistics with suppliers equipment/containers
SIN8	To what extent do you organizationally integrate activities with your supplier to sharing use of third-party logistical services with suppliers
	Customer Integration (CIN)
CIN1	To what extent do you organizationally integrate activities with your customers to access to planning systems
CIN2	To what extent do you organizationally integrate activities with your customers to sharing production plans
CIN3	To what extent do you organizationally integrate activities with your customers to joint use of EDI/web networks
CIN4	To what extent do you organizationally integrate activities with your customers to sharing the knowledge of inventory mix levels
CIN5	To what extent do you organizationally integrate activities with your customers to customize packaging
CIN6	To what extent do you organizationally integrate activities with your customers to high delivery frequencies
CIN7	To what extent do you organizationally integrate activities with your customers to sharing use of logistics equipment/containers
CIN8	To what extent do you organizationally integrate activities with your customers to sharing use of third-party logistical services

in this research: C4 (CITC score of 0.4414). Therefore. C4 was removed and a final

alpha score of 0.9453 was attained.

The Supply Chain Integration construct had an overall alpha score of 0.9408.

None of the items had low CITC scores or had an "alpha if deleted" score greater than the

overall alpha score. so no items were removed from this construct.

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Table 5.4.3.3 Reliability Analysis for Manufacturing Strategy - Large-Scale Survey

Items	Initial CITC	Initial α if Deleted	Final CITC	Final α if Deleted
Quality				
Q1	.6508	.9419	.6646	.9426
Q2	.6194	.9423	.6229	.9432
Q3	.6077	.9425	.6244	.9431
Q4	.6427	.9420	.6461	.9428
Q5	.4850	.9440	.4908	.9449
Q6	.6722	.9415	.6736	.9424
Delivery				
D1	.6708	.9416	.6781	.9423
D2	.6642	.9416	.6654	.9425
D3	.6675	.9416	.6486	.9428
D4	.7419	.9406	.7463	.9413
D5	.6729	.9415	.6799	.9423
Flexibility				
F1	.5611	.9432	.5558	.9443
F1A	.5874	.9428	.5883	.9437
F2	.6791	.9414	.6685	.9425
F3	.7231	.9407	.7196	.9417
F4	.6690	.9416	.6636	.9426
Cost				
C1	.6673	.9416	.6561	.9427
C2	.5388	.9434	.5324	.9444
C3	.7008	.9411	.7028	.9420
C4	.4414	.9453	Item dropped after purification	
C5	.7325	.9408	.7266	.9417
C6	.7488	.9405	.7605	.9411
Initial Alpha Score = .9445 Final Alpha Score = .9453				

Dimension-Level Confirmatory Factor Analysis

Dimension-level factor analysis was conducted for each construct: Manufacturing Strategy (See Table 5.4.3.5) and Supply Chain Integration (See Table 5.4.3.6). For Manufacturing Strategy, a single factor was found for each of the Quality. Delivery. and Cost dimensions. with none of the factor loadings less than 0.620. The Flexibility dimensions indicated two dimensions. which needed theoretical justification. After analyzing the items that factored into two dimensions for flexibility. the first dimension measures the flexibility in products and the second factor measures the process

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Table 5.4.3.4 Reliability Analysis for Supply Chain Integration - Large-Scale Survey

Items	Initial CITC	Alpha if Deleted
Customer Integration		
CIN1	.6505	.9379
CIN2	.6013	.9390
CIN3	.5360	.9404
CIN4	.6738	.9374
CIN5	.5770	.9398
CIN6	.7187	.9363
CIN7	.6743	.9374
CIN8	.6174	.9386
Supplier Integration		
SIN1	.7553	.9354
SIN2	.7493	.9356
SIN3	.6920	.9369
SIN4	.7833	.9348
SIN5	.6935	.9369
SIN6	.7656	.9352
SIN7	.7526	.9355
SIN8	.6993	.9368
Alpha Score = .9408		

flexibility. Kim and Arnold (1996) also found that flexibility was two different factors: process and product. Therefore, each flexibility dimension was kept as part of the manufacturing strategy construct.

Dimension-level factor analysis was also performed for Supply Chain Integration (See Table 5.4.3.6). The items for Supplier Integration and Customer Integration loaded as one factor for each dimension, with none of the factor loadings below 0.685. The sampling adequacy was very good with each higher than 0.80 and their Cronbach's alpha at 0.8879 and 0.9368 respectively.

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Table 5.4.3.5 Dimension Level Factor Analysis for Manufacturing Strategy – Large-Scale Survey

Items	Factor Loadings	Sampling Measures
Quality		
Q1	.888	
Q2	.829	
Q3	.898	α = 0.8629
Q4	.741	KMO = .838
Q5	.620	
Q6	.640	
Delivery		
D1	.815	
D2	.809	
D3	.697	α = 0.8547
D4	.862	KMO = .768
D5	.804	
Flexibility		
F1	.927[a]	
F1A	.917[a]	
F2	.871[b]	α = 0.8326
F3	.879[b]	KMO = .718
F4	.782[b]	
Cost		
C1	.814	
C2	.802	
C3	.865	α = 0.8827
C5	.849	KMO = .822
C6	.799	

[a] = Factor 1 of Flexibility
[b] = Factor 2 of Flexibility

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**Table 5.4.3.6 Dimension Level Factor Analysis for Supply Chain Integration –
Large-Scale Survey**

Items	Factor Loadings	Sampling Measures
Customer Integration		
CIN1	.778	
CIN2	.774	
CIN3	.685	
CIN4	.820	α = 0.8879
CIN5	.667	KMO = .866
CIN6	.786	
CIN7	.781	
CIN8	.701	
Supplier Integration		
SIN1	.847	
SIN2	.835	
SIN3	.783	
SIN4	.859	α = 0.9368
SIN5	.805	KMO = .925
SIN6	.850	
SIN7	.867	
SIN8	.816	

Construct-Level Confirmatory Factor Analysis

For discriminant validity, each of the constructs, Manufacturing Strategy and
Supply Chain Integration, were analyzed separately with factor analysis. The
Manufacturing Strategy construct formed five dimensions, similar to the dimension-level
factor analysis, which included two separate flexibility dimensions (See Table 5.4.3.7).
Some of the items were removed due to cross loadings and loadings on dimensions that
were not theoretically feasible. Since more than one item needed to be removed, a step-
wise approach was used to eliminate the items. This means that one item was removed at
a time and a new factor analysis was examined again. This is an important step, since the
factor loadings may change with the removal of one or more items (Hair et al. 1998).
Due to a step-wise approach, the cross loadings for C2 and C3 were not existent after a

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Table 5.4.3.7 Construct Level Factor Analysis for Manufacturing Strategy – Large-Scale Survey (Initial)

Items	F1	F2	F3	F4	F5
C1	.661				
C2*	.528	.578			
C3*	.540	.592			
F2	.765				
F3	.757				
F4	.719				
D3	.707				
Q6	.731				
C5		.731			
C6		.742			
D4		.691			
D5		.793			
Q1			.801		
Q2			.801		
Q3			.867		
Q4			.487		
D1				.708	
D2				.720	
Q5				.731	
F1					.851
F1A					.833
Eigen Value	10.121	2.094	1.327	1.102	1.007
% of Variance Explained	48.196%	9.973%	6.319%	5.246%	4.296%
Cumulative % of Variance	48.196%	58.169%	64.488%	69.734%	74.030%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .913					

few of the items were removed and they were kept in the final exploratory analysis (See Table 5.4.3.8), and one item, Q5, was kept even though it loaded onto the Delivery dimension. Q5 described the promptness of responding to customers, and since speed is a key aspect of Delivery, the item was kept as part of the Delivery construct. The final construct-level factor analysis indicated five dimensions with no cross loadings and all factors above 0.54. The five dimensions explained a total of 76% of the variance, and the sampling adequacy measure (KMO) was 0.870. A Cronbach's alpha coefficient of 0.9116 showed high reliability.

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Table 5.4.3.8 Construct Level Factor Analysis for Manufacturing Strategy – Large-Scale Survey (Final)

Items	F1: Cost	F2: Quality	F3: Delivery	F4: Product Flexibility	F5: Process Flexibility
C1	.721				
C2	.812				
C3	.771				
C5	.751				
C6	.641				
Q1		.814			
Q2		.813			
Q3		.874			
Q4		.542			
Q5			.705		
D1			.749		
D2			.754		
F3				.758	
F4				.697	
F5				.745	
F1					.865
F2					.856
Eigen Value	8.119	2.965	2.192	1.309	1.037
% of Variance Explained	47.758%	11.560%	6.530%	5.616%	4.937%
Cumulative % of Variance	47.758%	59.318%	65.837%	71.463%	76.400%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .870 Cronbach alpha (α) = .9116					

The Supply Chain Integration construct-level factor analysis formed three dimensions (See Table 5.4.3.9). All 8 items for Supplier Integration loaded into one factor. However, the 8 items for Customer Integration loaded into two dimensions, and after analyzing the differences between questions, it was determined that two factors were theoretically correct. The first dimension covered the integration of projects with customers and the second dimension covered distribution integration. The dimensions had very high factor loadings, with none of the loadings less than 0.673. Sampling adequacy and reliability were very good with a KMO score of 0.867 and Cronbach's alpha score 0.9408. For detailed items for both the constructs, see Table 5.4.3.10 and Table 5.4.3.11.

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**Table 5.4.3.9 Construct Level Factor Analysis for Supply Chain Integration –
Large-Scale Survey**

Items	F1: Supplier Integration	F2: Customer Project Integration	F3: Customer Distribution Integration
SIN1	.783		
SIN2	.755		
SIN3	.735		
SIN4	.752		
SIN5	.724		
SIN6	.732		
SIN7	.772		
SIN8	.726		
CIN1		.786	
CIN2		.748	
CIN3		.730	
CIN4		.721	
CIN5			.689
CIN6			.673
CIN7			.694
CIN8			.680
Eigen Value	8.542	1.637	1.080
% of Variance Explained	53.385%	10.229%	6.752%
Cumulative % of Variance	53.385%	63.614%	70.366%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .867 Cronbach alpha (α) = .9408			

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Table 5.4.3.10 Final Questionnaire Items for Manufacturing Strategy – Large-Scale Survey

Item Number	Survey Items
Quality (Q)	
Q1	Importance that is attached to having high performance of product in your primary product line
Q2	Importance that is attached to having high durability (long life) of product in your primary product line
Q3	Importance that is attached to having high reliability of product in your primary product line
Q4	Importance that is attached to having easy (cost and time) servicing of product in your primary product line
Q5	Importance that is attached to having promptness in solving customer complaints in your primary product line
Delivery (D)	
D1	Importance that is attached to having short delivery (lead) time in your primary product line
D2	Importance that is attached to having delivery on due date (ship on time) in your primary product line
D3	Importance that is attached to having *promptness* in solving customer complaints in your primary product line
Product Flexibility (PDF)	
PDF1	Importance that is attached to having large number of product features in your primary product line
PDF2	Importance that is attached to having large number of product options in your primary product line
Process Flexibility (PCF)	
PCF1	The importance given to ability to introduce new products into production quickly in manufacturing
PCF2	The importance given to ability to adjust capacity rapidly within a short time period in manufacturing
PCF3	The importance given to ability to make design changes in the product after production has started in manufacturing
Cost (C)	
C1	The importance given to lowering production cost in manufacturing
C2	The importance given to increasing labor productivity in manufacturing
C3	The importance given to optimizing capacity utilization in manufacturing
C5	The importance given to each criterion in evaluating a production managers' performance by optimization in cost
C6	The importance given to each criterion in evaluating a production managers' performance by optimization in productivity

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Table 5.4.3.11 Final Questionnaire Items for Supply Chain Integration – Large-Scale Survey

Item Number	Survey Items
Supplier Integration (SIN)	
SIN1	To what extent do you organizationally integrate activities with your supplier to access to planning systems
SIN2	To what extent do you organizationally integrate activities with your supplier to sharing production plans
SIN3	To what extent do you organizationally integrate activities with your supplier to joint use of EDI/web networks
SIN4	To what extent do you organizationally integrate activities with your supplier to sharing the knowledge of inventory mix levels
SIN5	To what extent do you organizationally integrate activities with your supplier to customized packaging
SIN6	To what extent do you organizationally integrate activities with your supplier to high delivery frequencies
SIN7	To what extent do you organizationally integrate activities with your supplier to sharing use of logistics with suppliers equipment containers
SIN8	To what extent do you organizationally integrate activities with your supplier to sharing use of third-party logistical services with suppliers
Customer Project Integration (PCIN)	
PCIN1	To what extent do you organizationally integrate activities with your customers to access to planning systems
PCIN2	To what extent do you organizationally integrate activities with your customers to sharing production plans
PCIN3	To what extent do you organizationally integrate activities with your customers to joint use of EDI web networks
PCIN4	To what extent do you organizationally integrate activities with your customers to sharing the knowledge of inventory mix levels
Customer Distribution Integration (CIN)	
DCIN1	To what extent do you organizationally integrate activities with your customers to customized packaging
DCIN2	To what extent do you organizationally integrate activities with your customers to high delivery frequencies
DCIN3	To what extent do you organizationally integrate activities with your customers to sharing use of logistics equipment containers
DCIN4	To what extent do you organizationally integrate activities with your customers to sharing use of third-party logistical services

5.4.4 Internet Strategy Assessment

Internet Strategy was a construct that was developed specifically for this study. This construct was comprised of 37 items and 5 dimensions, which were Marketing (MARK) (9 items), Distribution (DIS) (5 items), Efficiency (EFF) (8 items), Customer

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Table 5.4.4.1 Initial Questionnaire Items for Internet Strategy –
                 Large-Scale Survey

Item Number	Survey Items
	Marketing (MARK)
MARK1	The importance your organization currently places on the use of Internet to reach new customers directly
MARK2	The importance your organization currently places on the use of Internet to reach new markets directly
MARK3	The importance your organization currently places on the use of Internet to reach new geographical locations directly
MARK4	The importance your organization currently places on the use of Internet to reach new customers through intermediaries
MARK5	The importance your organization currently places on the use of Internet to reach new markets through intermediaries
MARK6	The importance your organization currently places on the use of Internet to reach new geographical locations through intermediaries
MARK7	The importance your organization currently places on the use of Internet to provide information to potential customers
MARK8	The importance your organization currently places on the use of Internet to provide pricing to potential customers
MARK9	The importance your organization currently places on the use of Internet to provide personalized marketing based on demographics of potential customers
	Distribution (DIS)
DIS1	The importance your organization currently places on the use of Internet to improve integration of intermediaries
DIS2	The importance your organization currently places on the use of Internet to improve integration of distributors
DIS3	The importance your organization currently places on the use of Internet to improve integration of retailers
DIS4	The importance your organization currently places on the use of Internet to improve existing distribution channels
DIS5	The importance your organization currently places on the use of Internet to improve tracking of the distribution of your product
	Efficiency (EFF)
EFF1	The importance your organization currently places on the use of Internet to reduce time to process orders
EFF2	The importance your organization currently places on the use of Internet to reduce cost to process orders
EFF3	The importance your organization currently places on the use of Internet to reduce administrative costs
EFF4	The importance your organization currently places on the use of Internet to reduce time to fulfill orders
EFF5	The importance your organization currently places on the use of Internet to reduce time to place orders
EFF6	The importance your organization currently places on the use of Internet to reduce cost in placing orders
EFF7	The importance your organization currently places on the use of Internet to reduce cost of materials
EFF8	The importance your organization currently places on the use of Internet to reduce cost of doing business

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Table 5.4.4.1 Initial Questionnaire Items for Internet Strategy –
Large-Scale Survey (Continued)

	Customer Relationship (CUST)
CUST1	The importance your organization currently places on the use of Internet with customers to improve feedback
CUST2	The importance your organization currently places on the use of Internet with customers to improve relationships
CUST3	The importance your organization currently places on the use of Internet with customers to respond quicker to their needs
CUST4	The importance your organization currently places on the use of Internet with customers to understand their wants and needs
CUST5	The importance your organization currently places on the use of Internet with customers to offer complementary products within your industry
CUST6	The importance your organization currently places on the use of Internet with customers to be the primary point of contact for your industry
CUST7	The importance your organization currently places on the use of Internet with customers to provide expert information
CUST8	The importance your organization currently places on the use of Internet with customers to dynamic pricing based on their current demand
CUST9	The importance your organization currently places on the use of Internet with customers to allow them to track status of orders
	Supplier Relationship (SUPP)
SUPP1	The importance your organization currently places on the use of Internet with suppliers to share information
SUPP2	The importance your organization currently places on the use of Internet with suppliers to integrate planning systems
SUPP3	The importance your organization currently places on the use of Internet with suppliers to share production plans
SUPP4	The importance your organization currently places on the use of Internet with suppliers to integrate designs design plans
SUPP5	The importance your organization currently places on the use of Internet with suppliers to improve communication
SUPP6	The importance your organization currently places on the use of Internet with suppliers to track status of orders

Relationship (CUST) (9 items), and Supplier Relationship (SUPP) (6 items). Table

5.4.4.1 shows the items for each dimension.

Reliability Analysis

To test internal consistency and reliability, CITC scores and an overall alpha

score for each construct were calculated (See Table 5.4.4.2). The overall alpha score for

Internet Strategy was 0.9800, which is an indication of high overall reliability. The CITC

scores were quite high with none of the items scoring lower than 0.6236. This showed

high internal consistency and reliability so this construct may be tested for validity.

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Table 5.4.4.2: Reliability Analysis for Internet Strategy - Large Scale Survey

Items	CITC	Alpha if Deleted
Marketing		
MARK3	.6236	.9799
MARK4	.6679	.9798
MARK5	.8088	.9793
MARK6	.7864	.9794
MARK7	.7835	.9794
MARK8	.7581	.9794
MARK9	.6355	.9798
MARK10	.7101	.9796
MARK13	.7290	.9795
Distribution		
DIS1	.7548	.9795
DIS2	.7168	.9796
DIS3	.6895	.9797
DIS4	.7319	.9795
DIS5	.7846	.9794
Efficiency		
EFF1	.7973	.9793
EFF2	.8247	.9792
EFF3	.7795	.9794
EFF4	.8002	.9793
EFF5	.7924	.9793
EFF6	.8249	.9792
EFF7	.7849	.9793
EFF8	.7389	.9795
Customer Relationship		
CUST1	.6877	.9797
CUST2	.6788	.9797
CUST3	.7186	.9796
CUST4	.7743	.9794
CUST5	.7589	.9794
CUST6	.7167	.9796
CUST7	.7433	.9795
CUST8	.8144	.9793
CUST9	.7592	.9795
Supplier Relationship		
SUPP1	.7394	.9795
SUPP2	.7450	.9795
SUPP3	.7653	.9794
SUPP4	.7353	.9795
SUPP5	.7304	.9795
SUPP6	.7602	.9794
Alpha Score = .9800		

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Table 5.4.4.3 Dimension Level Factor Analysis for Internet Strategy –
Large Scale Survey

Items	Factor Loadings	Sampling Measures
Marketing		
MARK1	.812	
MARK2	.845	
MARK3	.865	
MARK4	.901	α = 0.9435
MARK5	.931	KMO = .898
MARK6	.895	
MARK7	.729	
MARK8	.690	
MARK9	.804	
Distribution		
DIS1	.896	
DIS2	.937	
DIS3	.895	α = 0.9407
DIS4	.896	KMO = .899
DIS5	.875	
Efficiency		
EFF1	.921	
EFF2	.938	
EFF3	.924	
EFF4	.936	α = 0.9731
EFF5	.921	KMO = .920
EFF6	.940	
EFF7	.894	
EFF8	.866	
Supplier Relationship		
SUPP1	.917	
SUPP2	.945	
SUPP3	.941	α = 0.9533
SUPP4	.920	KMO = .897
SUPP5	.864	
SUPP6	.827	
Customer Relationship		
CUST1	.838	
CUST2	.854	
CUST3	.866	
CUST4	.894	
CUST5	.801	α = 0.9452
CUST6	.831	KMO = .910
CUST7	.842	
CUST8	.823	
CUST9	.773	

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Dimension-Level Confirmatory Factor Analysis

A Dimension-level confirmatory factor analysis was conducted for the Internet Strategy construct to show convergent validity (See Table 5.4.4.3). All dimensions formed one single factor, with all of the factor loadings quite high. The lowest factor loading was 0.690. Each dimension had high reliability and sampling adequacy scores, with none of the KMO values less than 0.897 and none of the alpha coefficients less than 0.940. The dimension-level factor analysis showed high convergent validity, reliability, and sampling adequacy.

Construct-Level Confirmatory Factor Analysis

To test for discriminant validity, the five dimensions of Internet strategy were entered into a construct-level confirmatory factor analysis (See Table 5.4.4.4). All of the items loaded correctly onto its theoretical dimension, with CUST9 and MARK9 the only two exceptions. CUST9 loaded on the Distribution dimension, and after reviewing the question, it was determined that the question was based on distribution by asking about the status of orders, but since Internet strategy is a new construct and reliable and valid dimensions are essential for quality data analysis, this item will be eliminated. MARK9 cross-loaded on Customer Relationship and Marketing and was eliminated for this reason. A few items loaded correctly, but did not meet the minimum criteria of a loading of at least 0.50: CUST5, CUST8, and MARK10. Therefore, a total of four items were deleted and a second construct-level factor analysis was then performed (See Table 5.4.4.5).

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Table 5.4.4.4 Construct Level Factor Analysis for Internet Strategy –
Large Scale Survey (Initial)

Items	F1: Efficiency	F2: Customer Relationship	F3: Marketing	F4: Supplier Relationship	F5: Distribution
EFF1	.791				
EFF2	.804				
EFF3	.802				
EFF4	.809				
EFF5	.777				
EFF6	.787				
EFF7	.740				
EFF8	.749				
CUST1		.802			
CUST2		.847			
CUST3		.790			
CUST4		.749			
CUST5		.469			
CUST6		.592			
CUST7		.632			
CUST8		.475			
MARK9		.626	.499		
MARK3			.782		
MARK4			.775		
MARK5			.613		
MARK6			.720		
MARK7			.788		
MARK8			.748		
MARK10			.399		
MARK13			.532		
SUPP1				.803	
SUPP2				.832	
SUPP3				.800	
SUPP4				.800	
SUPP5				.692	
SUPP6				.526	
CUST9					.538
DIS1					.637
DIS2					.782
DIS3					.740
DIS4					.728
DIS5					.687
Eigen Value	21.595	2.549	2.306	1.586	1.201
% of Variance Explained	58.365%	6.889%	6.232%	4.287%	3.245%
% of Variance Cumulative	58.365%	65.253%	71.486%	75.773%	79.018%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .951					

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Table 5.4.4.5 Construct Level Factor Analysis for Internet Strategy – Large Scale Survey (Final)

Items	F1: Efficiency	F2: Marketing	F3: Customer Relationship	F4: Supplier Relationship	F5: Distribution
EFF1	.793				
EFF2	.805				
EFF3	.804				
EFF4	.801				
EFF5	.777				
EFF6	.788				
EFF7	.739				
EFF8	.759				
MARK1		.790			
MARK2		.791			
MARK3		.608			
MARK4		.715			
MARK5		.797			
MARK6		.760			
MARK9		.570			
CUST1			.805		
CUST2			.848		
CUST3			.807		
CUST4			.766		
CUST6			.606		
CUST7			.637		
SUPP1				.803	
SUPP2				.835	
SUPP3				.806	
SUPP4				.807	
SUPP5				.693	
SUPP6				.538	
DIS1					.659
DIS2					.803
DIS3					.763
DIS4					.757
DIS5					.667
Eigen Value	19.425	2.536	2.130	1.538	1.119
% of Variance Explained	58.865%	7.686%	6.454%	4.661%	3.391%
Cumulative % of Variance	58.865%	66.551%	73.004%	77.665%	81.056%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .950 Cronbach alpha (α) = .9780					

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Table 5.4.4.6 Final Questionnaire Items for Internet Strategy –
Large-Scale Survey

Item Number	Survey Items
	Marketing (MARK)
MARK1	The importance your organization currently places on the use of Internet to reach new customers directly
MARK2	The importance your organization currently places on the use of Internet to reach new markets directly
MARK3	The importance your organization currently places on the use of Internet to reach new geographical locations directly
MARK4	The importance your organization currently places on the use of Internet to reach new customers through intermediaries
MARK5	The importance your organization currently places on the use of Internet to reach new markets through intermediaries
MARK6	The importance your organization currently places on the use of Internet to reach new geographical locations through intermediaries
MARK9	The importance your organization currently places on the use of Internet to provide personalized marketing based on demographics of potential customers
	Distribution (DIS)
DIS1	The importance your organization currently places on the use of Internet to improve integration of intermediaries
DIS2	The importance your organization currently places on the use of Internet to improve integration of distributors
DIS3	The importance your organization currently places on the use of Internet to improve integration of retailers
DIS4	The importance your organization currently places on the use of Internet to improve existing distribution channels
DIS5	The importance your organization currently places on the use of Internet to improve tracking of the distribution of your product
	Efficiency (EFF)
EFF1	The importance your organization currently places on the use of Internet to reduce time to process orders
EFF2	The importance your organization currently places on the use of Internet to reduce cost to process orders
EFF3	The importance your organization currently places on the use of Internet to reduce administrative costs
EFF4	The importance your organization currently places on the use of Internet to reduce time to fulfill orders
EFF5	The importance your organization currently places on the use of Internet to reduce time to place orders
EFF6	The importance your organization currently places on the use of Internet to reduce cost in placing orders
EFF7	The importance your organization currently places on the use of Internet to reduce cost of materials
EFF8	The importance your organization currently places on the use of Internet to reduce cost of doing business

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Table 5.4.4.6 Final Questionnaire Items for Internet Strategy –
Large-Scale Survey (Continued)

	Supplier Relationship (SUPP)
SUPP1	The importance your organization currently places on the use of Internet with suppliers to share information
SUPP2	The importance your organization currently places on the use of Internet with suppliers to integrate planning systems
SUPP3	The importance your organization currently places on the use of Internet with suppliers to share production plans
SUPP4	The importance your organization currently places on the use of Internet with suppliers to integrate designs/design plans
SUPP5	The importance your organization currently places on the use of Internet with suppliers to improve communication
SUPP6	The importance your organization currently places on the use of Internet with suppliers to track status of orders
	Customer Relationship (CUST)
CUST1	The importance your organization currently places on the use of Internet with customers to improve feedback
CUST2	The importance your organization currently places on the use of Internet with customers to improve relationships
CUST3	The importance your organization currently places on the use of Internet with customers to respond quicker to their needs
CUST4	The importance your organization currently places on the use of Internet with customers to understand their wants and needs
CUST6	The importance your organization currently places on the use of Internet with customers to be the primary point of contact for your industry
CUST7	The importance your organization currently places on the use of Internet with customers to provide expert information

All items loaded correctly onto its theoretical derived dimension. with all loadings higher than 0.60, with two exceptions: MARK9 = 0.570 and SUPP6 = 0.538. The five dimensions accounted for 81% of the variance explained for Internet strategy and sampling adequacy was very high with a KMO value of 0.950. The reliability was also very high with a Cronbach's alpha coefficient of 0.9780. Therefore, the five dimensions of Internet strategy is comprised of 32 items. For a detailed list of the final items for Internet strategy, please see Table 5.4.4.6.

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Table 5.4.5.1 Initial Questionnaire Items for Internet Performance –
Large-Scale Survey

Item Number	Survey Items
Relationship Enhancement (REL)	
REL1	The Internet has helped our organization improve relationship with customers
REL2	The Internet has helped our organization improve relationship with suppliers
REL3	The Internet has helped our organization improve relationship with employees
REL4	The Internet has helped our organization improve relationship with government agencies
REL5	The Internet has helped our organization improve relationship with community
Revenue Expansion (EXP)	
EXP1	The Internet has helped our organization increase revenues
EXP2	The Internet has helped our organization reach more potential customers
EXP3	The Internet has helped our organization sell a larger variety of products
EXP4	The Internet has helped our organization advertise in new markets
EXP5	The Internet has helped our organization sell in new markets
Time Reduction (TRED)	
TRED1	The Internet has helped our organization reduce the time to produce products/services
TRED2	The Internet has helped our organization reduce the time to respond to customers
TRED3	The Internet has helped our organization reduce the time to receive new orders.
TRED4	The Internet has helped our organization reduce the time to input new orders
TRED5	The Internet has helped our organization reduce the time to place orders
TRED6	The Internet has helped our organization reduce the time to receive payments from customers
TRED7	The Internet has helped our organization reduce the time to send payments to suppliers
Cost Reduction (CRED)	
CRED1	The Internet has help our organization reduce transactions costs with our customers
CRED2	The Internet has help our organization reduce transaction costs with our suppliers
CRED3	The Internet has help our organization reduce operation costs
CRED4	The Internet has help our organization reduce the cost to market products/services
CRED5	The Internet has help our organization reduce the cost to communicate with customers
CRED6	The Internet has help our organization reduce the cost to communicate with suppliers

5.4.5 Internet Performance Assessment

Internet Performance was specifically developed for this research to measure the progress of Internet development. This construct is comprised of 4 dimensions, which were proposed by Sawhney and Zabin (2001), and 23 items. The four dimensions of Internet Performance are Relationship Enhancement (REL) (5 items), Revenue

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Table 5.4.5.2 Reliability Analysis for Performance Measures – Large Scale Survey

Items	Initial CITC	Initial α if Deleted	Final CITC	Final α if Deleted
Relationship Enhancement				
REL1	.6920	.9724	.6961	.9736
REL2	.7513	.9719	.7433	.9732
REL3	.6249	.9729	.6090	.9733
REL4	.4803	.9741	Item dropped after purification	
REL5	.6001	.9729	.5847	.9734
Revenue Expansion				
EXP1	.7855	.9717	.7888	.9728
EXP2	.7819	.9717	.7879	.9728
EXP3	.8115	.9714	.8110	.9726
EXP4	.7958	.9716	.7985	.9727
EXP5	.8041	.9715	.8034	.9727
Cost Reduction				
CRED1	.8420	.9712	.8421	.9723
CRED2	.8282	.9713	.8279	.9725
CRED3	.8407	.9712	.8401	.9723
CRED4	.8393	.9712	.8429	.9723
CRED5	.8164	.9714	.8229	.9725
CRED6	.7881	.9716	.7910	.9728
Time Reduction				
TRED1	.7628	.9719	.7630	.9730
TRED2	.7613	.9719	.7658	.9730
TRED3	.8055	.9715	.8117	.9726
TRED4	.8605	.9710	.8668	.9721
TRED5	.8569	.9710	.8587	.9722
TRED6	.7695	.9718	.7713	.9730
TRED7	.7867	.9717	.7835	.9729
Initial Alpha Score = .9730 Final Alpha Score = .9741				

Expansion (EXP) (5 items), Cost Reduction (CRED) (6 items), and Time Reduction (TRED) (7 items). The items for each dimension are presented in Table 5.4.5.1.

Reliability Analysis

The CITC scores and overall alpha score for the Internet Performance construct were calculated to determine the reliability of the measure (See Table 5.4.5.2). The Cronbach's alpha score of 0.9800 shows high reliability. The CITC scores were quite high with only one item indicating a higher "alpha if deleted" score: REL4. Since this item was based on an aspect of performance that may be unclear (relationship with

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Table 5.4.5.3 Dimension Level Factor Analysis for Performance Measures –
Large Scale Survey

Items	Factor Loadings	Sampling Measures
Relationship Enhancement		
REL1	.759	
REL2	.826	α = 0.8197
REL3	.843	KMO = .788
REL5	.792	
Revenue Expansion		
EXP1	.867	
EXP2	.886	
EXP3	.894	α = 0.9277
EXP4	.886	KMO = .855
EXP5	.874	
Cost Reduction		
CRED1	.885	
CRED2	.875	
CRED3	.920	α = 0.9485
CRED4	.908	KMO = .899
CRED5	.880	
CRED6	.881	
Time Reduction		
TRED1	.820	
TRED2	.788	
TRED3	.913	
TRED4	.929	α = 0.9434
TRED5	.904	KMO = .896
TRED6	.852	
TRED7	.840	

government agencies) it was removed and the alpha score increased to 0.9741, with none of the other items indicating a higher "alpha if deleted" score than the final alpha score. Therefore, Internet Performance showed high reliability and internal consistency with the removal of one item.

Dimension-Level Confirmatory Factor Analysis

The dimension-level confirmatory factor analysis for the Internet Strategy construct showed good convergent validity (See Table 5.4.4.3). All dimensions formed one factor, with none of the factor loadings less than 0.759. Each dimension had good reliability and sampling adequacy scores, with all of the KMO values higher than 0.78

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**Table 5.4.5.4 Construct Level Factor Analysis for Performance Measures -
Large Scale Survey (Initial)**

Items	F1: Time Reduction	F2: Revenue Expansion	F3: Cost Reduction	F4: Relationship Enhancement
TRED1	.562		.555	
TRED3	.725			
TRED4	.703			
TRED5	.679			
TRED6	.798			
TRED7	.735			
EXP3	.544			
EXP5	.540			
EXP1		.613		
EXP2		.806		
EXP4		.661		
TRED2		.656		
REL1		.794	.555	
CRED1	.576		.548	
CRED2	.549		.552	
CRED3			.708	
CRED4			.635	
CRED5		.594	.636	
CRED6			.767	
REL2				.545
REL3				.784
REL5				.762
Eigen Value	14.529	1.781	1.380	1.137
% of Variance Explained	63.172%	6.000%	4.943%	3.210%
Cumulative % of Variance	63.172%	69.172%	74.114%	77.325%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .947				

and all of the alpha coefficients higher than 0.80.   This indicates good convergent

validity. sampling adequacy. and reliability.

Construct-Level Confirmatory Factor Analysis

The four dimensions of Internet Performance were entered into a construct-level

factor analysis (See Table 5.4.5.4) to test discriminant validity. A few of the items for

Cost Reduction had significant cross loadings. This can be attributed to the perceived

relationship between reducing time reduces cost. which indicated the need to eliminate

certain items: CRED1. CRED2. and TRED1. CRED5 loaded on Cost Reduction and

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**Table 5.4.5.5 Construct Level Factor Analysis for Internet Performance Measures -
Large Scale Survey (Final)**

Items	F1: Time Reduction	F2: Revenue Expansion	F3: Cost Reduction	F4: Relationship Enhancement
TRED3	.711			
TRED4	.685			
TRED5	.670			
TRED6	.829			
TRED7	.754			
EXP1		.586		
EXP2		.802		
EXP4		.643		
TRED2		.691		
REL1		.825		
CRED3			.719	
CRED4			.651	
CRED6			.808	
REL2				.552
REL3				.806
REL5				.760
Eigen Value	10.488	2.148	1.349	1.009
% of Variance Explained	61.695%	7.937%	5.762%	3.793%
Cumulative % of Variance	61.695%	69.633%	75.394%	79.187%
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy = .940 Cronbach alpha (α) = .9651				

Revenue Expansion and can be attributed to the use of customers in the item. Therefore
it was dropped. EXP3 and EXP5 both indicated selling new products or in new locations,
but loaded incorrectly on Time Reduction. Since they could not be theoretically justified
as part of Time Reduction, they were dropped due to loading on the incorrect dimension.
TRED2 and REL1 loaded on Revenue Expansion, but by analyzing the questions, they
both indicated a response to customers, which should lead to revenue expansion,
therefore they were deemed suitable for this dimension.

With the removal of these items, a second construct-level factor analysis was
performed (See Table 5.4.5.5). All factors loaded on the correct dimension with all factor

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Table 5.4.5.6 Final Questionnaire Items for Internet Performance – Large-Scale Survey

Item Number	Survey Items
Relationship Enhancement (REL)	
REL2	The Internet has helped our organization improve relationship with suppliers
REL3	The Internet has helped our organization improve relationship with employees
REL5	The Internet has helped our organization improve relationship with community
Revenue Expansion (EXP)	
EXP1	The Internet has helped our organization increase revenues
EXP2	The Internet has helped our organization reach more potential customers
EXP4	The Internet has helped our organization advertise in new markets
EXP5	The Internet has helped our organization improve relationship with customers
EXP6	The Internet has helped our organization reduce the time to respond to customers
Time Reduction (TRED)	
TRED3	The Internet has helped our organization reduce the time to receive new orders.
TRED4	The Internet has helped our organization reduce the time to input new orders
TRED5	The Internet has helped our organization reduce the time to place orders
TRED6	The Internet has helped our organization reduce the time to receive payments from customers
TRED7	The Internet has helped our organization reduce the time to send payments to suppliers
Cost Reduction (CRED)	
CRED3	The Internet has help our organization reduce operation costs
CRED4	The Internet has help our organization reduce the cost to market products/services
CRED6	The Internet has help our organization reduce the cost to communicate with suppliers

loadings higher than 0.60, with REL2 the lone exception at 0.552. The reliability was very high with a Cronbach's alpha value of 0.9651 and sampling adequacy was also high, with a KMO value of 0.940. The variance explained by the dimensions was relatively high at 79%, even with the removal of 6 items from the initial construct-level factor analysis. Therefore, the Internet Performance construct indicates a high level of reliability, sampling adequacy, and convergent and discriminant validity. A final list of the items for Internet Performance is presented in Table 5.4.5.6.

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Table 5.4.6 Summary of Items and Dimensions

Construct-Level Results	Dimension-Level Results				
	Final Dimension	**# of Items**	**Initial Dimension**	**Alpha**	**KMO**
Business Strategy α = 0.8932 KMO = 0.868	Product / Market Development	3	Product / Market Development	0.7514	0.683
	Strategic Clarity[a]	5	Strategic Clarity	0.8750	0.729
			Futurity	0.7384	*
	Focus on Efficiency	3	Focus on Efficiency	0.7088	0.674
	Scope	2	Scope	0.8960	*
Marketing Strategy α = 0.9450 KMO = 0.903	Market Analysis[b]	7	Market Research	0.8483	0.701
			Segmenting	0.8675	0.808
		NA	Product Line Breadth[c]	0.6687	0.561
	Product Innovation	3	Product Innovation	0.8150	0.706
		NA	Premium Pricing[c]	0.6085	*
	Service Quality	5	Service Quality	0.9043	0.864
	Selective Distribution	2	Selective Distribution	0.8705	*
	Advertising	6	Advertising	0.8705	0.879
	Personal Selling	5	Personal Selling	0.8675	0.849
		NA	Support for Promotion[c]	0.6412	*
Manufacturing Strategy α = 0.9116 KMO = 0.870	Cost	5	Cost	0.8879	0.822
	Quality	4	Quality	0.8629	0.838
	Delivery	3	Delivery	0.8547	0.768
	Process Flexibility	3	Flexibility[d]	0.8326	0.718
	Product Flexibility	2			
Supply Chain Integration α = 0.9408 KMO = 0.867	Supplier Integration	8	Supplier Integration	0.9368	0.925
	Cust. Project Integration	4	Customer Integration[e]	0.8879	0.866
	Cust. Distribution Integration	4			
Internet Strategy α = 0.9780 KMO = 0.950	Marketing	7	Marketing	0.9435	0.898
	Distribution	5	Distribution	0.9407	0.899
	Efficiency	8	Efficiency	0.9731	0.920
	Supplier Relationship	6	Supplier Relationship	0.9533	0.897
	Customer Relationship	6	Customer Relationship	0.9452	0.910
Internet Performance α = 0.9651 KMO = 0.940	Relationship Enhancement	3	Relationship Enhancement	0.8197	0.788
	Revenue Expansion	5	Revenue Expansion	0.9277	0.855
	Cost Reduction	3	Cost Reduction	0.9485	0.899
	Time Reduction	5	Time Reduction	0.9434	0.896

Note:
* KMO cannot be calculated for less than 3 items
[a] Strategic Clarity and Futurity formed 1 dimension
[b] Market Research and Segmenting formed 1 dimension
[c] Removed during dimension-level factor analysis for low α
[d] Flexibility factored into two dimensions
[e] Customer Integration factored into two dimensions

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5.4.6 Results of Assessment of Items and Dimensions

Table 5.4.6 presents a summary of the assessments of the items and dimensions for the five constructs: Business Strategy, Marketing Strategy, Operations Strategy, Internet Strategy, and Internet Performance. The reliability, sampling adequacy, convergent validity, and discriminant validity were assessed with a CITC analysis, dimension-level factor analysis, and a construct-level factor analysis for each construct.

Table 5.4.6 shows the construct results, indicating the alpha scores and KMO values. Of the five dimensions, all alpha scores were above 0.89 and the KMO values were above 0.86. This indicates high reliability and sampling adequacy at the construct level.

At the dimension level, Table 5.4.6 shows the final dimensions and number of items, as well as the initial dimensions with the alpha scores and KMO values. The initial dimensions showed good reliability, with Product Line Breadth, Premium Pricing, and Support for Promotion the only exceptions. Due to their low alpha scores, these three dimensions were eliminated and Market Research and Segmenting factored as one dimension, which left 6 dimensions for Marketing Strategy. With over 72% of the variance explained by the six dimensions, these dimensions are a good representation of Marketing Strategy. Customer Integration and Flexibility were also split into two factors and according to the data they represented legitimate factors that are relevant to the study. Therefore, the final dimensions shown will be used for statistical analysis after validating the predictive validity of the constructs and hypotheses for this study.

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5.5.1 Theoretical Specification of Miles and Snow (1978) Strategic Types

Prospectors	Defenders

This type of organization attempts to: - Operate within a **broad product/market domain** - Operate in a domain that undergoes rapid changes and redefinition - Be "**first-in**" in new product or market areas - Respond rapidly to early signals that represent a new opportunity - Be in many industries, but does not need to maintain market strength in all areas.	This type of organization attempts to: - Locate and maintain a secure niche - Compete in a **stable market** - Offer a **limited range of products or services** - Protect its domain by offering:
	       Higher quality
	       Superior service
	       Lower prices - Ignore industry changes that do not have a direct or immediate impact - Concentrate on doing the best job possible in a limited area

Analyzers	**Reactors**
This type of organization attempts to: - Maintain a stable, limited line of products and services - Also moves quickly to follow a carefully elected set of the more promising new developments in the industry **Carefully monitor** the actions of major competitors in compatible areas - Not to be "first in" with new products or services - Be "**second in**" **with a more cost-efficient product or service.**	This type of organization: - Does not appear to have a consistent product-market orientation - Is usually not as aggressive in maintaining established products and markets as some of its competitors - Is not as willing to take as many risks as other competitors **Responds** in those areas where it is forced to by environmental or competitive pressures

5.5 Correlation Analysis and Criterion-Related Validity

The last type of validity that was described in Section 5.2 is criterion-related validity. There are two kinds of criterion-related validity that were tested with this study: concurrent and predictive. To test for concurrent validity, each of the constructs was categorized by a known theoretical specification for organizational structure. Since two of the constructs, business and marketing strategy, were compared based on the Miles and Snow (1978) strategic profile types, a theoretically specified strategic types were used. Based on the literature, the higher the marketing and business, the more it would

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Table 5.5.2 Relationship and Means of Strategies and Strategic Profile

Strategy	Strategic Profile	Composite Mean	Spearman's Rho	Pictorial Linear Relationship
Business Strategy $F = 2.676$ (0.048)	Prospectors (4) Analyzers (3) Defenders (2) Reactors (1) AVERAGE	3.67 3.62 3.58 3.22 3.57	.144* (0.023)	
Marketing Strategy $F = 7.481$ (0.000)	Prospectors (4) Analyzers (3) Defenders (2) Reactors (1) AVERAGE	3.56 3.40 3.31 2.76 3.33	.229** (0.000)	
Operations Strategy $F = 4.410$ (0.000)	Prospectors (4) Analyzers (3) Defenders (2) Reactors (1) AVERAGE	3.25 3.08 3.07 2.60 3.07	.164** (0.010)	
Internet Strategy $F = 3.391$ (0.019)	Prospectors (4) Analyzers (3) Defenders (2) Reactors (1) AVERAGE	3.18 3.06 2.80 2.50 3.03	.191** (0.003)	

Note:
F value indicates ANOVA for comparison of means
Values in parenthesis are p-values
** *significant at 0.01*
* *significant at 0.05*

resemble the prospectors type. with analyzers next. followed by defenders and reactors. Therefore a linear relationship between the strategic types and the constructs would indicate a high level of concurrent validity. To test for predictive validity. correlation was used to test the relationship between the independent and dependent variables for each hypothesis.

To test for concurrent validity. the constructs were not only measured empirically, but each respondent was asked to theoretically specify the type of organization they are

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Table 5.5.3 Construct-Level Correlation Analysis

Hypothesis	Independent Variable	Dependent Variable	Pearson Correlation (p-value)
H1	Business Strategy	Marketing Strategy	0.727** (0.000)
H2	Business Strategy	Operations Strategy	0.502** (0.000)
H3	Marketing Strategy	Operations Strategy	0.725** (0.000)
H4	Business Strategy	Internet Strategy	0.503** (0.000)
H5	Marketing Strategy	Internet Strategy	0.642** (0.000)
H6	Operations Strategy	Internet Strategy	0.636** (0.000)
H7	Internet Strategy	Internet Performance	0.826** (0.000)

Note:
** significant at 0.01

most similar (See Table 5.5.1). The mean values for each construct were calculated using a composite score and compared by theoretical specification (See Table 5.5.2). If a linear relationship exists, then each construct is validated. To test for this, an ANOVA test was used to compare the means for each construct and a Spearman's Rho correlation coefficient was calculated. Spearman's Rho was used, due to its ability to compare ordinal data as an independent variable and indicated concurrent validity for each construct.

For predictive validity, the composite scores for each construct, including Internet Performance, were used to show the relationship between the variables indicated as part of the seven hypotheses. For each hypothesis, the independent variable and dependent variable were compared using the Pearson Correlation coefficient. According to Table 5.5.3, each hypothesized relationship was significantly correlated, with a p-value of

0.000. Therefore, all relationships show predictive validity. A further analysis of these

relationships will be tested using structural equation modeling.

Chapter 6

Structural Equation Modeling and Hypothesis Testing

The relationship between each construct represented in this research was found to be significant, as shown by the Pearson's Correlation presented in Table 5.5.3. However, this may not be true if the constructs and paths are put together in an overall comprehensive framework. A comprehensive framework for Internet strategy shows more than just individual relationships between constructs, it also shows direct and indirect relationships. Therefore, a more rigorous method of statistical analysis is used to show the interactions between variables.

Structural equation methods provide estimates of the strength of all hypothesized relationships between variables in a theoretical model. A structural equation model (SEM) can provide information about hypothesized impact, both directly from one variable to another, and also indirectly through other variables (Maruyama 1998). SEM has been used extensively in psychology and social sciences (Anderson and Gerbring 1988). One reason for its use is its confirmatory methods provide researchers with a comprehensive means for assessing and modifying theoretical models (Bentler 1983). The use of SEM for this research is to confirm the hypothesized paths and overall fit of the theoretical model presented in Figure 3.5.

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There are two distinct parts of SEM: measurement model and structural model. The measurement model provides a link between scores of a measuring instrument (observed indicator variables) and the underlying constructs that are designed to be measured (unobserved latent variables) (Byrne 2001).

The structural model defines relationships between the unobserved variables. Since the constructs or unobserved latent variables for this study have been statistically validated through factor analysis and reliability analysis, the model that will be used in this study will pertain to the structural model. The following is an equation representation of a structural model (Maruyama 1998).

$$\eta = \Gamma \xi + \beta \eta + \zeta$$

where:

Γ is a weight of partial regression coefficients relating exogenous to endogenous variables.

ξ is a vector of latent exogenous variables.

β is a weight matrix of partial regression coefficients interrelating endogenous variables.

η is a vector of latent endogenous variables.

ζ is a vector of residuals for latent endogenous variables.

6.1 Proposed Structural Model

The hypothesized model for Internet strategy (Figure 3.5) can be replicated in structural equation modeling. Figure 6.1 shows the hypothesized model using the mathematical expressions used in many structural equation model packages, such as LISREL, EQS, and AMOS (Maruyama 1998). Exogenous variables are represented by ξ_m, and endogenous are represented by η_n, for example Operations Strategy is

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represented by η_2. Each of the exogenous paths is represented by γ_{mn}, and endogenous paths are indicated by β_{nn}, such as the path from Marketing Strategy (η_1) to Internet Strategy (η_3), which is β_{13}.

The hypotheses that are proposed for this research are represented in the paths indicated in Figure 6.1. For a detailed representation of each path and corresponding hypotheses, see Table 6.1.

6.2 Structural Equation Modeling Methodology

Before moving on to testing the proposed structural model, goodness of fit indexes should be discussed. A goodness of fit index is an index for assessing fit of a model to data (Mulaik, James, Van Alstine, Bennett, Lind and Stilwell 1989). Although there are a number of fit indexes, there is no single test that best describes the fit of a

BS = Business Strategy
MS = Marketing Strategy
OS = Operations Strategy
IS = Internet Strategy
IP = Internet Perofrmance
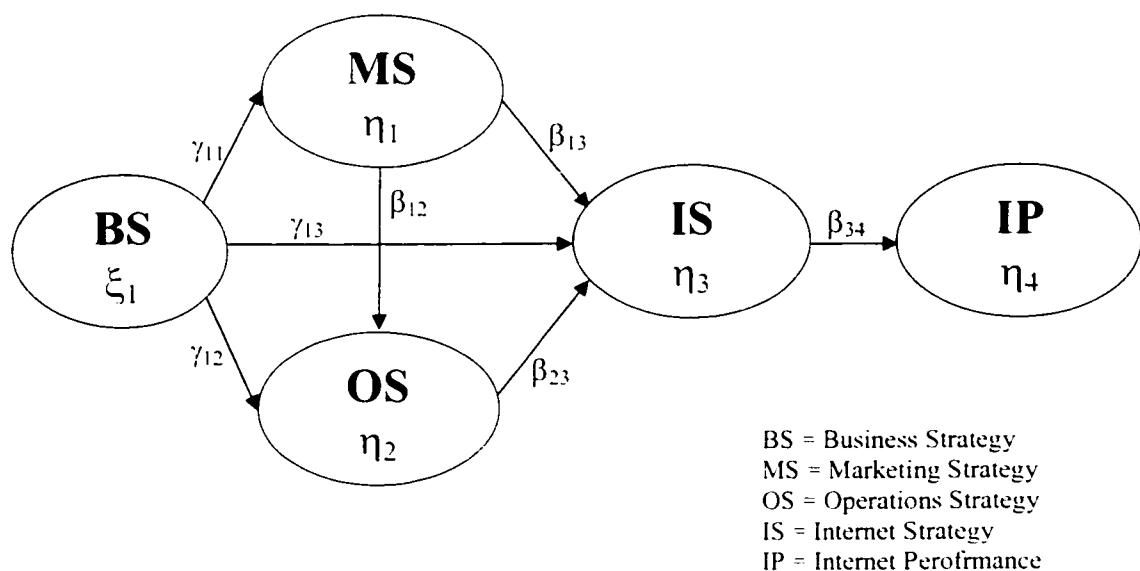
Figure 6.1 Proposed Structural Equation Model

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Table 6.1 Summary of Hypothesized Paths for Structural Equation Model

Exogenous Variable (ξ_m)	Endogenous Variable (η_n)	Path (γ_{mn})
Business Strategy (ξ_1)	Marketing Strategy (η_1)	γ_{11}
Business Strategy (ξ_1)	Operations Strategy (η_2)	γ_{12}
Business Strategy (ξ_1)	Internet Strategy (η_3)	γ_{13}

Endogenous Variable (η_n)	Endogenous Variable	Path (β_{nn})
Marketing Strategy (η_1)	Internet Strategy (η_3)	β_{13}
Marketing Strategy (η_1)	Operations Strategy (η_2)	β_{12}
Operations Strategy (η_2)	Internet Strategy (η_3)	β_{23}
Internet Strategy (η_3)	Internet Performance (η_4)	β_{34}

model. Fit measures can be categorized by three types: absolute, relative, and adjusted (or parsimonious) indexes (Maruyama 1998). Each of the statistical packages provide most of the commonly used fit measures.

Absolute Fit Indexes provide information about how closely the models fit compared to a perfect fit (Maruyama 1998). This can be measured by a χ^2 test, goodness-of-fit Index (GFI), and root mean residual. A low χ^2 value, which would have a p-value greater than 0.05, indicates that the actual and predicted are not significantly different. Goodness-of-fit (GFI) assesses the relative amount of variances and covariances jointly accounted for by the model. This index ranges from zero to one, with one indicating a perfect fit. A value of 0.90 or higher is considered acceptable (Segars and Grover 1993). A third index of absolute measurement is the Root Mean Residual (RMR). This straightforward index is simply the square root of the mean of the squared discrepancies between all of the predicted and observed matrices (Maruyama 1998). The lower the value, the better the fit, with a 0.1 or lower indicating good fit (Chau 1997).

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Relative Fit Indexes, also known as Comparative Fit Indexes, is a measure of how the model compares with other possible models with the same data (Maruyama 1998). Measures that are available include Normed Fit Index (NFI) and Comparative Fit Index (CFI). NFI and CFI compares the theoretical model to a baseline model. A recommended value of fit for both NFI and CFI is 0.90 (Hair et al. 1998).

Adjusted Indexes, or Parsimonous Fit Indexes, looks at how a model combines fit and parsimony (Maruyama 1998). This can be accomplished by adjusting a goodness of fit measure by degrees of freedom. One common indicator of parsimony is Adjusted Goodness-of Fit Index (AGFI), which is the GFI calculated adjusted for degrees of freedom. A value of 0.80 or higher is considered a good fit (Segars and Grover 1993).

These indexes are used to assess the fit of the model and the data collected. To assess the model proposed in Figure 6.1 the following was conducted to further ensure construct validity.

6.2.1 Confirmatory Factor Analysis and Validity

Gerbring and Anderson (1988) proposed three types of analysis to assess unidimensionality. They indicated that confirmatory factor anlaysis was the only true assessment of unidimensionality. In Chapter 5, confirmatory factor analysis was conducted at the dimension and construct level. To further validate the constructs confirmatory factor analysis was used within structural equation modeling. Confirmatory factor analysis in structural equation modeling gives a more true relationship of the dimensions since the measurement error is taken into consideration (Hair et al. 1998).

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Table 6.1.1.1 Confirmatory Factor Analysis using Structural Equation Modeling

Construct		Dimension	Standardized Regression Weights	Overall Model Fit
Business Strategy		Product / Market Devleopment	0.76	GFI = 0.984 AGFI = 0.918 NFI = 0.973 CFI = 0.979 RMR = 0.028
		Strategic Clarity	0.76	
		Focus on Efficiency	0.74	
		Scope	0.50	
Marketing Strategy		Market Analysis	0.84	GFI = 0.945 AGFI = 0.872 NFI = 0.927 CFI = 0.940 RMR = 0.045
		Product Innovation	0.76	
		Service Quality	0.54	
		Selective Distribution	0.58	
		Advertising	0.72	
		Personal Selling	0.73	
Operations Strategy*	**Manufacturing Strategy**	Cost	0.76	GFI = 0.914 AGFI = 0.838 NFI = 0.903 CFI = 0.919 RMR = 0.091
		Quality	0.73	
		Delivery	0.75	
		Process Flexibility	0.79	
		Product Flexibility	0.64	
	Supply Chain Integration	Supplier Integration	0.79	
		Customer Project Integration	0.76	
		Customer Distribution Integration	0.88	
Internet Strategy		Marketing	0.82	GFI = 0.987 AGFI = 0.936 NFI = 0.989 CFI = 0.993 RMR = 0.024
		Distribution	0.82	
		Efficiency	1.00	
		Supplier Relationship	0.88	
		Customer Relationship	0.83	
Internet Performance		Relationship Enhancement	0.76	GFI = 0.997 AGFI = 0.986 NFI = 0.998 CFI = 1.00 RMR = 0.010
		Revenue Expansion	0.88	
		Cost Reduction	0.89	
		Time Reduction	0.90	

Note:
* Operations Strategy was developed as a second order construct

To perform confirmatory factor analysis, each construct and its theoretically justified dimensions are entered into a structural equation model. Each construct is evaluated for strength based on standardized regression weights and the overall fit of the model.

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Table 6.1.1.2 Chi-Square Test for Discriminant Validity

Construct Comparison	Constrained	Unconstrained	Difference	p-value
Business Strategy ↔ Marketing Strategy	159.84	127.1	32.74	0.000
Business Strategy ↔ Operations Strategy	114.78	32.57	82.21	0.000
Business Strategy ↔ Internet Strategy	121.66	89.54	32.12	0.000
Business Strategy ↔ Internet Performance	97.93	43.53	54.4	0.000
Marketing Strategy ↔ Operations Strategy	129.35	107.22	22.13	0.000
Marketing Strategy ↔ Internet Strategy	197.18	188.09	9.09	0.003
Marketing Strategy ↔ Internet Performance	155.25	127.875	27.375	0.000
Operations Strategy ↔ Internet Strategy	120.6	101.04	19.56	0.000
Operations Strategy ↔ Internet Performance	65.95	9.114	56.836	0.000
Internet Strategy ↔ Internet Performance	159.03	151.97	7.06	0.007

Significantly high standardized regression weights and a high indication of goodness of fit further ensures convergent validity for each construct.

Table 6.1.1.1 shows the standardized regression weights and fit indexes for each construct. Since Operations Strategy is comprised of two latent variables, Manufacturing Strategy and Supply Chain Integration, it was considered a 2nd order model. All regression weights were significantly high and all fit measures indicated good absolute, relative, and adjusted fit. This further ensures convergent validity.

To further ensure discriminant validity, a structural equation model for each construct was correlated to each other in a constrained state and also an unconstrained state. The Chi-square values for each model are compared and if a significant difference exists between each type of model, with degrees of freedom equal to 1, then disciminant validity is justified.

According to Table 6.1.1.2, the unconstrained and constrained models are significantly different, with Chi-Square differences significantly greater with a 0.01 p-value. Therefore, discriminant validity is ensured through a structural equation model.

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Table 6.1.1.3 Summary of Validity, Reliability, and Sampling Adequacy Measures

Test	Description	Level	Evidence
Content Validity	Review items by Researchers and Practitioners prior to Q-sort	Dimension	Section 4.1
	Review items by Researchers and Practitioners after Q-sort	Dimension	Section 4.8
Construct Validity	Q-sort ensures convergent and discriminant validity	Qualitative Dimension	Table 4.8.1
	Exploratory Factor Analysis for convergent validity	Dimension	Tables: 5.4.1.3, 5.4.2.3, 5.4.3.5, 5.4.3.6, 5.4.4.3, and 5.4.5.3
	Exploratory Factor Analysis for discriminant validity	Construct	Tables: 5.4.1.4, 5.4.2.4, 5.4.2.5, 5.4.3.7, 5.4.3.8, 5.4.3.9, 5.4.4.4, 5.4.4.5, 5.4.5.4, and 5.4.5.5
	Confirmatory Factor Analysis	Construct	Table 6.1.1.1
	Chi-Square test of unconstrained and constrained models for discriminant validity	Construct	Table 6.1.1.2
Criterion-Related Validity	Spearman's Rho Correlation Analysis of strategic profiles for concurrent validity	Construct	Table 5.5.2
	Pearson's Correlation of hypotheses for predictive validity	Construct	Table 5.5.3
Reliability	Corrected Item-to-Total Correlation	Item	Tables: 5.4.1.2, 5.4.2.2, 5.4.3.3, 5.4.3.4, 5.4.4.2, 5.4.5.3
	Cronbach's alpha	Dimension	Tables: 5.4.1.3, 5.4.2.3, 5.4.3.5, 5.4.3.6, 5.4.4.3, and 5.4.5.3
	Cronbach's alpha	Construct	Tables: 5.4.1.4, 5.4.2.4, 5.4.2.5, 5.4.3.7, 5.4.3.8, 5.4.3.9, 5.4.4.4, 5.4.4.5, 5.4.5.4, and 5.4.5.5
Sampling Adequacy	KMO	Dimension	Tables: 5.4.1.3, 5.4.2.3, 5.4.3.5, 5.4.3.6, 5.4.4.3, and 5.4.5.3
	KMO	Construct	Tables: 5.4.1.4, 5.4.2.4, 5.4.2.5, 5.4.3.7, 5.4.3.8, 5.4.3.9, 5.4.4.4, 5.4.4.5, 5.4.5.4, and 5.4.5.5

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Table 6.1.1.3 shows a brief summary of the tests that were used to ensure validity, reliability, and sampling adequacy. It is very important to establish all three aspects of data adequacy, since SEM is predicated on sound theory. Therefore, with all three aspects of validity ensured, as well as dimension and construct-level reliability and sampling adequacy, the structural model may be tested for significance and fit.

6.3 Structural Equation Modeling

With each of the constructs properly ensured for reliability, validity, and sampling adequacy, a structural model was developed to test the seven hypotheses presented in this research. AMOS 4.0 by James Arbuckle (1999) was used in this study due to its availability and compatibility with SPSS 10.1. AMOS 4.0 is also an icon-based program, which is easy to navigate and develop models. Each of the constructs have been aggregated into one variable and entered into AMOS 4.0 as a path analytical model, similar to Figure 6.1. Once the path analytical or structural model was developed, the model was run and checked for overall fit and significance.

6.4 Structural Modeling Results

Figure 6.2 shows the results of the path analysis using AMOS 4.0 structural modeling analysis. The standardized estimates are shown for each path, with 5 out of the 7 paths found to be significant (See Table 6.3 for detailed results of the model). The fit of the model was acceptable with the GFI, AGFI, NFI, and CFI above 0.90 and RMR well below 0.1. The χ^2 value for this model is quite low, with a p-value higher than 0.05, which indicates that the data is not significantly different than the theorectical model.

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The following is a description of the results and implications for each hypothesis. The overall fit is quite good and no modifications were indicated by the AMOS 4.0 software.

6.5 Detailed Discussion of Model and Hypothesis Testing Results

The structural equation model showed good fit between the data and the theoretical model (See Figure 6.2). Five of the seven hypothesized paths were significant at a level of significance of 0.01 and represent the theoretical business-driven approach to Internet strategy that this research has predicated. The significant and non-significant paths statistically can be justified. By offering the practical and theoretical implications, more insight can be brought to the business-driven approach to Internet strategy. These results can be of great value to practitioners to understand the path that an organization should take in its attempt to incorporate the Internet into their business practices. The results are also important in many ways to help guide researchers in a new area of research: Internet strategy. The following is a detailed discussion of each hypothesis and its practical and theoretical implications.

$\gamma_{11} = 0.73^{**}$

$\beta_{13} = 0.31^{**}$

$\beta_{12} = 0.76$

$\gamma_{13} = 0.10$

$\gamma_{12} = -0.05^{**}$

$\beta_{23} = 0.36^{**}$

$\beta_{34} = 0.83^{**}$

MS η_1

BS ξ_1

OS η_2

IS η_3

IP η_4

$\chi^2 = 5.899$ (p-value = 0.117)
GFI = 0.991
AGFI = 0.955
NFI = 0.993
CFI = 0.997
RMR = 0.019
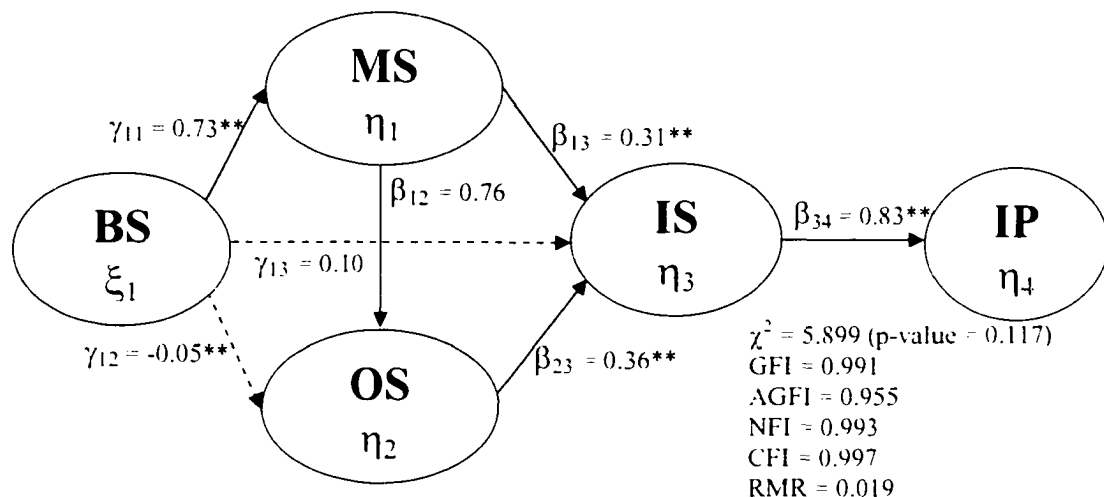
Figure 6.2 Structural Equation Model Results

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Table 6.3 A Summary of Structural Equation Modeling Results

Hypothesis	Relationship	Path	Standardized Estimate	p-value	Significantly Supported
H1	BS → MS	γ_{11}	0.73	0.000	Yes
H2	BS → OS	γ_{12}	-0.05	0.386	No
H3	MS → OS	β_{12}	0.76	0.000	Yes
H4	BS → IS	γ_{13}	0.10	0.138	No
H5	MS → IS	β_{13}	0.31	0.000	Yes
H6	OS → IS	β_{23}	0.36	0.000	Yes
H7	IS → IP	β_{34}	0.83	0.000	Yes

$\chi^2 = 5.899$ (p-value = 0.117) GFI = 0.991 AGFI = 0.955 NFI = 0.993 CFI = 0.997 RMR = 0.019

6.5.1 Business Strategy and Marketing Strategy

H1: *Business strategy has a direct positive relationship with marketing strategy.*

The relationship between business strategy and marketing strategy has been well documented and was supported by this research. In the business environment, this relationship shows the top-level management that develops the strategy for a business has a tremendous influence on the strategy of their marketing department. This reaffirms the customer driven approach that organizations have adopted in the past decade (Berry et al. 1995).

Theoretically, this hypothesis shows that when the dimensions for business strategy are high, the dimensions for marketing strategy will also be high. Dimensions such as scope, product/market development, and futurity are of high importance to an organization who considers their marketing strategy as vital to their organization. This

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method of measuring strategic alignment with linear scales allows researchers to statistically analyze constructs in a comprehensive fashion.

From a practical standpoint, this indicates that the marketing strategy of an organization is directly affected by the business strategy of an organization. In most cases, business strategy is developed at the top-level of management, which indicates that top-level management has a vested interest in marketing and they do not delgate the responsibility to the functional level.

6.5.2 Business Strategy and Operations Strategy

H2: *Business strategy has a direct positive relationship with Operations strategy.*

This hypothesis was not supported with the structural model. Although the Pearson's Correlation was significant between business and operations, when thrust into a comprehensive model the path was found non-significant. From a practical standpoint, this infers that the internal process of business strategy formulation does not directly shape the internal operations of an organization. The formulation of an operations strategy must take a look at the external environment prior to implementation, which was supported in Hypothesis 3.

From a theoretical perspective, this reaffirms the customer driven approach (Berry et al. 1995), which indicates that an organization should find out what their customer wants and then develop an operations strategy.

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6.5.3 Marketing Strategy and Operations Strategy

H3: *Marketing Strategy has a direct positive relationship with Operations Strategy.*

This hypothesis was found to be highly significant. This finding has several implications. First, the marketing aspect and the operations of a firm are highly correlated. The type of marketing strategy that an organization uses directly affects the operations strategy. The operations strategy also is indirectly affected by the business strategy through marketing. The practical implications for an organization become evident with the relationship between business, marketing, and operations.

An organization develops their business strategy to achieve a competitive advantage. For an organization to have the "know how" to strategically position their organization, they must go outside their organization first before they can develop an operations strategy. Therefore, this critical link between marketing and operations at the functional level of an organization is key to strategy formulation.

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6.5.4 Business Strategy and Internet Strategy

H4:   *Business strategy has a direct positive relationship with Internet strategy.*

This hypothesis was not supported by the data and structural model. The predictive validity was highly significant, but when entered into a comprehensive model, the relationship was not significant. This lack of relationship shows that Internet strategy is not influenced directly by the business strategy of an organization. The data shows that Internet strategy is directly related to the functional level of strategy (Hypothesis 5 and Hypothesis 6). Therefore, Internet strategy is indirectly affected by business strategy through marketing and operations strategy.

This finding is critical to the development of an Internet strategy. This suggests that an Internet strategy should be formulated at the functional level of an organization and guided indirectly from the business level. Therefore, the individuals that should be in charge of Internet utilization should have a direct connection to the functional level of their organization. Again, the Internet itself is not a competitive advantage (Porter 2001), but when incorporated with the functional levels of an organization, it can enhance current efficiencies and advantages within an organization.

This also indicates that Internet strategy should be researched at the functional level of an organization, and although top management and business level strategy indirectly has influence over an Internet strategy, the functional level of an organization should not be ignored. This may also have practical and theoretical implications in other functional areas of an organization, such as human resources, finance, etc.

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6.5.5 Marketing Strategy and Internet Strategy

H5:   *Marketing strategy has a direct positive relationship with Internet strategy.*

The structural model supported this hypothesis as an important link for Internet strategy formulation. With most of the emphasis of Internet use directed at the marketing aspect of an organization, marketing strategy cannot be ignored when developing a strategic use of Internet technology. Which also infers that the strategic profile of the marketing function of an organization should be similar to the Internet strategy of an organization. A company similar to a high level marketing strategy should use the Internet differently than a company that has a low level of marketing strategy. Therefore, without taking an in-depth look at an organization and determining its business strategy and marketing strategy, an organization may not incorporate the use of the Internet to add value to their organization. Instead they may only add extra costs, such as unsolicited advertising and marketing expenses.

Most of the literature on Internet strategy has been in the marketing field. Therefore, the emphasis on developing this link has been established. However, it is important to develop the complete link, which also includes business strategy and operations, which is supported in Hypothesis 6. Therefore, the marketing strategy of an organization is key to developing an Internet strategy, and it is also critical in developing the links between business, marketing, operations, and the Internet.

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6.5.6 Operations Strategy and Internet Strategy

H6: *Operations strategy has a direct positive relationship with Internet strategy.*

The link between operations strategy and Internet strategy was found to be significant. This relationship also provided evidence that not only does the marketing aspect of a firm have an influence on the use of the Internet, but internal operations are also an influence on strategy formulation. Organizations that look to use the Internet to reduce costs or time must incorporate the operations strategy of their organization. An organization that has a high level of supplier integration, may want to incorporate the Internet to enhance this position. An organization that prides itself on fast turnaround time may look to use the Internet to receive or place orders to reduce the processing time. This link is critical for an organization to include as part of Internet strategy formulation, which will enhance the value of their products and services.

Research has neglected this aspect of Internet strategy. Most of the research has emphasized the business and marketing level, with a few researchers investigating the link between the Internet and an organization's supply chain. However, the internal operations of an organization should be considered an integral part of strategy formulation for the Internet. Therefore, the operations should work in conjunction with the marketing aspect of a firm to initiate an Internet strategy that adds value instead of cost.

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6.5.7 Internet Strategy and Internet Performance

H7:   *Internet strategy will have a direct positive relationship on Internet Performance.*

This research shows that the higher the level of Internet strategy, the higher the Internet performance. It can then be concluded that at this time in the evolution of the Internet, a high level of importance on the usage of the Internet when strategically aligned within the organization will lead to a high level of Internet performance, such as relationship enhancement, revenue expansion, cost reduction, and time reduction. An organization that lacks business strategy will not have a high Internet performance. This is supported by data when the means for Internet performance are compared and categorized by the theoretical specification of the Miles and Snow (1978) typology (See Table 6.5.7). After further investigation, the means for each of the strategic types in Table 6.5.7 are different, but after calculating the pair-wise differences with the Tukey-Kramer test, only reactors was significantly different from prospectors, analyzers, and defenders. This shows that a reactors strategic type, which resembles a lack of strategic focus, is the only one that is significantly lower than the other types of organizations.

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Table 6.5.7 Comparison of Theoretically Derived Means for Internet Performance

Strategy	Strategic Profile	Composite Mean	Pictorial Linear Relationship
Internet Performance $F = 4.101$** (0.007)	Prospectors (4)	3.38	
	Analyzers (3)	3.10	
	Defenders (2)	2.88	
	Reactors (1)	2.60	
	AVERAGE	3.03	

Note:
F value indicates ANOVA for comparison of means
Value in parenthesis are p-values
** *significant at 0.01*

A reactors Internet strategy is similar to a technology-driven approach that was discussed in Chapter 1 and Chapter 2. A technology-driven approach to strategy looks at what is currently being used in the field and makes decisions on implementation only when confronted with the option. The business approach looks at the strategy of the organization and how the Internet can complement their organization. Therefore, this research supports an integrated model for Internet strategy and the business-driven approach to Internet strategy.

It should also be noted that there were no modifications indicated by the structural model. Therefore, business strategy, marketing strategy, and operations strategy do not have a direct relationship to Internet performance. This indicates a stronger case for incorporating an Internet strategy into an organization, since in order to attain a high level of performance based on the used of the Internet, an Internet strategy or a structured deployment plan must be instituted.

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Chapter 7

Dimension Level Analysis of Internet Performance, Internet Strategy, and its Marketing and Operational Antecedents

This study showed that for an effective Internet strategy to be developed, the paradigm of development must shift from a technology-driven approach to a business-driven approach. For this to occur, a company must first assess their business, marketing, and operations strategy and the strategic position of their organization, and then develop an Internet strategy that best complements their current business practices. The structural model showed that an Internet strategy is best developed at the functional level of strategy, with an indirect influence from business strategy. This integrated framework of Internet strategy will then lead to a high Internet performance such as increased revenues, a reduction in time and costs, and also enhanced business relationships. However, without looking at the relationship of Internet performance and strategy at the dimension level, practical implications are somewhat abstract.

For an Internet strategy to be successful, the necessary functional strategies and attributes should be in place. For example, an Internet strategy may help deploy the ability to advertise to a broader market, but without an exceptional fulfillment capability, the opportunity for added revenue may be lost. Therefore, as mentioned throughout this research, a business-driven approach to Internet strategy is critical to the success of

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Internet deployment. Up to this point in the research, strategy is analyzed as an aggregate construct. The relationship between the functional strategies (marketing and operations) of an organization and the business and Internet strategy is quite important to establishing the ideology of a business-driven approach. However, a deeper analysis at the dimension level of Internet performance. Internet strategy, as well as the dimensions of each functional strategy, will give added insight into the development and implementation of a business-driven approach to Internet strategy.

A methodology including step-wise regression and structural equation modeling was used to further analyze the final framework for Internet strategy (Figure 7.1). Since there were so many possible relationships at the dimension level, instead of including all of the non-significant relationships into a structural equation model, an exploratory step-wise regression analysis was used to refine the number of dimensions and paths. The first stage of this analysis was to identify the key attributes of marketing and operations strategy that are critical to the success of an integrated Internet strategy and performance. Two structural equation models were developed based on the overall construct of Internet performance: one including the five dimensions of Internet strategy and its marketing antecedents and the other including Internet strategy and its operations strategy antecedents. The first model determined the significant relationships between Internet performance and the dimensions of Internet strategy, as well as the dimensions of marketing strategy that have an indirect significant relationship with Internet performance. The second model identified the dimensions of operations strategy that have an indirect relationship to Internet performance. The results from these two structural models were used to develop four structural models: one for each dimension of

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Internet performance. Included in each dimension level model of Internet performance were the Internet strategy dimensions that were found significant to that particular dimension of Internet performance and its antecedents from marketing and operations strategy. Finally, a model was developed to show Internet performance, Internet strategy, and its marketing and operational antecedents, which takes all previous analysis and compiles the results into one final model. Business strategy was not used during this part of the research, since it did not have a direct significant relationship to Internet strategy (H4 in Figure 7.1). The first step in building these final structural models was to analyze the relationship between Internet performance and the dimensions of Internet strategy
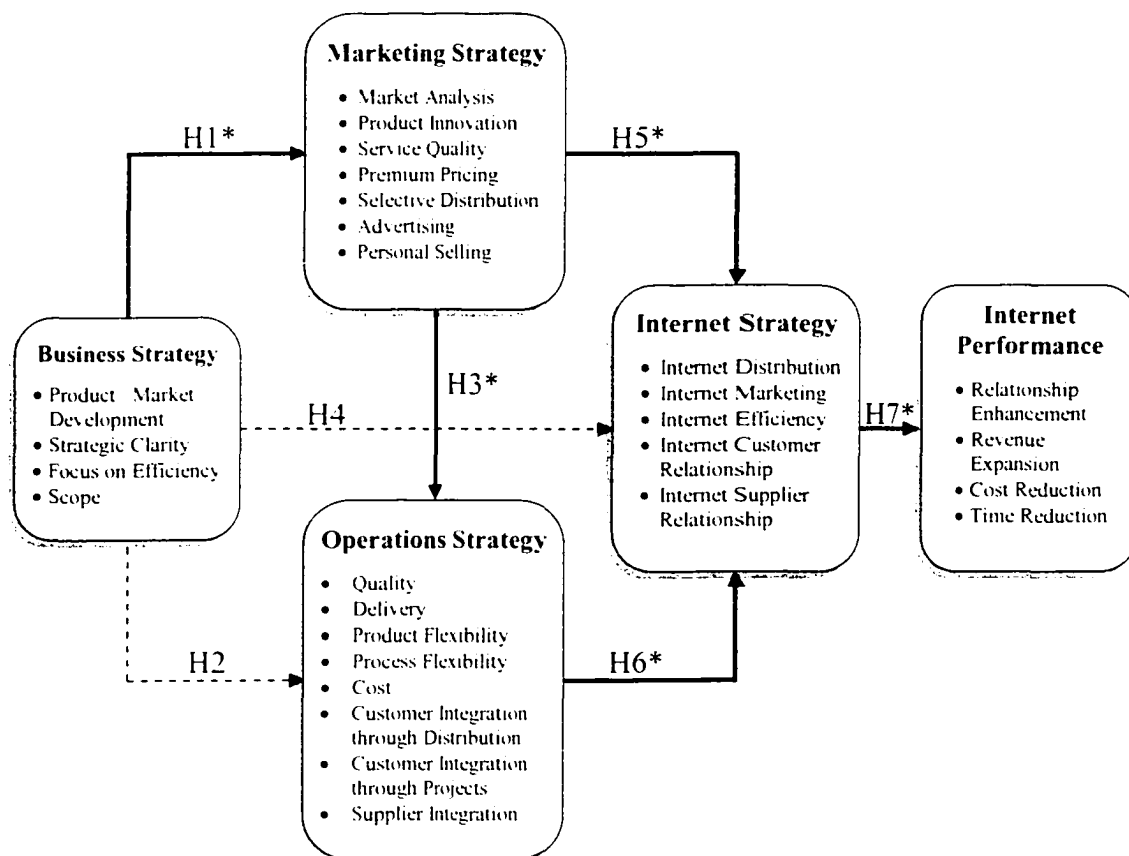
* indicates a significant relationship at a 0.01 significance level

Figure 7.1: Significant Relationships for Internet Strategy Model

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through step-wise regression analysis (H7 in Figure 7.1). Second, the antecedents of Internet strategy were analyzed through exploratory regression (H5 and H6 in Figure 7.1), which led to the initial structural equation models at the construct level of Internet performance. After the initial structural equation models were developed, a further refinement was conducted at the dimension level of Internet performance. To build the four models, an exploratory step-wise regression analysis was conducted between each dimension of Internet performance and each dimension of Internet strategy. Then the models were developed based on the initial analysis of Internet strategy and its antecedents, as well as a final overall model of analysis at the dimension level. Refinement was looked at through modification and theoretical justification was reviewed prior to developing a final model.

7.1 Internet Performance, Internet Strategy, and its Antecedents

As described in Sections 3.5, there are five dimensions that comprise Internet strategy: Internet marketing, Internet efficiency, Internet customer relationship, Internet supplier relationship, and Internet distribution. The original structural equation model (Figure 6.2) shows a significant relationship between Internet performance and Internet strategy. However, without further analysis, it cannot be determined if each dimension of Internet strategy is significantly related to Internet performance, and if each dimension is significantly related, which dimensions of both marketing and operations strategy are important to develop each of the dimensions of Internet strategy.

Table 7.1.1 Step-wise Regression between Internet Performance and Internet Strategy Dimensions

Dependent Variable	Predictor Variable	t-value	Significance
Internet Performance			
	Internet Customer Relationship	4.412	0.000
	Internet Efficiency	3.931	0.000
	Internet Supplier Relationship	3.716	0.000
	Internet Marketing	2.828	0.005
	Internet Distribution	2.004	0.046

7.1.1 Internet Performance and Internet Strategy

Prior to analyzing the relationship between Internet performance. Internet strategy, and marketing and operations strategy, the link between Internet performance and the Internet strategy dimensions was established. Step-wise regression was used and it was found that each dimension of Internet strategy was significant to Internet performance (Table 7.1.1). Internet marketing, Internet efficiency. Internet customer relationship, and Internet supplier relationship were significant at a 0.01 level and Internet distribution was significant at a 0.05 level. Therefore, each dimension of Internet strategy was significantly related to Internet performance.

7.2 Internet Strategy and its Antecedents

With established relationships developed between the functional level strategies and Internet strategy, an organization can determine the proper support needed to attain high levels of Internet performance. To test these relationships, a step-wise regression was conducted for each dimension of Internet strategy (dependent variable) and the dimensions for marketing and operations strategy (independent variable). Structural

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Table 7.2.1.1 Step-wise Regression between the Dimensions of Internet Strategy and Marketing Strategy Dimensions

Dependent Variable	Predictor Variable	t-value	Significance
Internet Efficiency			
	Personal Selling	4.761	0.000
	Market Analysis	2.658	0.008
	Advertising	2.258	0.025
Internet Marketing			
	Advertising	5.264	0.000
	Market Analysis	3.444	0.001
	Product Innovation	2.848	0.005
Internet Supplier Relationship			
	Personal Selling	5.103	0.000
	Advertising	3.944	0.000
	Selective Distribution	2.683	0.008
Internet Customer Relationship			
	Advertising	4.086	0.000
	Market Analysis	3.717	0.000
Internet Distribution			
	Advertising	5.400	0.000
	Personal Selling	4.402	0.000
	Selective Distribution	2.550	0.011

models were then developed to show these relationships in an overall model that included

the construct for Internet performance. A model for marketing as well as operations was

developed to determine fit separately.

7.2.1 Internet Strategy and Marketing Strategy

Table 7.2.1.1 shows a step-wise regression for each Internet strategy dimension

and the marketing strategy dimensions. Each dimension of marketing strategy was

developed in prior research (Slater and Olson 2001) and then re-validated through this

research (Section 5.4.2). Internet efficiency was found to have a significant relationship

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with personal selling and market analysis at a 0.01 level, and with advertising at a 0.05 level. From a marketing standpoint, a high level of personal selling and market analysis lends itself to utilizing the Internet for efficiency. A high level of personal selling is indicative of an organization that has a direct relationship to their customers and may use the Internet to improve the service or processes that customers currently experience. Also, market analysis pertains to segmenting/targeting markets and market research. A company that tends to have a high level of market analysis may use the Internet to enhance these aspects through better communication and the availability of information. Advertising was found to be significant for all dimensions of Internet strategy and shows that in most cases, due to the Internet's ability to improve coverage of markets or geographic locations, a high level of advertising will lend it to Internet utilization.

Internet marketing was significantly related to three marketing dimensions at a significance level of 0.01: advertising, market analysis, and product innovation (Table 7.2.1.1). As mentioned before, advertising was significantly related to all dimensions of Internet strategy. However, for an organization that would like to use the Internet, they should have a high level of advertising, as well as ability to innovate at a high rate through market research. Therefore, highly innovative organizations may use the Internet to advertise new products or services and also allow for feedback for customers to improve the market analysis process.

The Internet supplier relationship dimension had three marketing dimensions that were significantly related: advertising, personal selling, and selective distribution (Table 7.2.1.1). As previously stated, each dimension shows a reliance on the important of advertising. An organization that not only advertises, but also uses salespeople or

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personal selling, may be involved in a highly complex business-to-business environment. Therefore, if the Internet can help an organization develop a good relationship with their suppliers, the ability to provide accurate information on delivery dates or service would be enhanced. Selective distribution refers to selecting a distributor that not only is capable and dependable, but also will incorporate your marketing campaigns or efforts into their distribution. For example, they may inventory an organization's boxes to be used during shipments, setup displays in stores, or determine ideal geographical marketing locations. Therefore, developing an Internet strategy that includes a focus on enhancing the supplier relationship, should take these three dimensions of marketing into consideration.

On the other end of spectrum is the Internet strategy dimension for customer relationship. Not only can an Internet strategy be developed to enhance the relationships between an organization and its suppliers, but it can also be developed to enhance its relationship with its customers. For a business-driven approach to Internet strategy, advertising and market analysis were found to be highly related to Internet customer relationship (Table 7.2.1.1). Therefore, an organization should already have a solid advertising strategy in place, which would be enhanced by the Internet, as well as a firm grasps on market research and analysis in order to determine what aspects of the Internet will improve the customer experience.

The last dimension of an Internet strategy is Internet distribution. The ability to deliver product reliably and efficiently anywhere in the world can be enhanced by the use of the Internet. This is somewhat similar to the supplier relationship, except that distribution does not have to be conducted by an outside source. However, the marketing

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dimensions that were found to be significantly related to Internet distribution were similar to the antecedents of Internet supplier relationship; advertising, personal selling, and selective distribution (Table 7.2.1.1).

Each of the dimensions of Internet strategy was found to have different marketing strategy antecedents, with advertising significant to all five dimensions. Also, service quality of marketing was not found to be significant to any Internet strategy dimensions, which shows that this dimension is not of importance at this point in the development of an Internet strategy. This may be attributed to the notion that service quality is a personal dimension that is measured based on the interaction with customers.

With five of the six dimensions of marketing strategy found to be significantly related to at least one dimension of Internet strategy, an overall model of Internet performance, Internet strategy, and its marketing strategy antecedents was developed. The purpose of this model was not only to further evaluate the paths, but to ensure fit as an overall model, and also to identify any relationships between the dimensions of Internet strategy. For example, to develop a high level of Internet marketing strategy, it may be hindered if an organization does not have a good relationship with its customers. Since the only contact an organization may have with a customer that would be initiated through the use of marketing through the Internet is the Internet, a good customer relationship may be a preceding factor. Therefore, a structural equation model, based on the initial exploratory step-wise regression will enable this type of analysis.

Figure 7.2.1.1 shows the initial structural equation model. The overall fit of this model was poor and modifications were needed. Through the modification index provided through AMOS 4.0, it was determined that certain relationships between

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dimensions of Internet strategy did exist. No new relationships were identified between a marketing strategy dimension and a dimension of Internet strategy, which shows that the initial step-wise regression did refine the process and aid in the development of the model.

After reviewing the modification index, paths were identified based on statistical significance to the model, as well as practical significance. Internet customer relationship was found to drive Internet marketing and Internet supplier relationship. Without knowing what customers would want or need, it is hard to market to them through the Internet. Also, without having a good relationship with customers, the need for a good supplier relationship is nullified. If customers demand speed of delivery and reliable service, then suppliers must match these qualities in order to stay competitive. If a good supplier relationship is established, then the efficiency within an organization will tend to

GFI = 0.671   AGFI = 0.132   NFI = 0.721   CFI = 0.727   RMR = 0.132
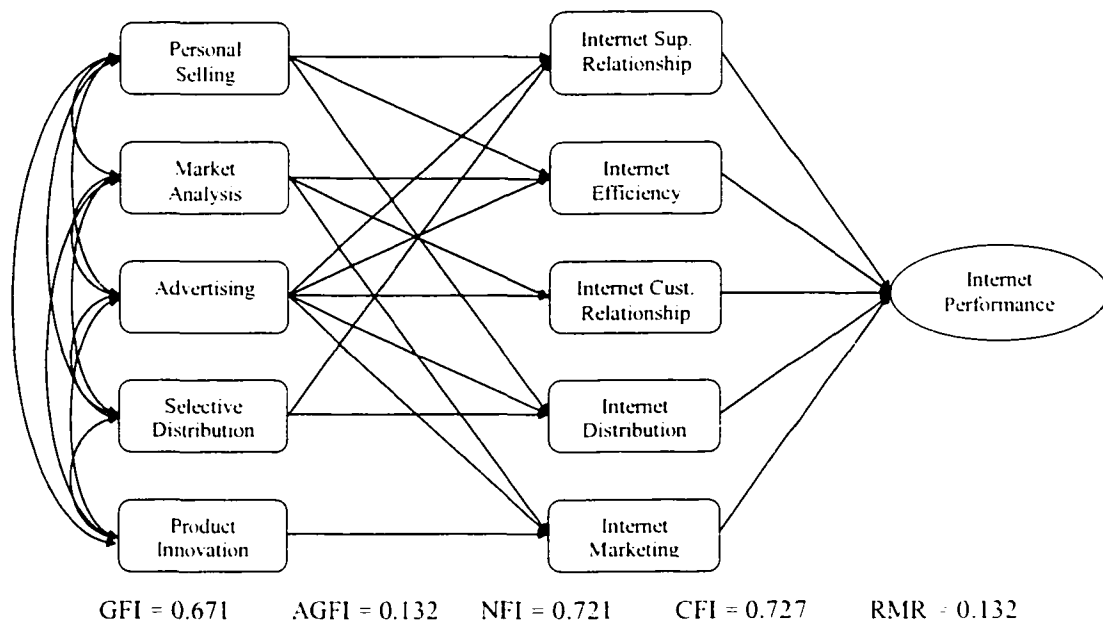
Figure 7.2.1.1 Structural Equation Model of Internet Performance, Internet Strategy, and its Marketing Antecedents – Initial Model

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be higher. Therefore, a relationship between Internet supplier relationship and Internet efficiency was also found.

Another Internet dimension that was found as a significant driver of other dimensions of Internet strategy was Internet distribution. Internet distribution can be viewed as a support function and without the capability to provide product or service, or the ability to fill orders, the ability to market and create relationships with customers will be less likely to achieve. In order to establish a strategy for Internet marketing and Internet customer relationship, an effective distribution strategy through the Internet must be in place. Therefore, as shown in Figure 7.2.1.2, the above-mentioned relationships were developed and a new model was established.
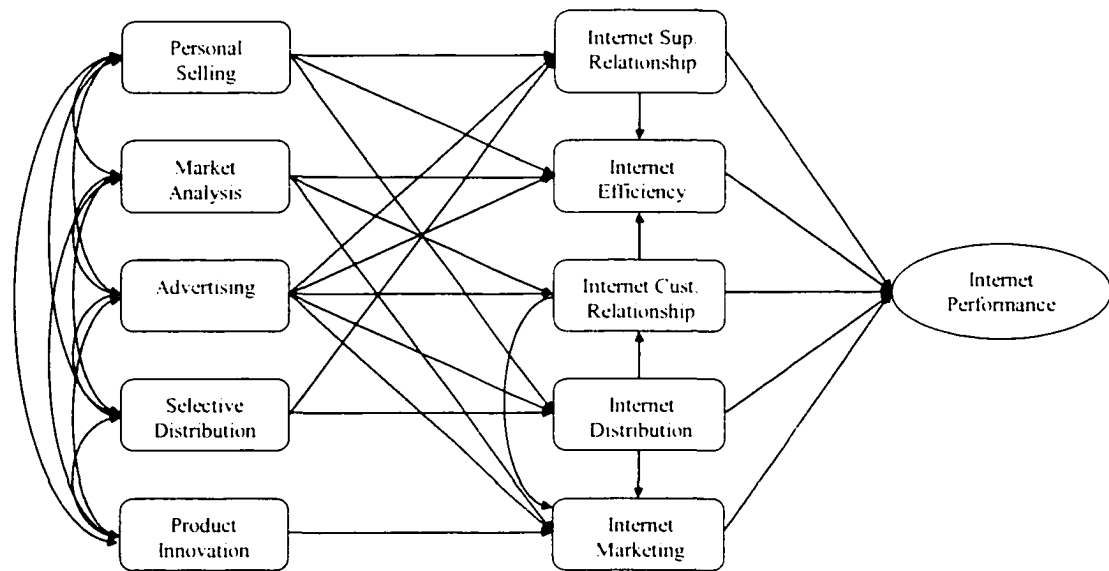
GFI = 0.974   AGFI = 0.905   NFI = 0.979   CFI = 0.988   RMR = 0.036

Figure 7.2.1.2 Structural Equation Model of Internet Performance, Internet Strategy, and its Marketing Antecedents – Final Model

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Table 7.2.1.2 Path Coefficients for the Structural Model Representing Internet Performance, Internet Strategy, and its Marketing Strategy Antecedents

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Efficiency	Personal Selling	Marketing	0.362	0.000**
	Market Analysis	Marketing	0.076	0.320
	Advertising	Marketing	0.057	0.448
	Internet Customer Relationship	Internet	0.543	0.000**
	Internet Efficiency	Internet	0.431	0.000**
Internet Supplier Relationship	Personal Selling	Marketing	0.179	0.006**
	Advertising	Marketing	0.174	0.007**
	Selective Distribution	Marketing	0.127	0.009**
Internet Customer Relationship	Market Analysis	Marketing	0.208	0.008**
	Advertising	Marketing	0.104	0.190
	Internet Distribution	Internet	0.442	0.000**
Internet Distribution	Personal Selling	Marketing	0.315	0.000**
	Advertising	Marketing	0.396	0.000**
	Selective Distribution	Marketing	0.130	0.016*
Internet Marketing	Market Analysis	Marketing	0.172	0.007**
	Advertising	Marketing	0.087	0.120
	Product Innovation	Marketing	0.155	0.007**
	Selective Distribution	Marketing	-0.106	0.007**
	Internet Customer Relationship	Internet	0.257	0.000**
	Internet Distribution	Internet	0.497	0.000**
Internet Performance	Internet Efficiency	Internet	0.184	0.000**
	Internet Distribution	Internet	0.119	0.033*
	Internet Customer Relationship	Internet	0.214	0.000**
	Internet Marketing	Internet	0.155	0.005**
	Internet Supplier Relationship	Internet	0.198	0.000**

Note: ** *represents significance at 0.01*
    * *represents significance at 0.10*

This revised model (Figure 7.2.1.2) showed good fit with a GFI, AGFI, NFI, and CFI above 0.90, and a RMR less than 0.05. In order to simplify the view of Figure 7.2.1.2, the path coefficients and their significance are shown in Table 7.2.1.2.

The five dimensions of Internet strategy showed significant paths with Internet performance at 0.01, with Internet distribution significant at a 0.10 level. This reaffirms the step-wise regression that showed similar results (Table 7.2.1). One result of an overall model is the lessening effect each dimension receives from its theoretically

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derived antecedents (Maruyama 1998). When a dimension is shown to be significant to many variables, such as was the case with the advertising dimension; the effect on one specific path is lessened. Therefore, three of the paths between advertising and an Internet strategy dimension were not significant in this analysis. Although, from a practical standpoint, advertising is an important supportive strategy factor of all dimensions, in the model direct paths were not found. However, indirect or direct relationships between advertising and each Internet strategy dimension were (Table 7.2.1). Advertising had a direct relationship with Internet distribution and Internet customer relationship, as well an indirect relationship with Internet supplier relationship (through Internet customer relationship), Internet efficiency (through Internet customer relationship and then Internet supplier relationship) and also Internet marketing (through Internet customer relationship and Internet distribution).

The model is a representation of the path and fit between Internet performance, Internet strategy and its marketing antecedents (Figure 7.2.1.2). From a marketing perspective, this model shows that each dimension of Internet strategy is vital to Internet performance. Also, certain dimensions of a marketing strategy are important as a foundation prior to deployment of an Internet strategy. For example, to integrate suppliers and customers through the use of the Internet, an ability to advertise, as well the development of a distribution system that incorporates the Internet would enable a successful implementation of an Internet strategy. If the initial foundations of marketing principles are not in place prior to the implementation of an Internet strategy, then results may be mixed at best. The same can be true of the operations strategy of an organization.

7.2.2 Internet Strategy and Operations Strategy

For this research, operations strategy was an aggregated construct that included manufacturing or service capabilities (Ward et al. 1998) and supplier and customer integration (Frohlich and Westbrook 2001). The final overall structural model of Internet strategy (Figure 6.2) showed a significant relationship between Internet strategy and operations. This finding is quite significant to determining a business-driven approach to Internet strategy, but its practical implications are somewhat abstract. Therefore, further analysis was required at the dimension level to add practical insight into the relationship between operations and Internet strategy.

The process of this analysis was similar to that conducted in the previous section between marketing and Internet strategy. A step-wise regression analysis was conducted to determine the significant relationships between each dimension of Internet strategy and the operations strategy dimensions, and then a structural model was developed to show the overall effect of each dimension and Internet performance.

Table 7.2.2.1 shows the step-wise regression for each dimension of Internet strategy. The Internet efficiency dimension had a significant relationship with three operations strategy dimensions at a level of 0.01; delivery, supplier integration, and product flexibility. The Internet can provide different types of efficiencies within an organization, however some of the more prevalent pertain to improving the ability to communicate, produce, or respond to customers or suppliers in an efficient manner. Also, the ability to offer customization within their product line has become a significant factor in differentiating an organization from its competitors. For example, a car company may enable its customers to order a vehicle online and completely customize

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Table 7.2.2.1 Step-wise Regression between the Dimensions of Internet Strategy and Operations Strategy Dimensions

Dependent Variable	Predictor Variable	t-value	Significance
Internet Efficiency			
	Delivery	5.598	0.000
	Supplier Integration	2.788	0.006
	Product Flexibility	2.748	0.006
Internet Marketing			
	Product Flexibility	3.019	0.003
	Delivery	3.278	0.001
	Supplier Integration	3.070	0.002
	Process Flexibility	2.673	0.008
Internet Customer Relationship			
	Delivery	6.135	0.000
	Customer Integration through Distribution	3.112	0.002
Internet Supplier Relationship			
	Supplier Integration	5.363	0.000
	Product Flexibility	3.892	0.000
	Customer Integration through Projects	3.029	0.003
	Delivery	2.032	0.043
Internet Distribution			
	Supplier Integration	3.852	0.000
	Process Flexibility	2.679	0.008
	Customer Integration through Distribution	3.269	0.001
	Delivery	2.573	0.011

the car to its needs and wants, and then deliver the car in an efficient and quick manner. From an operations strategic perspective, an organization should have the ability to produce a product at a fast rate, allow the customer some product flexibility which means that in order to allow for these accommodations, a tight relationship with suppliers is needed. Therefore, the delivery, supplier integration, and product flexibility are required

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capabilities of an organization that plans on developing an Internet strategy to increase efficiency.

The ability to market through the Internet has some of the same characteristics of Internet efficiency. Internet marketing includes the ability to customize service to customers as well as reaching a large geographical market. From an operations standpoint, an organization must have certain operational dimensions in place prior to offering products and services to their customers. Through step-wise regression, Internet marketing was found to be significantly related to four dimensions of operations strategy; delivery, supplier integration, product flexibility, and process flexibility (Table 7.2.2.1). As stated with the Internet efficiency dimension, in order to offer customized service to the customer, an organization must be able to have flexibility within their product line, and within their process, and be able to deliver in an efficient manner. To accomplish this, a strong relationship with its suppliers is needed. This indicates that these four dimensions of operations strategy should be at the foundation of an organization in order to develop a strong Internet marketing strategy.

The dimension of Internet customer relationship was significantly related to two operations strategy dimensions: delivery and customer integration through distribution (Table 7.2.2.1). From an operations perspective, the improvement of a relationship between an organization and its customers indicates an emphasis on the delivery of product or services. Without having an effective distribution system, which includes fast and reliable deliveries, real-time delivery status, and other ways of ensuring the customer that they will receive what they are expecting, the customer relationship would be strained. Therefore, an added emphasis by organizations to ensure complete integration

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with customers for distribution and delivery is important prior to developing aspects of an Internet strategy that pertain to the relationship with the customer.

Internet efficiency indicated a need for a high level of supplier integration. This also implies that if a high level of efficiency is achieved, a high level of Internet supplier relationship will be achievable as shown by the relationship in Figure 7.2.1.2 between Internet efficiency and Internet supplier relationship. However, for an improvement between an organization and its suppliers through the use of the Internet, four dimensions of operations strategy were found significant: delivery, supplier integration, product flexibility, and customer integration through projects. Three of these dimensions are the same as the dimensions of Internet efficiency, and can be attributed to the ability to customize and deliver a product in an efficient manner. The fourth dimension, customer integration through projects was not expected, but adds additional insight into the supplier relationship. From a manufacturing or operations perspective, when its customer brings in an organization for input during the project stage, that organization must go through a learning process that includes the expertise from their suppliers. This learning process would include accurate pricing, delivery, and specifications that would enable them to meet their customer's demands. Therefore, the relationship between an organization and their suppliers would be strengthened through this process.

The dimension Internet distribution, which includes the ability to distribute product or services to customers or from suppliers in an effective manner, not only includes quick and reliable deliveries, but also the ability to receive real-time information on current status of orders. Therefore, the integration of suppliers and customers, as well as delivery is vital to this dimension. The Internet distribution dimension had a

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significant relationship with four dimensions of operations strategy at a significance level of 0.01; delivery, supplier integration, customer integration through distribution, and process flexibility (Table 7.2.2.1). For a strategic development of Internet distribution to be viable, an organization must first have reliable delivery, as well as integration with suppliers and customers from a distribution perspective. Also, the step-wise regression showed a relationship between Internet distribution and process flexibility. In many instances, for customization to occur with the use of the Internet, the ability to deliver a product or service quicker than usual to meet customer demands may be necessary. To meet this requirement, an organization would need to be flexibility within its processes to allow for such changes. Therefore, not only is integration between suppliers and customers important for an Internet distribution dimension to be viable in an organization, but for it to increase any type of Internet performance, the ability to change or show flexibility within processes or delivery dates is necessary.

All five dimensions of Internet strategy showed similar relationships with operations strategy. Surprisingly, cost and quality were shown to not have a significant relationship to an Internet strategy dimension. The ability to deliver and integrate with customers and suppliers were the key dimensions that should be in place prior to applying an Internet strategy. Otherwise, the Internet will not increase an organization's competitive advantage, but only make it similar to its competitors. Therefore, a structural equation model was developed to show the relationships between Internet strategy and its operational strategy antecedents, as well as Internet performance (figure 7.2.2.1).

Figure 7.2.2.1 shows the development of the structural model. The relationships from the step-wise regression are shown through the paths from operations strategy to

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Internet strategy (Table 7.2.2.1). The interdependencies of each of the Internet strategy

dimensions were also included, due to the structural equation model that included

marketing (Figure 7.2.1.2).

The model showed good fit, with all of the major indexes above 0.90 and RMR

less than 0.05. Also, the modification index provided by AMOS 4.0 did not indicate any

changes. Therefore, this model is a good representation of the relationship between

Internet performance, Internet strategy, and its operations strategy antecedents. Also

most of the paths were found to be significant at a 0.01 level (See Table 7.2.2.2 for

results). Some noted exceptions included the Internet marketing and its operational

GFI = 0.983   AGFI = 0.939   NFI = 0.986   CFI = 0.997   RMR = 0.026
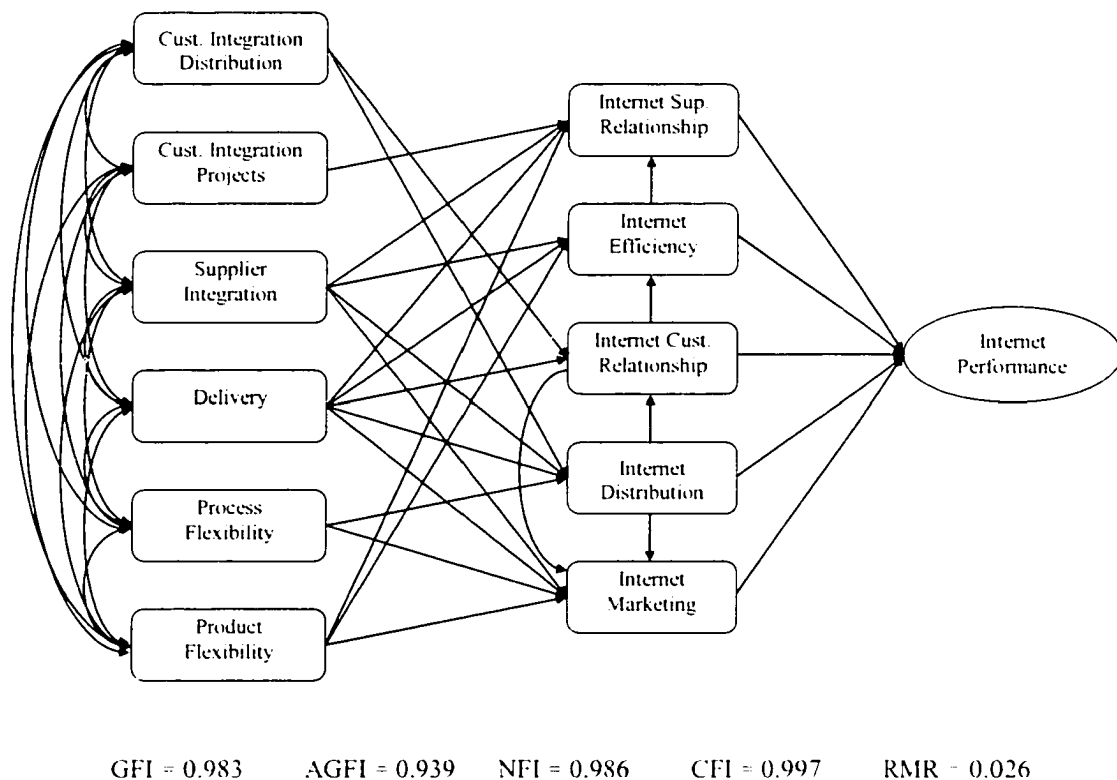
Figure 7.2.2.1 Structural Equation Model of Internet Performance, Internet Strategy, and its Operations Strategy Antecedents

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Table 7.2.2.2 Path Coefficients for the Structural Model Representing Internet Performance, Internet Strategy, and its Operations Strategy Antecedents

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Efficiency	Supplier Integration	Operations	0.163	0.006**
	Delivery	Operations	0.258	0.000**
	Product Flexibility	Operations	0.138	0.017**
	Internet Customer Relationship	Internet	0.516	0.000**
Internet Supplier Relationship	Customer Integration through Projects	Operations	0.181	0.000**
	Supplier Integration	Operations	0.292	0.000**
	Delivery	Operations	-0.055	0.340
	Product Flexibility	Operations	0.133	0.005**
	Internet Efficiency	Internet	0.429	0.000**
Internet Customer Relationship	Customer Integration through Distribution	Operations	-0.034	0.580
	Delivery	Operations	0.287	0.000**
	Internet Distribution	Internet	0.493	0.000**
Internet Distribution	Customer Integration through Distribution	Operations	0.232	0.000**
	Supplier Integration	Operations	0.269	0.000**
	Delivery	Operations	0.186	0.011**
	Process Flexibility	Operations	0.202	0.001**
Internet Marketing	Supplier Integration	Operations	-0.006	0.894
	Delivery	Operations	0.061	0.289
	Process Flexibility	Operations	0.042	0.396
	Product Flexibility	Operations	0.140	0.003**
	Internet Customer Relationship	Internet	0.302	0.000**
	Internet Distribution	Internet	0.486	0.000**
Internet Performance	Internet Efficiency	Internet	0.184	0.000**
	Internet Distribution	Internet	0.119	0.032*
	Internet Customer Relationship	Internet	0.214	0.000**
	Internet Marketing	Internet	0.155	0.006**
	Internet Supplier Relationship	Internet	0.198	0.000**

Note: ** *represents significance at 0.01*
    * *represents significance at 0.10*

antecedents. Delivery, supplier integration, and process flexibility were not significantly related through Internet marketing, but they did have an indirect relationship with Internet marketing through Internet customer relationship and Internet distribution. Therefore, in order to deploy an Internet marketing initiative, an organization should already have the ability to enhance customer relationships through the Internet, as well as a system in place for distribution of product through the Internet.

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7.3 Dimension-Level Analysis of Internet Performance

From an overall performance perspective the preceding sections offer additional insight into the dimensions needed at the marketing and operational level of strategy in order to deploy an effective business-driven Internet strategy. However, the performance measure is made up four dimensions; revenue expansion, relationship enhancement, cost reduction, and time reduction, and each dimension requires a different level of strategy from each dimension of Internet strategy. Many organizations may only try to pursue one or two of these aspects in an initial development of an Internet strategy. For example, an organization that has a set number of customers and would like to use the Internet reduce the time and cost to process orders need to know the aspects of their organization that are important as a foundation to Internet deployment. Therefore, further analysis was conducted at the dimension level of Internet performance.

This was achieved by first performing a step-wise regression between each dimension of Internet performance (dependent variable) and the dimensions of Internet strategy (Table 7.3). Models were then developed for each dimension of Internet performance, which also included the significant Internet strategy dimensions and their marketing and operational antecedents. A final step was the development of a final model for the dimension of Internet performance that included only the significant relationships, which would then indicate the vital dimensions of marketing, operations, and Internet strategy in order to achieve revenue expansion, relationship enhancement, cost reduction, or time reduction.

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Table 7.3 Step-wise Regression between the Dimensions of Internet Performance and Internet Strategy Dimensions

Dependent Variable	Predictor Variable	t-value	Significance
Revenue Expansion			
	Internet Customer Relationship	9.687	0.000
	Internet Marketing	6.277	0.000
Relationship Enhancement			
	Internet Supplier Relationship	5.215	0.000
	Internet Marketing	3.589	0.000
	Internet Customer Relationship	2.947	0.004
Cost Reduction			
	Internet Efficiency	5.667	0.000
	Internet Supplier Relationship	2.957	0.003
	Internet Distribution	2.618	0.009
	Internet Marketing	2.093	0.037
Time Reduction			
	Internet Efficiency	5.890	0.000
	Internet Supplier Relationship	4.237	0.000
	Internet Customer Relationship	2.964	0.003
	Internet Distribution	2.236	0.036

7.3.1 Revenue Expansion, Internet Strategy, and its Antecedents

Revenue expansion pertains to the improvement an organization receives from the Internet in reaching new markets, increasing revenue, and increasing the reach of an organization. According to a step-wise regression analysis (Table 7.3), Internet customer relationship and Internet marketing were significantly related to revenue expansion at a 0.01 level. This indicates a customer approach to increasing revenues and suggests that in order to increase revenues through the use of the Internet, an organization should focus their efforts on marketing to their customers or potential customers, as well improve

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channels of communication between itself and its customers. Therefore, an initial model was developed that included revenue expansion, Internet customer relationship, Internet marketing and their respective marketing and operational antecedents (Figure 7.3.1.1).

The initial model for revenue expansion showed excellent fit with GFI = 0.989. AGFI, 0.942, NFI = 0.989. CFI = 0.998, and RMR of 0.019. However, there were a few paths that were found to be non-significant when incorporated into an overall model (Table 7.3.1.1). A few of the paths for Internet marketing and its antecedents were found to be non-significant; and were removed to represent a parsimonious model of revenue expansion (7.3.1.2).
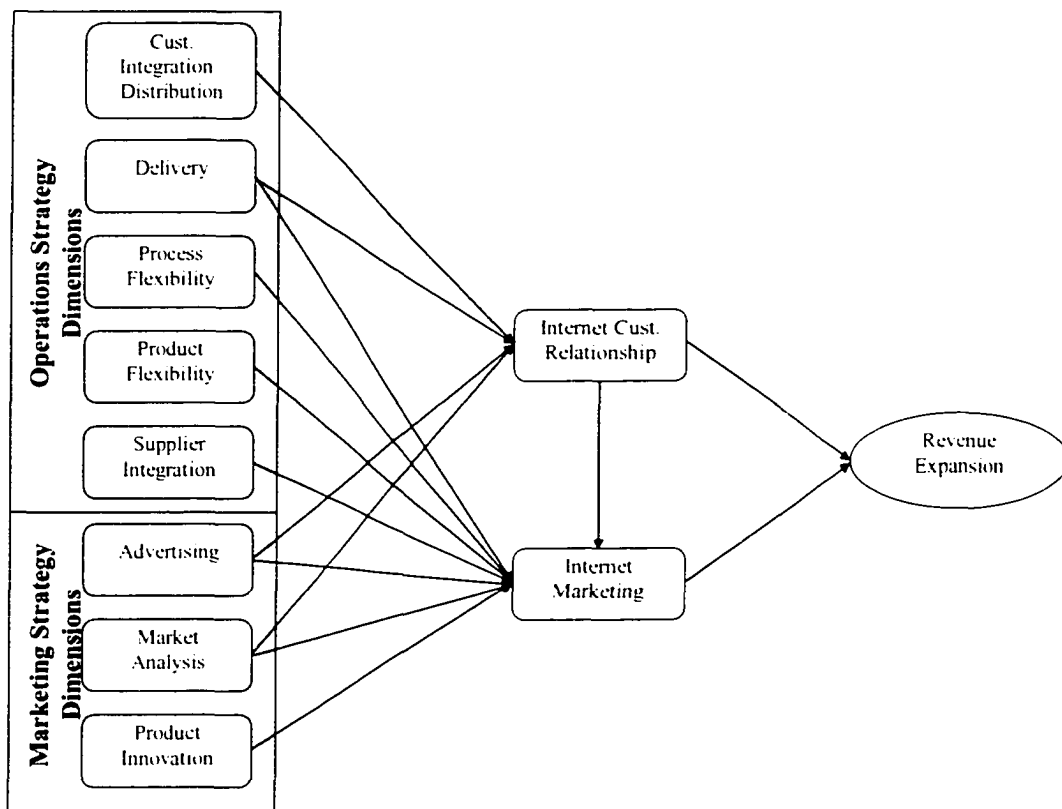
GFI = 0.989   AGFI = 0.942   NFI = 0.989   CFI = 0.998   RMR = 0.019

7.3.1.1 Structural Equation Model of Revenue Expansion, Internet Strategy, and its Antecedents – Initial Model
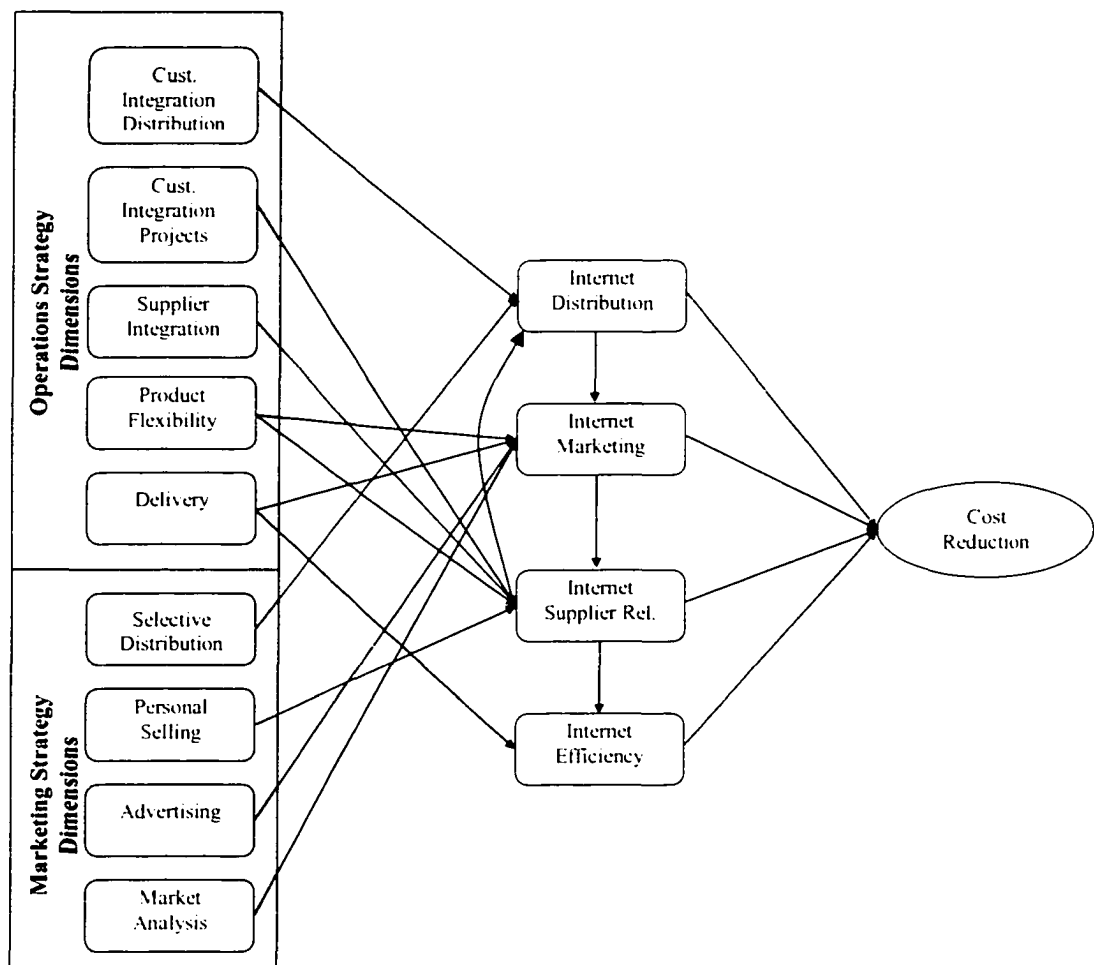
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Table 7.3.1.1 Path Coefficients for the Structural Model Representing Revenue Expansion, Internet Strategy, and its Antecedents – Initial Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Customer Relationship	Advertising	Marketing	0.282	0.000**
	Market Analysis	Marketing	0.160	0.076*
	Delivery	Operations	0.293	0.000**
	Customer Integration through Distribution	Operations	0.105	0.086*
Internet Marketing	Advertising	Marketing	0.167	0.009**
	Market Analysis	Marketing	0.164	0.031*
	Product Innovation	Marketing	0.059	0.423
	Product Flexibility	Operations	0.119	0.024*
	Delivery	Operations	0.017	0.802
	Supplier Integration	Operations	0.099	0.058*
	Process Flexibility	Operations	0.064	0.289
	Internet Customer Relationship	Internet	0.436	0.000**
Revenue Expansion	Internet Customer Relationship	Internet	0.502	0.000**
	Internet Marketing	Internet	0.353	0.000**

Note: ** represents significance at 0.01
          * represents significance at 0.10

The final model (Figure 7.3.1.2) included only the significant paths between Internet strategy and its antecedents. To simplify Figure 7.3.1.2, the path coefficients were included in Table 7.3.1.2. The model improved slightly, which indicates that by removing the non-significant paths, the model was not affected in an adverse direction. However, it does show a more practical and appropriate model that can be more easily explained.

Based on this model (Figure 7.3.1.2) and its path coefficients (Table 7.3.1.2), six dimensions were required at the functional level of an organization: advertising, market analysis, cost integration through distribution, delivery, product flexibility, and supplier integration. From a marketing perspective an organization that relies on advertising and innovation through market research should look to the Internet to increase revenues. If an organization relies on personal selling instead of advertising, then to increase revenues

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through the Internet may be futile. Therefore, for a business-driven approach to Internet strategy, an organization that has excelled through advertising and innovation can enhance its ability to increase revenues through advertising their new and exciting products through the Internet. However, an organization that does not have these characteristics may try to reach a broader audience through the Internet, but may not be targeting the appropriate market.

From an operational perspective, the characteristics of an organization that can deliver customized orders and that is highly integrated with customers and suppliers will excel in improving revenues through the use of Internet. Therefore, an organization must look within itself prior to developing a strategy to increase revenues through the use of the Internet and decide if it possesses the infrastructure needed to compete.
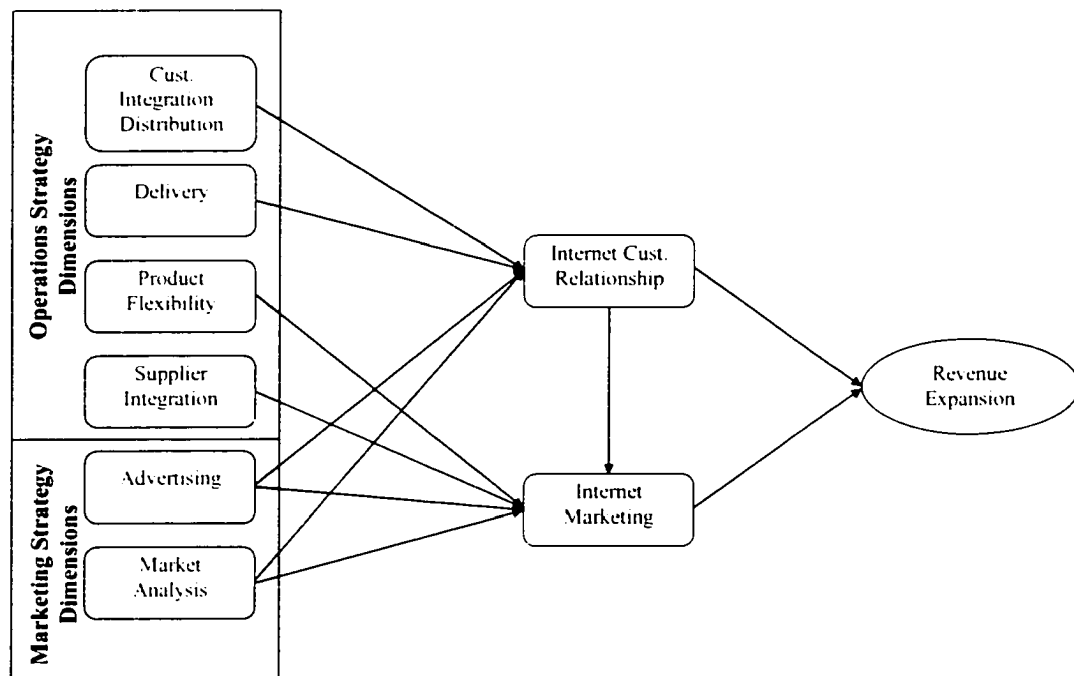
GFI = 0.991   AGFI = 0.960   NFI = 0.991   CFI = 0.999   RMR = 0.022

7.3.1.2 Structural Equation Model of Revenue Expansion, Internet Strategy, and its Antecedents – Final Model

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Table 7.3.1.2 Path Coefficients for the Structural Model Representing Revenue Expansion, Internet Strategy, and its Antecedents – Final Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Customer Relationship	Advertising	Marketing	0.282	0.000**
	Market Analysis	Marketing	0.160	0.076*
	Delivery	Operations	0.293	0.000**
	Customer Integration through Distribution	Operations	0.105	0.086*
Internet Marketing	Advertising	Marketing	0.172	0.007**
	Market Analysis	Marketing	0.215	0.001**
	Product Flexibility	Operations	0.140	0.006**
	Supplier Integration	Operations	0.113	0.028*
	Internet Customer Relationship	Internet	0.450	0.000**
Revenue Expansion	Internet Customer Relationship	Internet	0.502	0.000**
	Internet Marketing	Internet	0.353	0.000**

Note: ** *represents significance at 0.01*
     * *represents significance at 0.10*

7.3.2 Relationship Enhancement, Internet Strategy, and its Antecedents

Not all organizations look at the Internet as a way of expanding revenues. Some may want to improve their relationship with customers and suppliers through the use of Internet. The need to understand the appropriate development of an Internet strategy and the necessary foundation of an operations and marketing strategy is required prior to expectation of relationship enhancement. According to a step-wise regression between relationship enhancement and the dimensions of Internet strategy, three dimensions were found significantly related: Internet marketing, Internet supplier relationship, Internet customer relationship (Table 7.3). This indicated an overall development of communication between all of the members of the organization's value chain. This value chain includes customers (prospective and current) and suppliers. Therefore, the need to enhance relationships between current and potential customers through Internet marketing and Internet customer relationship as well as a need to enhance relationships

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between its suppliers through Internet supplier relationship is prevalent in order to attain a high level of relationship enhancement.

To show these relationships, as well as their marketing and operational antecedents, a structural equation model was developed (Figure 7.3.2.1). This model also included the initial relationships to the three dimensions of Internet strategy that were

GFI = 0.981   AGFI = 0.913   NFI = 0.983   CFI = 0.994   RMR = 0.029
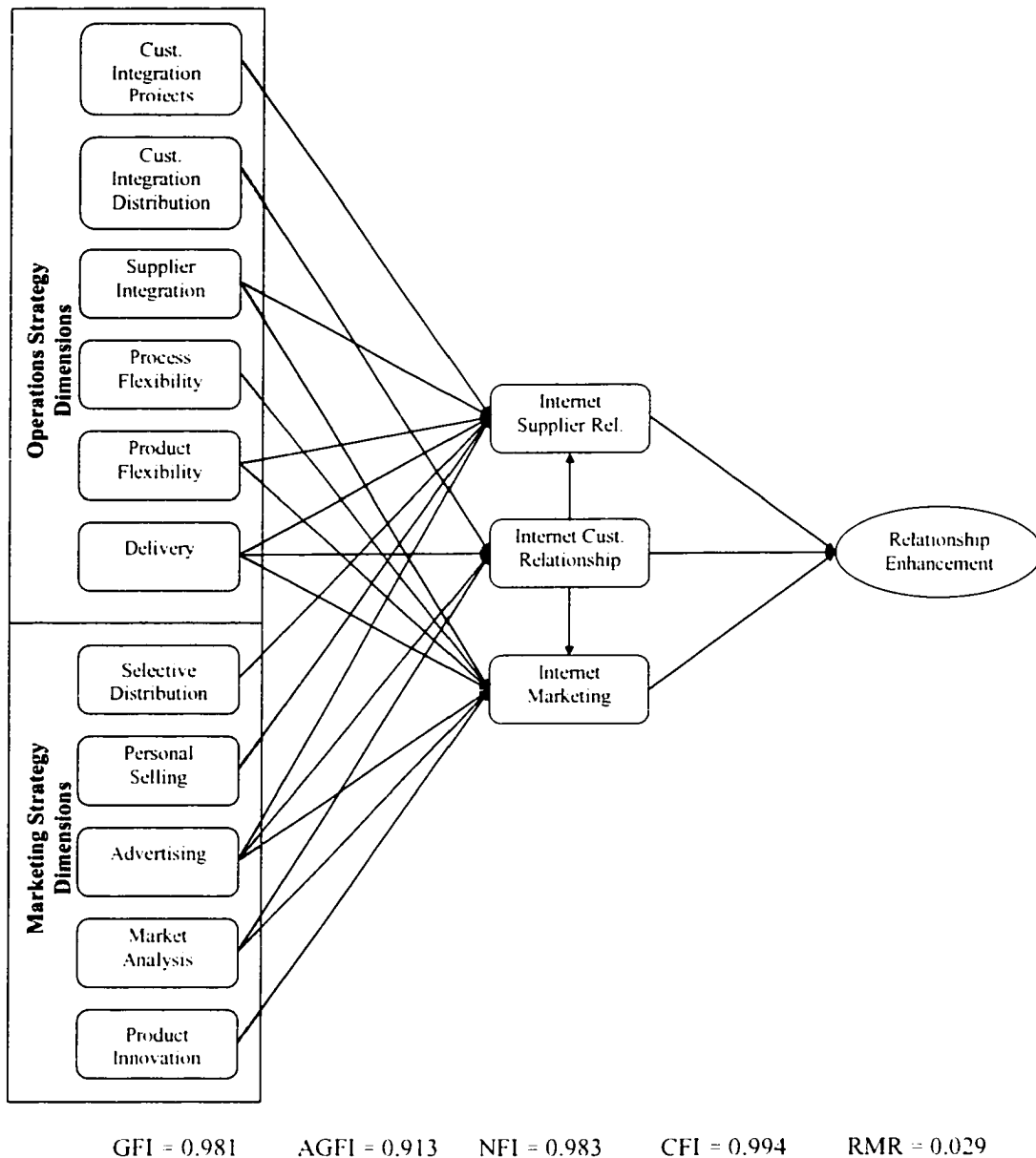
7.3.2.1 Structural Equation Model of Relationship Enhancement, Internet Strategy, and its Antecedents – Initial Model

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Table 7.3.2.1 Path Coefficients for the Structural Model Representing Relationship Enhancement, Internet Strategy, and its Antecedents – Initial Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Marketing	Advertising	Marketing	0.161	0.011*
	Market Analysis	Marketing	0.168	0.020*
	Product Innovation	Marketing	0.064	0.365
	Product Flexibility	Operations	0.116	0.028*
	Delivery	Operations	0.005	0.934
	Supplier Integration	Operations	0.095	0.066*
	Process Flexibility	Operations	0.084	0.146
	Internet Customer Relationship	Internet	0.435	0.000**
Internet Customer Relationship	Advertising	Marketing	0.282	0.000**
	Market Analysis	Marketing	0.160	0.076*
	Delivery	Operations	0.293	0.000**
	Customer Integration through Distribution	Operations	0.105	0.086*
Internet Supplier Relationship	Supplier Integration	Operations	0.302	0.000**
	Product Flexibility	Operations	0.158	0.003**
	Customer Integration through Projects	Operations	0.153	0.005**
	Personal Selling	Marketing	0.137	0.018*
	Internet Customer Relationship	Internet	0.382	0.000**
Relationship Enhancement	Internet Customer Relationship	Internet	0.125	0.039*
	Internet Marketing	Internet	0.187	0.004**
	Internet Supplier Relationship	Internet	0.340	0.000**

Note: ** *represents significance at 0.01*
 * *represents significance at 0.10*

found in previous analysis (Figure 7.2.1.2). The model showed good fit with all major indexes higher than 0.90 and RMR lower than 0.05. Most of the path coefficients were significant, with few exceptions (Table 7.3.2.1). The non-significant relationships were within the Internet marketing dimension, similar to the results for revenue expansion. Therefore, a second model was developed including only significant relationship at a significance level of 0.10 (Figure 7.3.2.2).

The final model excluded the paths that were not significant in the initial model (See Table 7.3.2.1 for non-significant path coefficients). This enabled a more parsimonious model with only the paths that were significant. The path coefficients were

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compiled into Table 7.3.2.2 to simplify Figure 7.3.2.2. The fit measures for the final model were similar to the initial model, which were very good (Figure 7.3.2.2). Therefore, no significant change occurred by the omission of non-significant paths.

From a marketing perspective, the same dimensions of marketing strategy were the same as revenue expansion, (advertising and market analysis), with the addition of personal selling. The addition of personal selling is due to the need to also look down stream to supplier relationships in order to enhance not only the customer's experience.
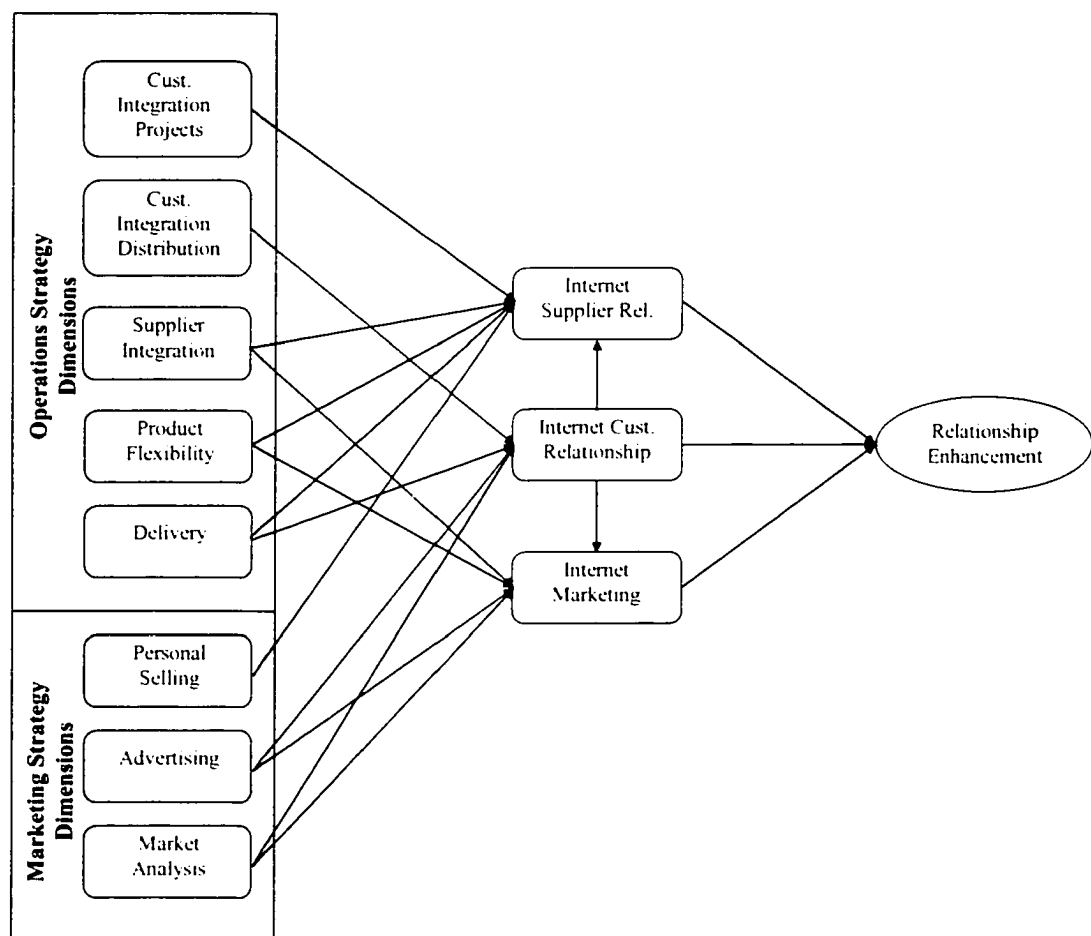
GFI = 0.979   AGFI = 0.917   NFI = 0.979   CFI = 0.991   RMR = 0.030

7.3.2.2 Structural Equation Model of Relationship Enhancement, Internet Strategy, and its Antecedents – Final Model

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Table 7.3.2.2 Path Coefficients for the Structural Model Representing Relationship Enhancement, Internet Strategy, and its Antecedents – Final Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Customer Relationship	Advertising	Marketing	0.282	0.000**
	Market Analysis	Marketing	0.160	0.076*
	Delivery	Operations	0.293	0.000**
	Customer Integration through Distribution	Operations	0.105	0.086*
Internet Marketing	Advertising	Marketing	0.156	0.061*
	Market Analysis	Marketing	0.219	0.064*
	Product Flexibility	Operations	0.142	0.051*
	Supplier Integration	Operations	0.117	0.052*
	Internet Customer Relationship	Internet	0.453	0.046*
Internet Supplier Relationship	Supplier Integration	Operations	0.301	0.059*
	Product Flexibility	Operations	0.178	0.054*
	Customer Integration through Projects	Operations	0.150	0.054*
	Delivery	Operations	-0.107	0.062*
	Personal Selling	Marketing	0.170	0.060*
	Internet Customer Relationship	Internet	0.403	0.046*
Relationship Enhancement	Internet Customer Relationship	Internet	0.125	0.039*
	Internet Marketing	Internet	0.187	0.004**
	Internet Supplier Relationship	Internet	0.340	0.000**

Note: ** represents significance at 0.01
         * represents significance at 0.10

Personal selling enables more critical information to be exchanged between an organization and its customers, which filters down stream to their suppliers. Without knowing exactly what the customer may need or want, it can be hard to identify key attributes from suppliers, which may strain the relationship. Therefore, for an upstream or customer perspective, advertising and market analysis are quite important, but to identify key characteristics needed from suppliers, personal selling is the only aspect of marketing that will assist.

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Relationship enhancement can be improved through the operations strategy of an organization more effectively when looking into the integration of customers and suppliers, product flexibility and also reliable delivery. To improve relationships throughout the value chain, integration of systems and knowledge is vital from the customer to the supplier, and the ability for an organization to customize products or service to their customer through the use of the Internet, will lead to a distinct advantage. Therefore, to enhance relationships, the ability to offer a customized product with reliable delivery through the Internet is vital to enhancing the customer experience. To accomplish and improve relationships with suppliers a complete value chain integration of systems and information is needed prior to deploying an Internet strategy to attain relationship enhancement.

7.3.3 Cost Reduction, Internet Strategy, and its Antecedents

There also internal aspects of an organization that can be improved through the use of the Internet such as the ability to reduce administrative and production costs. Cost reduction was found to have a significant relationship with Internet efficiency, Internet supplier relationship, and Internet distribution at a 0.01 level, and Internet marketing at 0.05. To reduce the cost to process orders, of highest importance to an Internet strategy should be improving internal efficiencies, then look to integrating distribution as well as improving the relationship between an organization and its suppliers. An organization can also look to reduce the cost of marketing, but immediate results will be through the reduction of internal processes. This approach looks at taking an internal approach to the Internet and then looks externally for utilization of the Internet.

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An initial model was developed to show the relationship between cost reduction, dimensions of Internet strategy and its antecedents (Figure 7.3.3.1). Also included in the model were the interdependencies that were found between Internet distribution and Internet marketing, as well as Internet supplier relationship and Internet efficiency. This initial model had adequate measures of GFI = 0.941, NFI = 0.944, and CFI = 0.954. However, the AGFI was below an acceptable level (AGFI = 0.748) and the RMR was higher than the acceptable 0.05 (RMR = 0.079). Therefore the need to evaluate not only the non-significant paths, but also the need for any modifications was needed. According to the path coefficients for this model (Table 7.3.3.1); there were several non-significant paths. This can attributed to the vast number of paths included in the initial model, which spreads the strength of relationships quite thin throughout the model. Any non-significant paths were excluded from a final model.

A further review of the initial structural equation model (Figure 7.3.3.1) found modifications needed to improve the overall fit indexes. When referring to a reduction in costs, a strong supplier relationship can lead to a more effective and cost conscious development of a distribution system that utilizes the Internet. For example, an organization that has integrated its ordering system with suppliers could notify suppliers immediately when orders are placed. An order from a customer could automatically generate an order to a supplier, which would improve the efficiency and cost of placing orders. Therefore, according to the model and based on practical implications, a relationship between Internet supplier relationship and Internet distribution was included in a final model (Figure 7.3.3.2). Also included in the final model was a path between Internet marketing and Internet supplier relationship. This path is a result of the ability to

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not only marketing thought the Internet. but the ability to receive and process orders via the Internet. If an organization deploys an Internet strategy that includes the ability to process orders, then integration with suppliers through the Internet could be more easily available, which would enhance the relationship with suppliers.
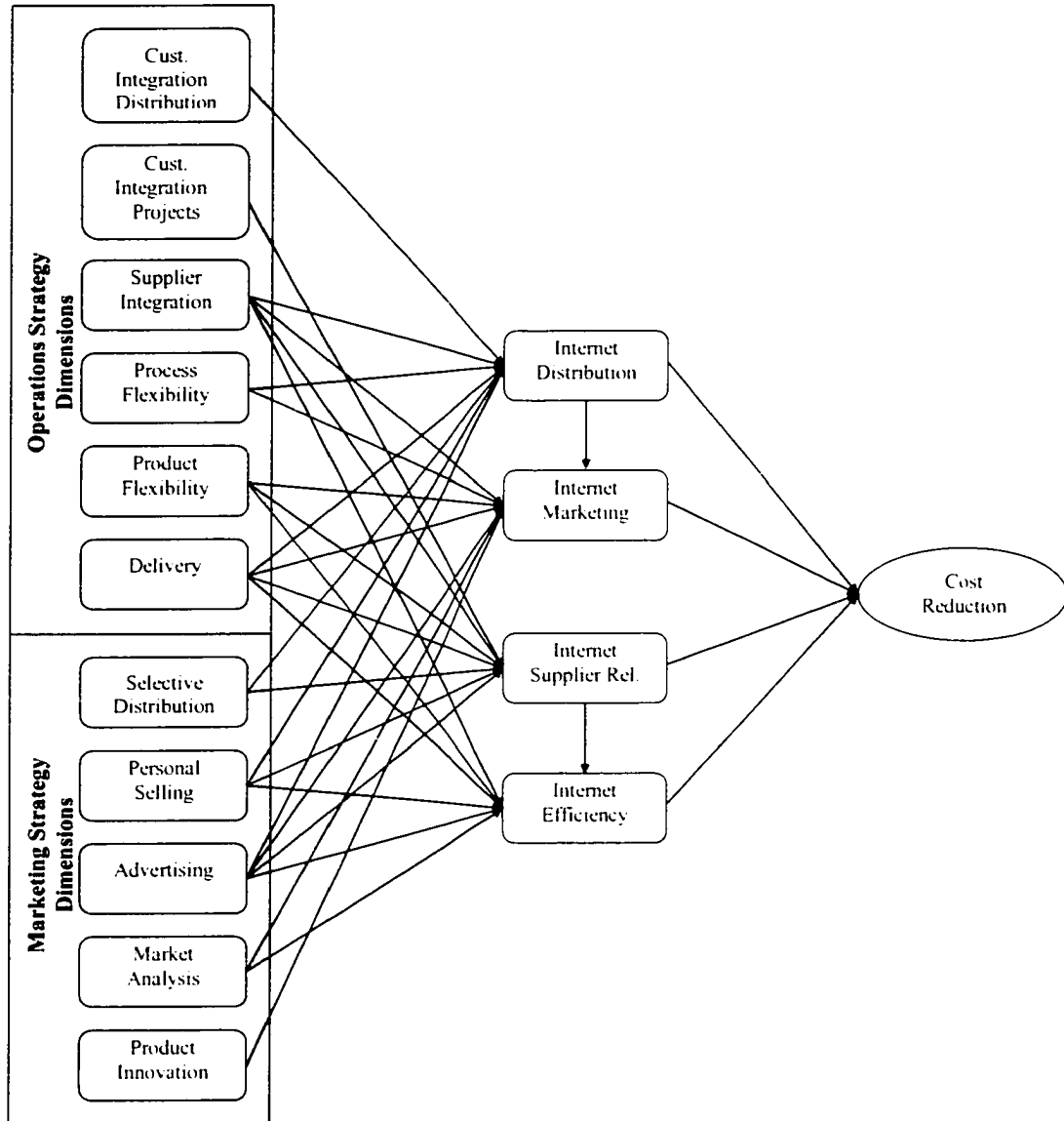
GFI = 0.941   AGFI = 0.748   NFI = 0.944   CFI = 0.954   RMR = 0.079

7.3.3.1 Structural Equation Model of Cost Reduction, Internet Strategy, and its Antecedents – Initial Model

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Table 7.3.3.1 Path Coefficients for the Structural Model Representing Cost Reduction, Internet Strategy, and its Antecedents – Initial Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Supplier Relationship	Supplier Integration	Operations	0.256	0.000**
	Product Flexibility	Operations	0.166	0.007**
	Customer Integration through Projects	Operations	0.201	0.002**
	Delivery	Operations	0.056	0.423
	Personal Selling	Marketing	0.121	0.105
	Selective Distribution	Marketing	0.052	0.335
	Advertising	Marketing	0.205	0.002**
Internet Distribution	Selective Distribution	Marketing	0.065	0.238
	Personal Selling	Marketing	0.087	0.263
	Advertising	Marketing	0.338	0.000**
	Supplier Integration	Operations	0.126	0.069*
	Process Flexibility	Operations	0.099	0.138
	Customer Integration through Distribution	Operations	0.215	0.002**
	Delivery	Operations	0.112	0.125
Internet Efficiency	Delivery	Operations	0.287	0.000**
	Supplier Integration	Operations	-0.163	0.013*
	Product Flexibility	Operations	-0.023	0.713
	Personal Selling	Marketing	0.117	0.127
	Market Analysis	Marketing	0.086	0.293
	Advertising	Marketing	0.071	0.347
	Internet Supplier Relationship	Internet	0.672	0.000**
Internet Marketing	Internet Distribution	Internet	0.586	0.000**
	Product Innovation	Marketing	0.162	0.017*
	Market Analysis	Marketing	0.145	0.036*
	Advertising	Marketing	0.088	0.144
	Product Flexibility	Operations	0.112	0.021*
	Delivery	Operations	0.079	0.190
	Supplier Integration	Operations	-0.071	0.152
	Process Flexibility	Operations	-0.045	0.420
Cost Reduction	Internet Marketing	Internet	0.139	0.012*
	Internet Efficiency	Internet	0.363	0.000**
	Internet Supplier Relationship	Internet	0.202	0.000**
	Internet Distribution	Internet	0.227	0.000**

Note: ** represents significance at 0.01
* represents significance at 0.10

The final structural model for cost reduction showed adequate fit, with all of the fit indexes in an acceptable range of values. All of the path coefficients, which were included in Table 7.3.3.2 to simplify the Figure 7.3.3.2, were significant and represent a model for reducing costs via the Internet.

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From a marketing perspective, three of the same characteristics of relationship enhancement were also significant for cost reduction. Another marketing dimension is selective distribution, which was added due to the inclusion of Internet distribution as a critical dimension of cost reduction. For an organization to integrate systems and the ability to distribute, selective distribution will enhance their position. Selective distribution includes the ability for suppliers or distributors to also market your products effectively, which switched some of the cost to them from a marketing stand point.

GFI = 0.961   AGFI = 0.876   NFI = 0.967   CFI = 0.980   RMR = 0.049

7.3.3.2 Structural Equation Model of Cost Reduction, Internet Strategy, and its Antecedents – Final Model

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Table 7.3.3.2 Path Coefficients for the Structural Model Representing Cost Reduction, Internet Strategy, and its Antecedents – Final Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Marketing	Market Analysis	Marketing	0.212	0.001**
	Advertising	Marketing	0.156	0.007**
	Product Flexibility	Operations	0.117	0.015*
	Delivery	Operations	0.124	0.034*
	Internet Distribution	Internet	0.411	0.000**
Internet Supplier Relationship	Supplier Integration	Operations	0.261	0.000**
	Product Flexibility	Operations	0.094	0.071*
	Customer Integration through Projects	Operations	0.120	0.025*
	Personal Selling	Marketing	0.182	0.001**
	Internet Marketing	Internet	0.368	0.000**
Internet Distribution	Selective Distribution	Marketing	0.082	0.084*
	Customer Integration through Distribution	Operations	0.159	0.007**
	Internet Supplier Relationship	Internet	0.679	0.000**
Internet Efficiency	Delivery	Operations	0.359	0.000**
	Internet Supplier Relationship	Internet	0.615	0.000**
Cost Reduction	Internet Marketing	Internet	0.139	0.065*
	Internet Efficiency	Internet	0.363	0.000**
	Internet Supplier Relationship	Internet	0.202	0.006**
	Internet Distribution	Internet	0.227	0.003**

Note: ** represents significance at 0.01
* represents significance at 0.10

Operations strategy is the same for this aspect of Internet performance as it was for relationship enhancement. This continues to reinforce the notion of an organization's ability to offer customized product with quick and reliable deliveries, which is enabled through an integrated value chain. Therefore, it is becoming evident that this type of operations strategy is a prerequisite for a competitive advantage with the use of the Internet.

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7.3.4 Time Reduction, Internet Strategy, and its Antecedents

Another aspect of Internet performance from an internal viewpoint is time reduction. Time reduction had significant relationships between Internet strategy dimensions similar to cost reduction, except for a significant relationship between time reduction and Internet customer relationship (Table 7.3). Internet efficiency, Internet supplier relationship, and Internet customer relationship were significantly related to time reduction at a 0.01 level. Internet distribution was significant to time reduction at a significance level of 0.05. Therefore, to reduce the time to processes orders, an organization should look at improving efficiencies through the Internet, and then improve the relationships and integration with suppliers and customers.

An initial model of time reduction, Internet strategy and its antecedents was developed with the use of structural equation modeling (Figure 7.3.4.1). The model also included the interdependencies between the dimensions of Internet strategy. The model showed adequate fit, but based on the measures for AGFI of 0.765 and RMR of 0.063, modifications were needed. According to the path coefficients (Table 7.3.4.1), many of the paths between marketing dimensions and Internet strategy were non-significant. This implies an operations approach to reducing the time to process, with some lessened emphasis on marketing strategy. Based on the operations strategy dimensions, the same dimensions were significant as before with cost reduction and relationship enhancement. The one noted exception is the addition of process flexibility, but this dimension enhances the ideology of a customized marketing and operations approach.

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A final model included only the significant path coefficients and according to the modification index provided by AMOS 4.0, some additional paths were needed. According to the results of the model, for an optimal model for time reduction, Internet customer relationship had an effect on Internet efficiency. This relationship is indicative of a customer driven approach to production. To process orders accurately and
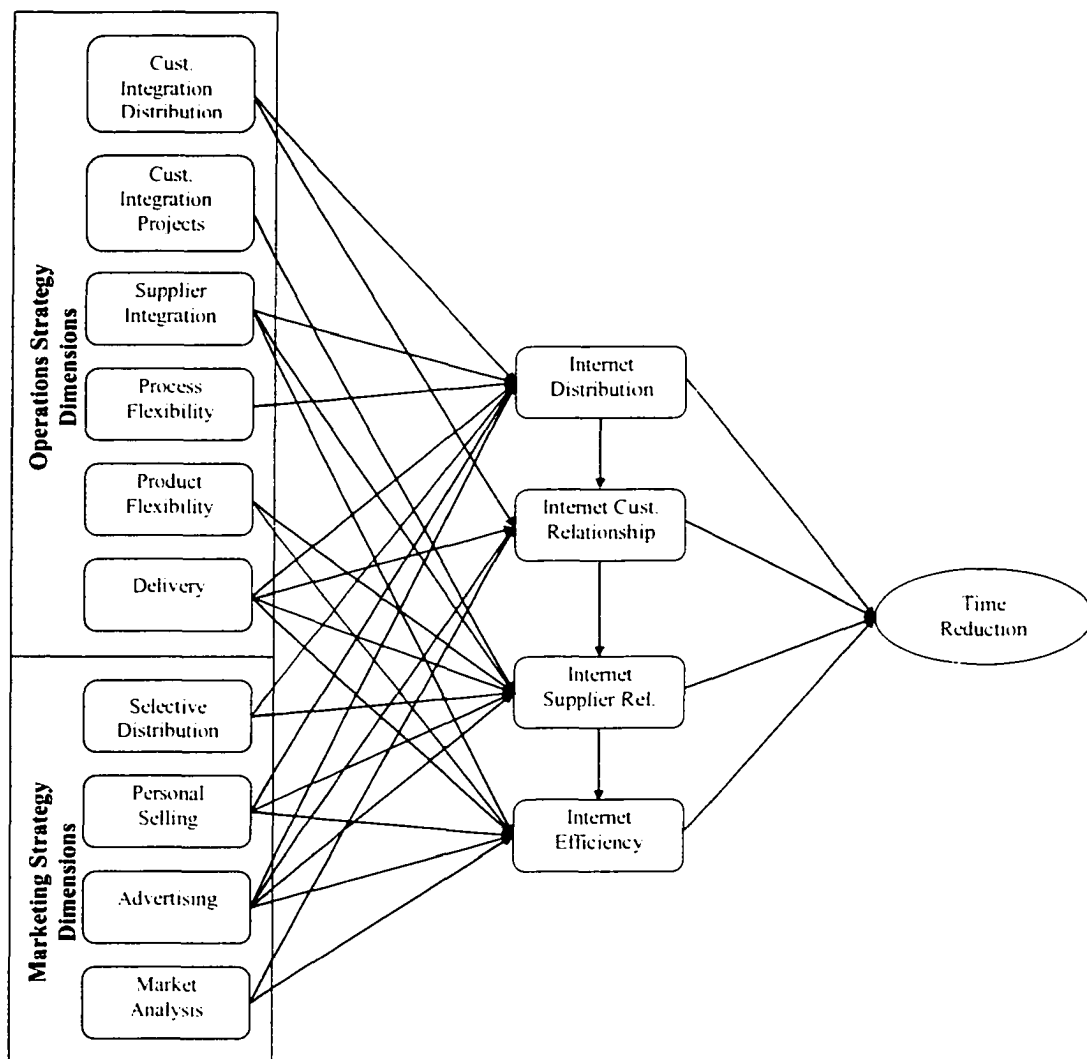
GFI = 0.943   AGFI = 0.765   NFI = 0.944   CFI = 0.955   RMR = 0.063

7.3.4.1 Structural Equation Model of Time Reduction, Internet Strategy, and its Antecedents – Initial Model

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Table 7.3.4.1 Path Coefficients for the Structural Model Representing Time Reduction, Internet Strategy, and its Antecedents – Initial Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Customer Relationship	Advertising	Marketing	0.117	0.134
	Market Analysis	Marketing	0.110	0.190
	Delivery	Operations	0.224	0.002**
	Customer Integration through Distribution	Operations	-0.043	0.476
	Internet Distribution	Internet	0.423	0.000**
Internet Supplier Relationship	Supplier Integration	Operations	0.276	0.000**
	Product Flexibility	Operations	0.165	0.003**
	Customer Integration through Project	Operations	0.159	0.005**
	Delivery	Operations	-0.087	0.172
	Personal Selling	Marketing	0.130	0.052*
	Selective Distribution	Marketing	0.042	0.393
	Advertising	Marketing	0.059	0.342
	Internet Customer Relationship	Internet	0.384	0.000**
Internet Distribution	Selective Distribution	Marketing	0.065	0.238
	Personal Selling	Marketing	0.087	0.263
	Advertising	Marketing	0.338	0.000**
	Supplier Integration	Operations	0.126	0.069*
	Process Flexibility	Operations	0.099	0.138
	Customer Integration through Distribution	Operations	0.215	0.002**
	Delivery	Operations	0.112	0.125
Internet Efficiency	Delivery	Operations	0.287	0.000**
	Supplier Integration	Operations	-0.163	0.014*
	Product Flexibility	Operations	-0.023	0.713
	Personal Selling	Marketing	0.117	0.128
	Market Analysis	Marketing	0.086	0.293
	Advertising	Marketing	0.071	0.345
	Internet Supplier Relationship	Internet	0.672	0.000**
Time Reduction	Internet Customer Relationship	Internet	0.228	0.000**
	Internet Efficiency	Internet	0.343	0.000**
	Internet Supplier Relationship	Internet	0.261	0.000**
	Internet Distribution	Internet	0.159	0.002**

Note: ** *represents significance at 0.01*
represents significance at 0.10

efficiently, information is needed in a timely manner from the customer, which can only be accomplished with a close relationship. Therefore, a path between Internet customer relationship and Internet efficiency was included in the final model (Figure 7.3.4.2).

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According to the final structural model for time reduction (Figure 7.3.4.2), only two dimensions of marketing strategy were needed as a prerequisite to deploying an Internet strategy. Table 7.3.4.2 shows the path coefficients in order to simplify Figure 7.3.4.2. Each of these has been included in the other dimensions of Internet performance and implies that a need to communicate with suppliers and customers is enhanced through personal selling. Internet distribution had a direct relationship with advertising, which can be attributed to the ability to attract orders will enhance the ability to distribute orders.
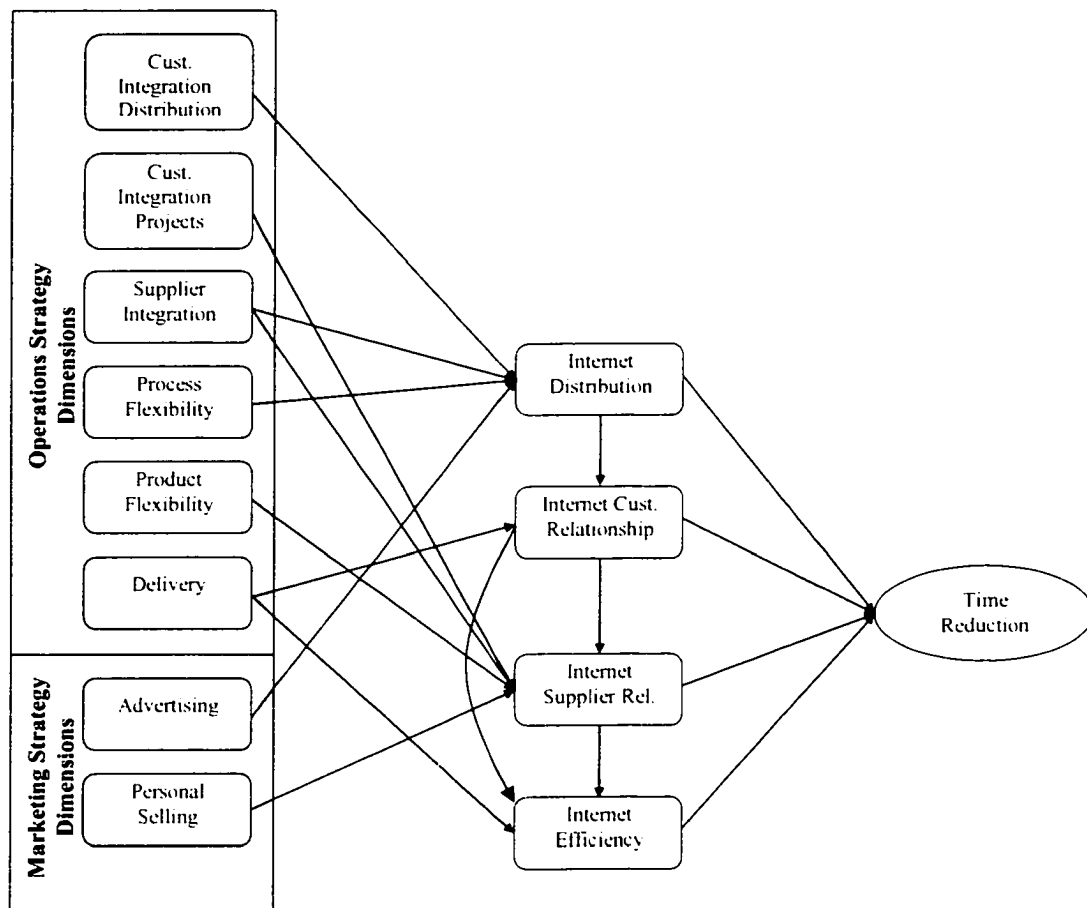
GFI = 0.971   AGFI = 0.914   NFI = 0.975   CFI = 0.990   RMR = 0.047

7.3.4.2 Structural Equation Model of Time Reduction, Internet Strategy, and its Antecedents – Final Model

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Table 7.3.4.2 Path Coefficients for the Structural Model Representing Time Reduction, Internet Strategy, and its Antecedents – Final Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Customer Relationship	Delivery	Operations	0.282	0.000**
	Internet Distribution	Internet	0.479	0.000**
Internet Efficiency	Delivery	Operations	0.224	0.000**
	Internet Customer Relationship	Internet	0.438	0.000**
	Internet Supplier Relationship	Internet	0.460	0.000**
Internet Supplier Relationship	Supplier Integration	Operations	0.317	0.000**
	Product Flexibility	Operations	0.166	0.001**
	Customer Integration through Projects	Operations	0.175	0.001**
	Personal Selling	Marketing	0.139	0.019*
	Internet Customer Relationship	Internet	0.279	0.000**
Internet Distribution	Advertising	Marketing	0.346	0.000**
	Supplier Integration	Operations	0.168	0.011*
	Process Flexibility	Operations	0.199	0.000**
	Customer Integration through Distribution	Operations	0.251	0.000**
Time Reduction	Internet Customer Relationship	Internet	0.228	0.000**
	Internet Efficiency	Internet	0.343	0.000**
	Internet Supplier Relationship	Internet	0.261	0.000**
	Internet Distribution	Internet	0.159	0.012*

Note: ** *represents significance at 0.01*
    * *represents significance at 0.10*

From an operations perspective, the dimensions that were indicative of the ability to offer customized products with quick and reliable delivery were again evident in this model. In order to achieve this operational focus, an organization should integrate throughout the entire value chain including customers and suppliers. This type of system would enable the ability to offer customized products or service through the Internet without compromising the time to process orders.

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7.4 Composite Model of Internet Performance, Internet Strategy, and its Antecedents

Throughout the analysis of the four dimensions of Internet performance, certain marketing and operations strategy dimensions were more significantly related than others. Therefore, a model was developed to include all of the analysis at the dimension
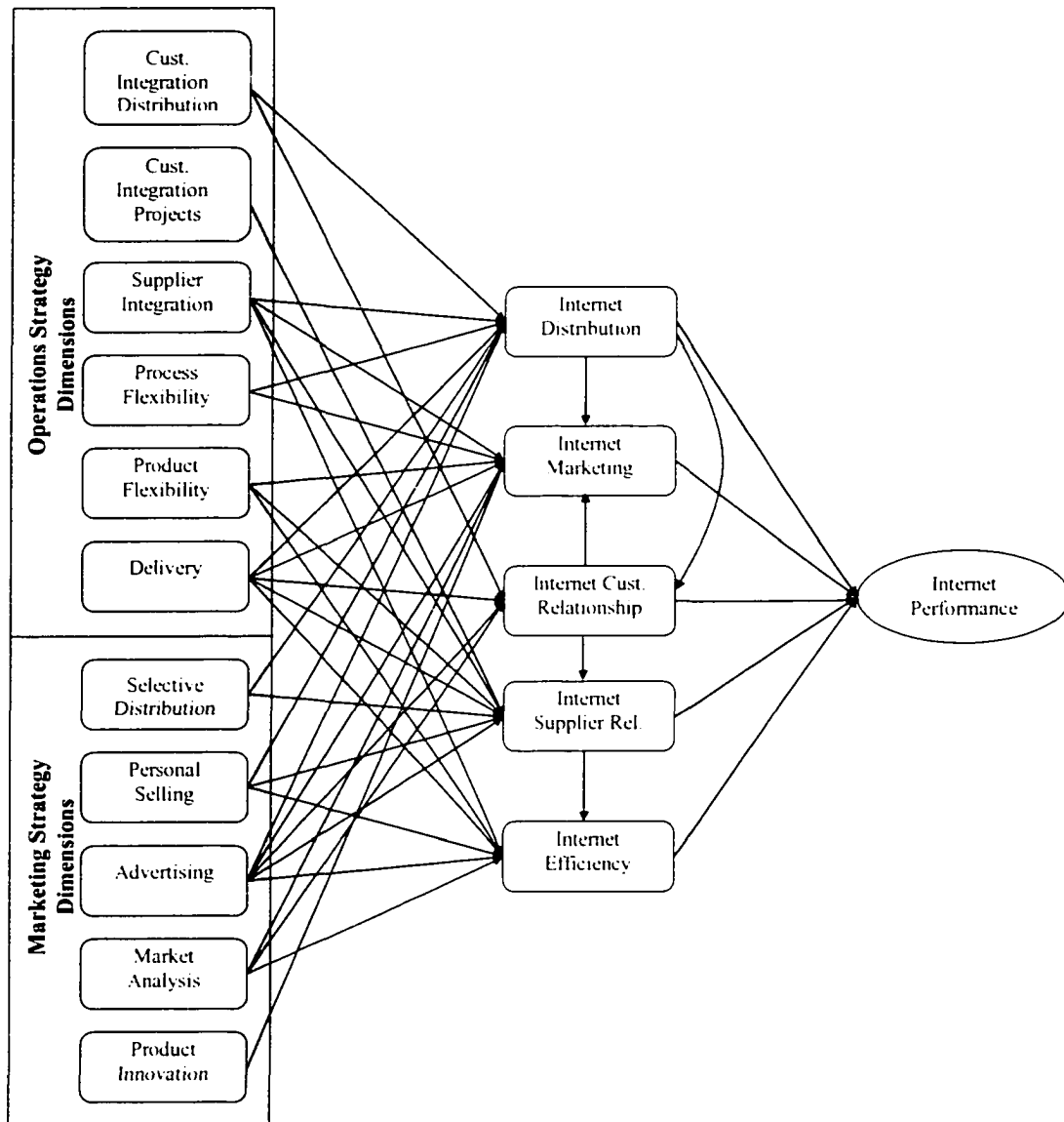
GFI = 0.949   AGFI = 0.800   NFI = 0.956   CF I = 0.968   RMR = 0.050

7.4.1 Structural Equation Model of Internet Performance, Internet Strategy, and its Antecedents – Initial Model

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Table 7.4.1 Path Coefficients for the Structural Model Representing Internet Performance, Internet Strategy, and its Antecedents – Initial Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Distribution	Selective Distribution	Marketing	0.064	0.245
	Personal Selling	Marketing	0.074	0.335
	Advertising	Marketing	0.336	0.000**
	Supplier Integration	Operations	0.114	0.096*
	Process Flexibility	Operations	0.127	0.038*
	Customer Integration through Distribution	Operations	0.234	0.000**
	Delivery	Operations	0.100	0.166
Internet Customer Relationship	Market Analysis	Marketing	0.133	0.098*
	Advertising	Marketing	0.074	0.323
	Delivery	Operations	0.216	0.002**
	Customer Integration through Distribution	Operations	-0.012	0.840
	Internet Distribution	Internet	0.422	0.000**
Internet Supplier Relationship	Supplier Integration	Operations	0.263	0.000**
	Product Flexibility	Operations	0.164	0.001**
	Customer Integration through Projects	Operations	0.185	0.001**
	Delivery	Operations	-0.042	0.519
	Personal Selling	Marketing	0.125	0.064*
	Selective Distribution	Marketing	0.046	0.346
	Advertising	Marketing	0.106	0.089*
	Internet Customer Relationship	Internet	0.262	0.000**
Internet Efficiency	Delivery	Operations	0.287	0.000**
	Supplier Integration	Operations	-0.163	0.014*
	Product Flexibility	Operations	-0.023	0.713
	Personal Selling	Marketing	0.117	0.128
	Market Analysis	Marketing	0.086	0.293
	Advertising	Marketing	0.071	0.345
	Internet Supplier Relationship	Internet	0.672	0.000**
Internet Marketing	Product Innovation	Marketing	0.124	0.051*
	Market Analysis	Marketing	0.129	0.048*
	Advertising	Marketing	0.052	0.352
	Product Flexibility	Operations	0.113	0.013*
	Delivery	Operations	0.015	0.799
	Supplier Integration	Operations	-0.035	0.453
	Process Flexibility	Operations	-0.024	0.644
	Internet Distribution	Internet	0.465	0.000**
	Internet Customer Relationship	Internet	0.263	0.000**
Internet Performance	Internet Marketing	Internet	0.179	0.001**
	Internet Efficiency	Internet	0.199	0.000**
	Internet Supplier Relationship	Internet	0.199	0.000**
	Internet Distribution	Internet	0.213	0.000**

Note: ** *represents significance at 0.01*
    * *represents significance at 0.10*

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level, including Internet performance, the five dimensions of Internet strategy, and their antecedents. The aggregated construct for Internet performance was used in the development of this model, which included revenue expansion, relationship enhancement, cost reduction, and time reduction. Since, all five dimensions of Internet strategy were significantly related to the Internet performance construct (Table 7.1.1), they were also included. Finally, the dimensions of marketing and operations strategy that were significant to the five dimensions of Internet strategy were included. This complex model is shown in Figure 7.4.1, with the path coefficients compiled in Table 7.4.1.

The overall Internet performance model showed adequate fit with a GFI = 0.949, AGFI = 0.800, NFI = 0.956, CFI = 0.968, and a RMR = 0.050. Many of these paths were not significant, as has been the case with other models that included a significant number of relationships. Therefore, according to the path coefficients (Table 7.4.1), paths were excluded from a final model of Internet performance. Also, according to the modification index provided by AMOS 4.0, a significant relationship should be included between Internet customer relationship and Internet efficiency. This was similar to what had occurred with the time reduction structural equation model (Figure 7.3.4.2), therefore the path was included in a final model (Figure 7.4.2).

With the reduction in paths and the additional relationship between Internet customer relationship and Internet efficiency, the final overall Internet performance model showed a significant improvement (Figure 7.4.2). The fit index improved to GFI = 0.974, AGFI = 0.928, NFI = 0.980, CFI = 0.996, and RMR = 0.036. All paths included in this model were significant. In order to simplify Figure 7.4.2, the path coefficients

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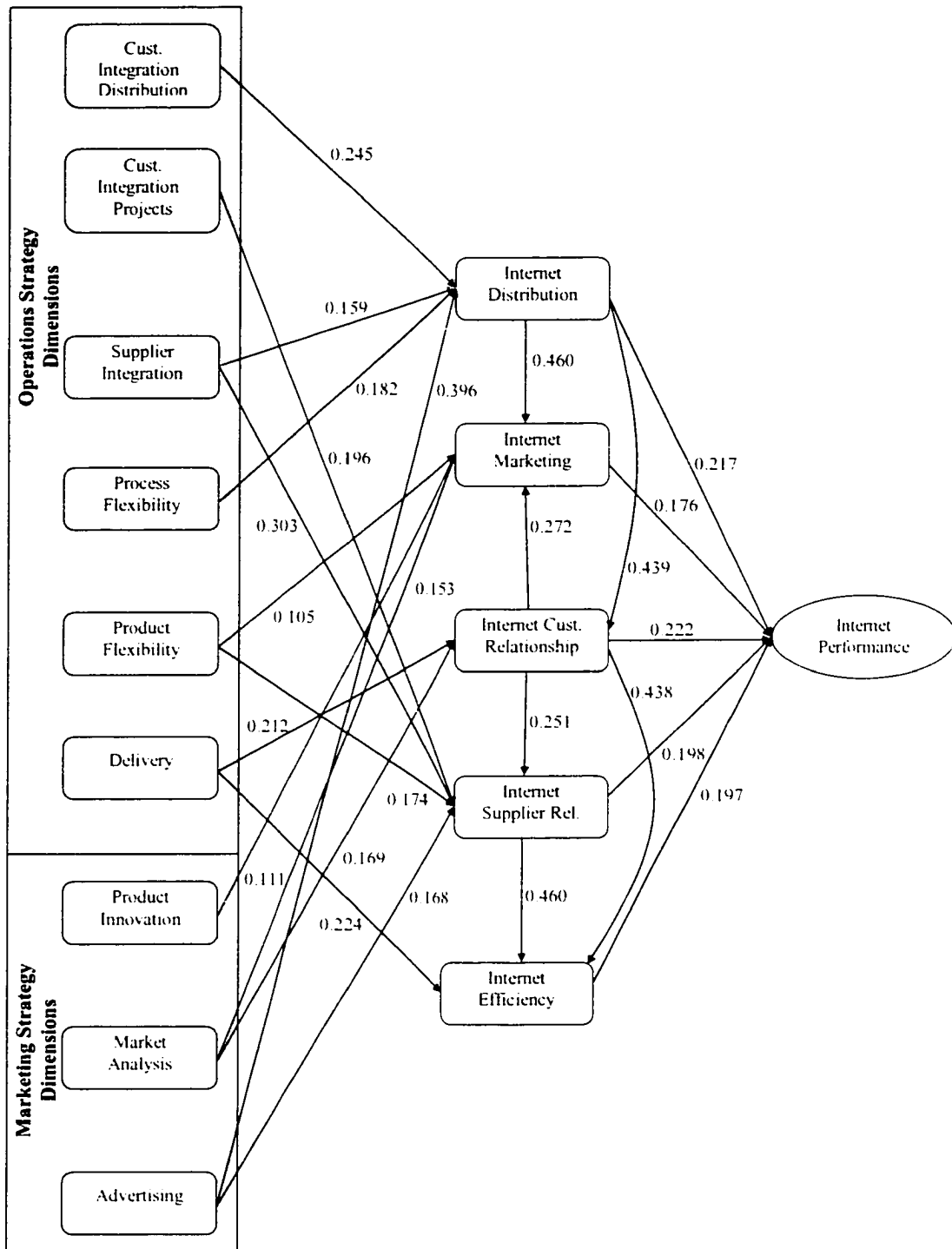
GFI = 0.974   AGFI = 0.928   NFI = 0.980   CFI = 0.996   RMR = 0.036

7.4.2 Structural Equation Model of Internet Performance, Internet Strategy, and its Antecedents – Final Model

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Table 7.4.2 Path Coefficients for the Structural Model Representing Internet Performance, Internet Strategy, and its Antecedents – Final Model

Dependent Variable	Independent Variable	Construct	Estimate	p-value
Internet Distribution	Advertising	Marketing	0.396	0.000**
	Supplier Integration	Operations	0.159	0.016*
	Process Flexibility	Operations	0.182	0.001**
	Customer Integration through Distribution	Operations	0.245	0.000**
Internet Customer Relationship	Market Analysis	Marketing	0.169	0.017*
	Delivery	Operations	0.212	0.002**
	Internet Distribution	Internet	0.439	0.000**
Internet Supplier Relationship	Supplier Integration	Operations	0.303	0.000**
	Product Flexibility	Operations	0.174	0.000**
	Customer Integration through Projects	Operations	0.196	0.000**
	Advertising	Marketing	0.168	0.004**
	Internet Customer Relationship	Internet	0.251	0.000**
Internet Efficiency	Delivery	Operations	0.224	0.000**
	Internet Customer Relationship	Operations	0.438	0.000**
	Internet Supplier Relationship	Internet	0.460	0.000**
Internet Marketing	Product Innovation	Marketing	0.111	0.054*
	Market Analysis	Marketing	0.153	0.010*
	Product Flexibility	Operations	0.105	0.009**
	Internet Distribution	Internet	0.460	0.000**
	Internet Customer Relationship	Internet	0.272	0.000**
Internet Performance	Internet Distribution	Internet	0.217	0.000**
	Internet Marketing	Internet	0.176	0.001**
	Internet Customer Relationship	Internet	0.222	0.000**
	Internet Supplier Relationship	Internet	0.198	0.000**
	Internet Efficiency	Internet	0.197	0.000**

Note: ** *represents significance at 0.01*
     * *represents significance at 0.10*

were included in Table 7.4.2. This indicates a representation of Internet performance, the dimensions of Internet strategy, and its antecedents.

As was the case with analysis at the dimension level of Internet performance, revenue expansion, relationship enhancement, cost reduction, and time reduction, advertising and market analysis were significantly related to the dimensions of Internet strategy that deal with external upstream factors, such as marketing, customers, and

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distribution. Also included as a marketing dimension was product innovation, which implies that in order to deploy an optimal Internet strategy, an organization should have the ability to develop new and innovative products or services will gain interets on the Internet through advertising. To achieve a high level of innovation, the use of market research and specific processes for targeting and segmenting markets should be used.

From a operations strategy perspective, the same dimensions that were found for individual dimensions of Internet performance were also found significant in this model. As mentioned previously, the operations strategy of an organization should permit the ability to produce customized products and services in a quick and reliable manner. To achieve this ideology, an organization should integrate all players within their value chain, inlcuding customers and suppliers. This would enable an organization to market new and innovate products through the Internet and also enable customization of products or services. This strategy would lead to business-driven Internet strategy that would expand revenues, enhance relationships, and reduce time and cost to produce and administer orders.

Chapter 8

Discussion and Future Research Implications

A business-driven Internet strategy is developed through an analysis of the current strategic position of an organization and how the Internet can be used to enhance existing business practices. For this to occur, the driver of an Internet strategy must be existing business and functional strategies. This research looks at the relationship between business strategy, functional strategies (marketing and operations), as well as the development of an Internet strategy. An overall Internet strategy model was developed and validated to indicate that for a high level of performance, due to the Internet, a business driven approach is relevant (Figure 6.2). The following is a look at the practical and theoretical implication of this research and future directions that can be derived.

8.1 Practical Implications

Organizations have struggled with the development of an Internet strategy. Most organizations that were interviewed for this research acknowledged that they tend to look at new innovations in technology and decide on implementation at that time. They also acknowledged that using the Internet is a reactive measure that is normally forced on their organization by customers, suppliers, or the need to keep up with the competition.

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This approach to Internet strategy is reactive and in many cases represents a technology-driven approach.

Organizations need to become proactive with their approach to the Internet. Instead of trying to keep up with competition, or utilizing the Internet to keep existing business, they need to take a good look at what they currently do well and see how the Internet can enhance their current practices. Any other implementation of Internet technology will only add cost, not value, to an organization. Therefore, the business-driven approach presented in this study to Internet strategy may guide organizations in the right direction.

Another aspect of this research that is important to remember is the stage of the Internet era in which the business environment is currently entrenched. As mentioned in Section 2.1.2, there are three stages in which the age of renaissance or the revolution in business will incur. The first stage is represented by a spurt of innovation followed by a market crash. The next stage is marked by a sustained growth in technology, and the third stage is a maturation of technologies and products. If history is correct, as it has been since the 1760's, we are currently moving into the second stage of the Internet era, which is a sustained build-out of new technologies that will change the way we do business. Therefore, organizations should not look at the current economic situation and assume that it is the end of the Internet: it is only the beginning. The second stage of the Internet era will not be marked with IPOs and small upstarts, but it will be remembered for the use of the Internet to enhance good, sound business practices that companies have used over the past decades to achieve a sustainable competitive advantage.

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What companies should try to realize is the type of strategic position necessary prior to implementing an Internet strategy. Certain aspects or dimensions of an organization will lead to a higher level of performance. Chapter 7 identified important dimensions for Internet performance, as well for each individual dimension: revenue expansion, relationship enhancement, time reduction, cost reduction. Although each type of performance had a slightly different structure required through marketing and operations, there were some underlying strategic structures that were prevalent.

From an operations perspective the need to integrate the entire value chain of an organization is important as a prerequisite or as part of the initial Internet strategy. Customer integration and supplier integration was found indirectly related to each type of Internet performance dimensions, through various Internet strategy dimensions. Therefore, implementing a strategic plan for Internet utilization without improving the communication, integrating systems, or distribution channels may only add cost instead of value to an organization.

Another finding through the dimension level analysis was the ability to deliver a customized product through the use of Internet. Both product flexibility and delivery were shown to be significantly related to Internet performance. Customers look to the Internet to buy products or services that meet their individual needs. For a shirt company, such as Land's End, to able to give the customer the ability to order customized tailoring and monogramming and deliver it when they the customer expects, it would gain a distinct advantage. A competitor that only displays their catalog online will not gain the same advantages and will probably only add cost to their organization.

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Some dimensions of operations strategy that were not significantly related to any type of Internet performance measure was cost and quality. In many organizations these two aspects of operations are the most vital. and it should be noted that although they were not significantly related, they are still important. But to gain an advantage over competitors through the use of the Internet. these dimensions should already be in place.

From a marketing perspective some interesting results were found in the dimension level analysis. First. the ability to advertise is necessary to gain any type of revenue expansion. The Internet is more useful if an organization already has materials and strategies in place to attract customers. If an organization relies strictly on personal selling. then they do not need to change the structure of their organization, but they should look at improving relationships or reducing the time and cost to process orders. Although advertising is still important to enhancing all aspects of Internet performance, an organization does not need to change their current practices just to dabble into the use of Internet technologies. Again. a business-driven approach looks at what you are currently doing and how the Internet can enhance your competitive advantages.

Other dimensions of a marketing strategy that were found indirectly related to Internet performance were market analysis and product innovation. Market analysis pertains to an organization use of market research and structure analysis of segmentation and targeting of customers. and product innovation is the rate of innovation in an organization. For a sustained advantage with the use of the Internet. an organization can not stay complacent. Therefore. the need to innovate and continually improve products or services will keep customers coming back to a website or continually seek your organization's ideas.

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This dimension level analysis brings this research to a given direction of what an organization should look at to be highly successful. An organization should have the ability to advertise and present its products and services in a way that shows innovation and is ahead or at the pace of technology. At the operational level of an organization, they should be able to produce highly flexible products at a quick and reliable rate. This can be enhanced through the integration of both customers and suppliers and enable a completely integrated value chain to produce. distribute. and market via the Internet.

8.2 Theoretical Implications

Before discussing the implications derived from the data of this research. the mode of data collection should be discussed. This research looked at new ways to gather reliable data. Using the Internet drastically reduced the time and cost for data collection. The entire data collection process took less than one and a half months. which included three rounds of collection. The cost for each email sent out was less than $0.10 per email. This compares to tradition modes of data collection. via postal mail where the cost of printing is far greater than the total of cost of email data collection. The accuracy of data was 100% reliable. since none of the survey had to be entered into a database by hand. They were automatically entered from a text file that was transferred from the website of the questionnaire. The response was adequate and typical of other email surveys and the data was reliable and valid. as shown in Chapters 4 and 5. Therefore. the use of email and websites for data collection was quite effective. and it can be foreseen as a more popular mode of data collection. as researchers become more comfortable with using the Internet.

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Aside from the data collection, the research methodology took an innovative approach to incorporating four areas of research: business, marketing, operations, and the Internet. To measure the relationship between each of these types of strategies, a linear scale was used. This approach allows all areas to be measured at the same time and these measures can be used in future research to incorporate other aspects of an organization at the functional level or to measure other performance measures. The Internet strategy construct showed high validity and reliability, and can be used to develop other theory and conclusions in the Internet strategy field. The Internet strategy field is relatively new and this research is only one small brick on a potentially enormous wall of research.

A final analysis at the dimension level added tremendous insight into the practical implication of a business-driven Internet strategy (Chapter 7). The methodology of performing step-wise regression prior to the development of a structural equation model helped refine the process. The results from the structural equation models also produced more accurate analysis, due to the inter-relationships found at each level. Also the elimination of non-significant paths produced a more parsimonious result that can be more easily explained. This analysis that went beyond the construct level aided in the development of practical implications of a business-driven approach to Internet strategy.

8.2.1 Alternative Model

In the development and validation of the structural model for this research no alternative models were necessary due to the extremely high overall fit of the model. However, one aspect of the model that should be further investigated is the direction of influence from operations to marketing strategy. Does marketing strategy influence an

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operations strategy in every case? Ten years ago, consumers and the business environment had no idea what the Internet could offer. Therefore, organizations had to determine internally what they thought organizations might want in the future and then invested on these estimations. Innovations in highly technical industries can look externally, but it may be more plausible to understand what they can give customers and then analyze if there is a market for the product. An example of such an innovation is Bluetooth technology that allows several devices to talk to one another. At one point, there was no viable market for the device and the relevance to the business environment was not known. Was this type of technology developed because of a ready market demand? Or was the technology developed and now it is the developer's job to find the right market opportunity? This switch from a customer driven approach (Berry et al. 1995) may be more relevant in the future and should be investigated further. Although,
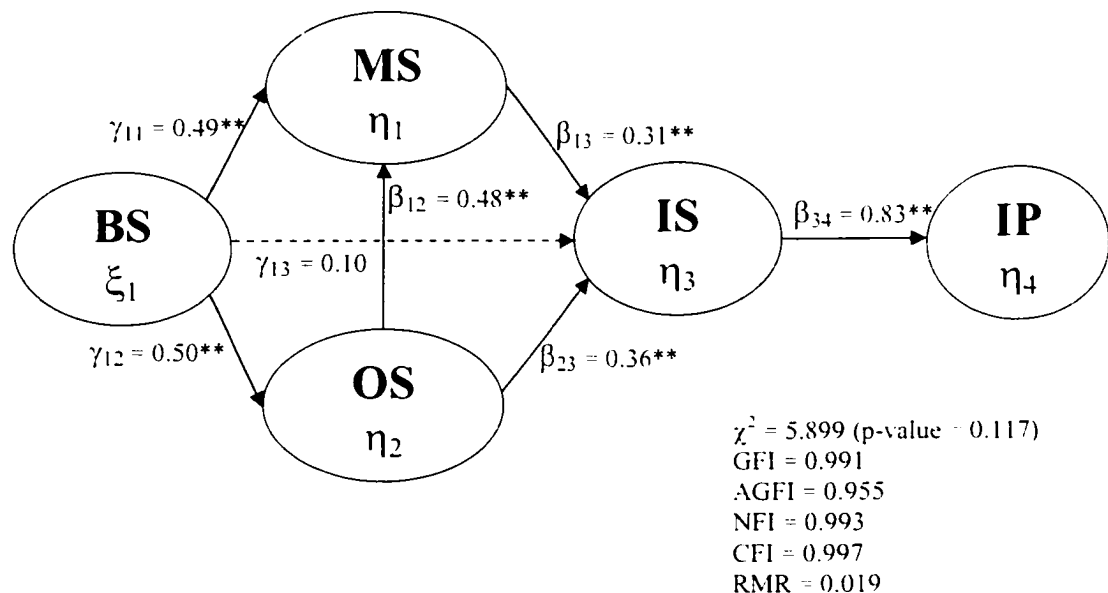
Figure 8.2 Alternative Structural Equation Model Results

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literature suggests that marketing strategy leads to operations strategy (Whybark 1994; Berry et al. 1995; Berry et al. 1999; Weir et al. 2000; Prabhaker 2001), this may be different with the Internet.

To test this point, an alternative model was tested to see what would happen to the structural model if the relationship between marketing strategy (MS) and operations strategy (OS) were changed to show that operations had a direct affect on marketing strategy. The relationships are all significant, except business strategy to Internet strategy, and all of the fit measures stayed the same. This model indicates a more comprehensive approach to Internet strategy, with the additional relationship between business strategy and operations strategy. Figure 7.2 shows that business strategy has a direct effect on marketing and operations and indicates less reliance on external factors, and a more balanced business-driven approach. Therefore, although this alternative model is not grounded in sound theory, it is an aspect of research that should be investigated in areas of high technology.

8.3 Future Research Directions

The research on Internet strategy is still in its infancy. Most of the literature pertaining to the Internet champions the use of principles that have since failed miserably in the business environment. Therefore, the need for theory driven research on Internet strategy is needed. This research is an attempt to help guide researchers in a business-driven approach to the Internet and establishes the need to investigate each of the given relationships presented by this research to identify key aspects of strategy formulation.

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This research was conducted at a down time in the business environment and many organizations do not feel that the Internet has helped their organization at this current time. The performance measures used in this study did show a high level of validity and reliability, but with the evolution of the Internet, these performance measures will need to be modified to accommodate the changing environment.

Another area for future research consideration is the use of the Internet for data collection. To be timely and more effective, researchers can create an instrument and collect data in less time, which will keep researchers more current with the business environment. Also, the more it is used, the more it will be accepted into the academic environment.

Another aspect of data collection that was used as part of this research was click-through responses. A click-through response will help researchers identify flaws in their data collection, prior to a second attempt at collection. If a click-through response is high and the actual responses are quite low, then the website for the questionnaire may need to be altered. If the click-through response is quite low, then the email sent to potential responses should be altered, similar to what was done with this research. The use of a click-through response rate by future researchers will establish an acceptable point of responses. At this time, no acceptable response rate has been determined for click-through or actual email responses for research. This research had a 12.8% click-through and a 4.8% actual response. Also, 37% of the individuals that went to the website actually filled out the questionnaire. With future research that gauges these responses, acceptable responses may be determined.

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8.4 Conclusion

This research developed an integrated business-driven approach to Internet strategy. First, based on an extensive review of the literature, aspects that are important to strategy formulation were incorporated into a measure of Internet strategy. This construct for Internet strategy, after being validated, was measured against three areas of strategy: business, marketing, and operations. The relationship between these constructs was then measured against the Internet performance of an organization. Further analysis was then performed to identify key dimensions of Internet performance, Internet strategy, and its marketing and operations strategy antecedents.

This research shows that when an Internet strategy is a proactive complement to existing business practices, a high level of Internet performance may be achieved. If an Internet strategy is reactive and is based on a technology-driven approach, the probability of reaching a high level of Internet performance is not as likely. Therefore, organizations should take an in-depth look at their existing strategies and business practices and then develop an Internet strategy to best complement their organization at the functional level. This approach will add value instead of cost to their organization.

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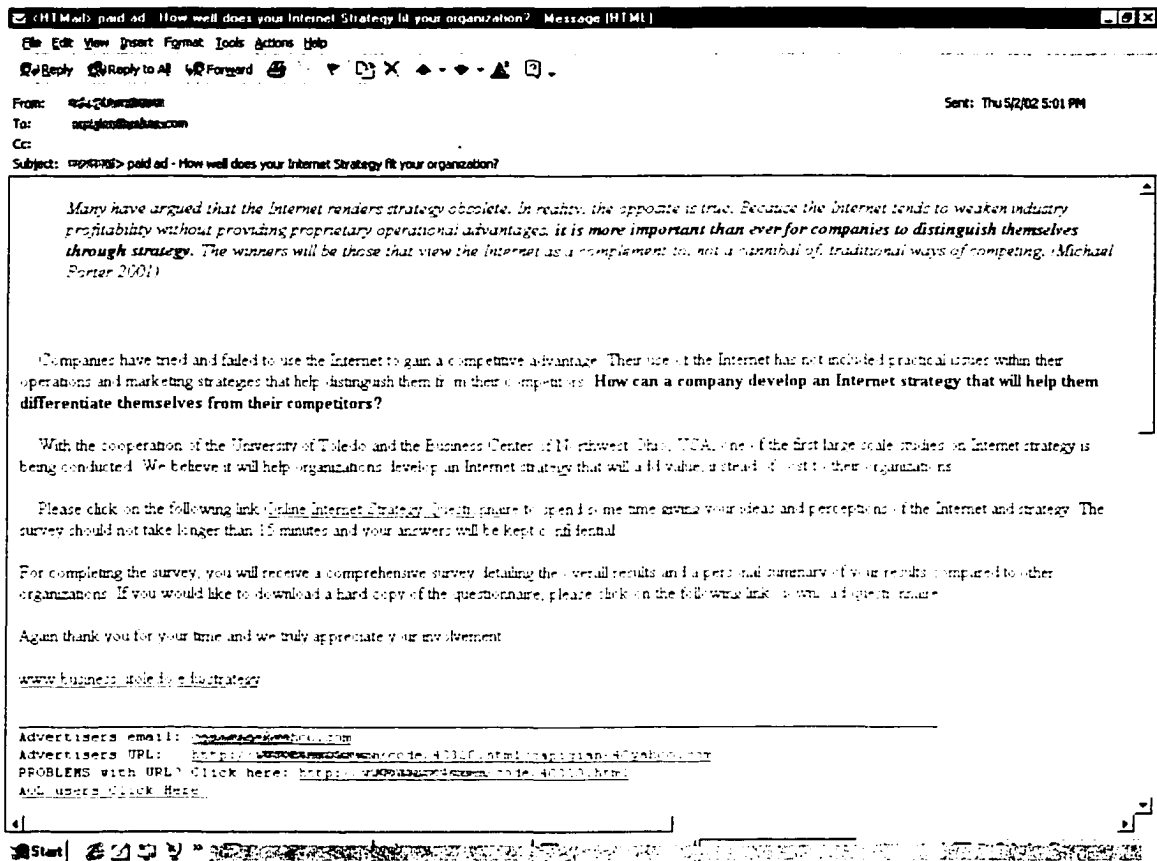
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Appendix A: Sample Email and Web Pages for Data Collection

Sample Email for Data Collection

Homepage of Internet Strategy Questionnaire

Sample of Online Internet Strategy Questionnaire

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Appendix B: Demographics and Chi-Square Test for Differences

Corporate Position

Corporate Position	Sample 1	Sample 2 and 3	Chi-Square *(p-value)*
Top Level Management	31.8%	38.3%	
Middle Level Management	22.5%	24.2%	
First Level Management	9.3%	7.5%	$\chi^2 = 3.63$ *(0.457)*
Professional employee with no supervisory role	25.6%	23.3%	
Other	10.9%	6.7%	
Degrees of freedom = 4			

Industry Type

Industry	Sample 1	Sample 2 and 3	Chi-Square *(p-value)*
Manufacturing	13.2%	12.5%	
Medicine / Law / Education	14.7%	5.8%	
Business Service	15.5%	15.8%	
Information Technology	10.1%	12.5%	
Finance / Insurance / Real Estate	6.2%	5.0%	$\chi^2 = 11.527$ *(0.247)*
Wholesale / Retail	17.1%	20.8%	
Government	6.2%	6.7%	
Communications	5.4%	4.2%	
Computers	4.7%	6.7%	
Other	7.1%	12.5%	
Degrees of freedom = 9			

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Company Sales

Company Sales	Sample 1	Sample 2 and 3	Chi-Square *(p-value)*
Less than 5 million	53.5%	51.7%	
5 to 25 million	18.6%	23.3%	
25 to 100 million	8.5%	10.0%	$\chi^2 = 2.785$
100 to 250 million	3.1%	3.3%	*(0.733)*
250 million to 500 million	4.7%	2.5%	
500 million to 1 billion	8.5%	10.0%	
Degrees of freedom = 9			

Gender of Respondents

Gender	Demographics*	Sample	Chi-Square *(p-value)*
Male	62.6%	59.9%	$\chi^2 = 1.127$
Female	34.2%	40.1%	*(0.28)*
Demographics provided by Opt-in List Management Service *Degrees of freedom = 1*			

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Appendix C: Printed Version of Questionnaire

Internet Strategy Questionnaire

www.business.utoledo.edu strategy
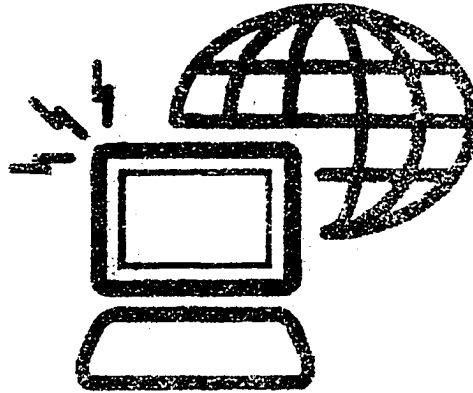
How well does your Internet Strategy fit your organization?
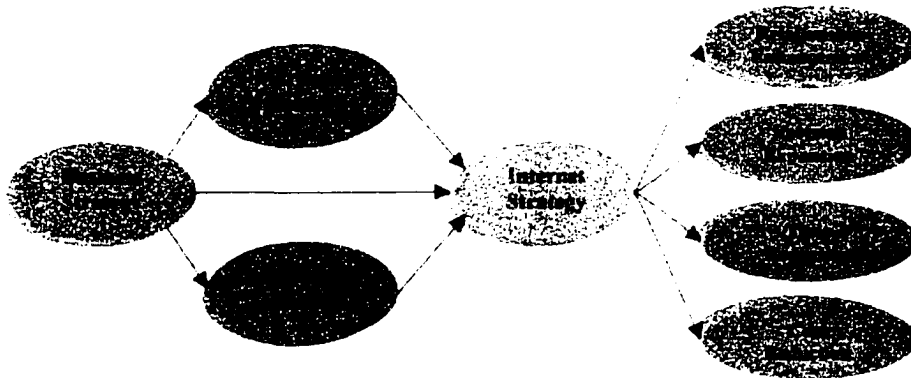
Charles H. Apigian
The University of Toledo
Toledo, OH

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General Instructions

In the past few years, the Internet has revolutionized the way companies have conducted business. Many have viewed the Internet as a technology that will change the way individuals do business well into the future. This questionnaire is one of the first large-scale efforts to document the effect and fit that an Internet Strategy has on an organization, by looking at an organization's business, marketing, operations strategy and its overall fit with its use of the Internet.

The questionnaire is divided into 7 sections. We estimate that it should take you a maximum of 15 minutes to fill out this questionnaire. Each question requires that you choose the alternative that best fits your views on that topic. There are no right or wrong answers; we are interested in your perceptions. **The anonymous information provided by you will be treated in the strictest confidence.** We believe that, with your assistance, this study can help clarify some of the misconceptions of the use of the Internet and its relationship to a company's strategy.

To receive a full report please attach a business card or provide your email at the end of this survey. **Please seal your completed questionnaire in the enclosed envelop and return it at your earliest convenience.**

Thank you very much for your cooperation.

Section 1: The following statements describe **goals and objectives** that define an organization. Please circle the appropriate number to indicate the extent to which you consider the statement applies to your organization.	Not at all important	Somewhat Important	Quite Important	Very Important	Extremely Important	Not Applicable, or Do Not Know
The importance your organization currently places on the following characteristics:						
The development of new markets	1	2	3	4	5	NA
A strong sense of organizational mission	1	2	3	4	5	NA
An explicitly stated organizational strategy	1	2	3	4	5	NA
A clear image of the organization's future	1	2	3	4	5	NA
A strong entrepreneurial orientation	1	2	3	4	5	NA
Long range planning	1	2	3	4	5	NA
The use of formal forecasting procedures	1	2	3	4	5	NA
The importance placed on your organization's strategy:						
Develop new products and/or services	1	2	3	4	5	NA
Provide unique products and/or services	1	2	3	4	5	NA
Provide low cost products and/or services	1	2	3	4	5	NA
Provide products and/or services in a timely manner	1	2	3	4	5	NA

To what extent do other organizations:	None				Extensive	
In your industry serve a more diverse set of customers/clients then your organization	1	2	3	4	5	NA
In your industry offer a broader range of products and/or services than your organization	1	2	3	4	5	NA
To what extent does your organization:						
Actively collect information about its external environment	1	2	3	4	5	NA
Extensively monitor the external environment	1	2	3	4	5	NA

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Section 2: The following statements describe **marketing** practices within an organization. Please circle the appropriate number to indicate the extent to which you consider the statement applies to your organization.

	Not at all important	Somewhat important	Quite Important	Very Important	Extremely Important	Not Applicable, or Do Not Know

The importance your organization currently places on the following aspects of product determination.

Offer a broad product/service line..	1	2	3	4	5	NA
Offer a focused product/service line..	1	2	3	4	5	NA
Develop a products/services that have a broad market appeal	1	2	3	4	5	NA
Develop innovative new products/services...	1	2	3	4	5	NA
Utilize early adopters for new product/service ideas and feedback......................	1	2	3	4	5	NA
Achieve or maintain short time from product/service concept to introduction......	1	2	3	4	5	NA
Use of premium pricing..	1	2	3	4	5	NA
Price below industry average...	1	2	3	4	5	NA
Use of price promotions and discounts..	1	2	3	4	5	NA

The importance your organization currently places on the following aspects of market analysis.

Systematically learning about customers..	1	2	3	4	5	NA
Analyze competitor's objectives and actions...	1	2	3	4	5	NA
Systematically collecting information about industry trends.................................	1	2	3	4	5	NA
Segmenting of markets...	1	2	3	4	5	NA
Systematically evaluating which markets to target..	1	2	3	4	5	NA
Focus marketing activities on specific segments...	1	2	3	4	5	NA
Attract new customers..	1	2	3	4	5	NA

The importance your organization currently places on the following aspects of service.

Provide service with a high degree of consistency and accuracy......	1	2	3	4	5	NA
Respond quickly to customers' requests and problems.................	1	2	3	4	5	NA
Clearly understand and communicate with customers..................	1	2	3	4	5	NA
Provide superior post-sale service quality..................................	1	2	3	4	5	NA
Develop long-term relationships with key customers...................	1	2	3	4	5	NA
Selective distribution through best distributors available..............	1	2	3	4	5	NA
Distribute through distributor that invests in specialized selling effort or unique facilities......	1	2	3	4	5	NA

The importance your organization currently places on the following aspects of promotion.

Achieve above industry average number of impressions through advertising......................	1	2	3	4	5	NA
Generate high quality advertising materials...	1	2	3	4	5	NA
Use of media advertising..	1	2	3	4	5	NA
Use of Web/Internet advertising..	1	2	3	4	5	NA
Use of direct mail advertising..	1	2	3	4	5	NA
Use of integrated marketing communications programs...	1	2	3	4	5	NA
Use of public relations...	1	2	3	4	5	NA
Highly skilled and knowledgeable sales force..	1	2	3	4	5	NA
Generate sales through internal sales force..	1	2	3	4	5	NA
Maintain high salesperson to sales manager ratio..	1	2	3	4	5	NA
Evaluate salesperson performance based on achievement of targets or quotas......................	1	2	3	4	5	NA
Evaluate salesperson performance based on accomplishment of prescribed behaviors...........	1	2	3	4	5	NA
Provide support to customer contact personnel...	1	2	3	4	5	NA
Use 'specialist' marketing personnel who direct their efforts to a well-defined set of activities	1	2	3	4	5	NA

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Section 3: The following statements describe internal **operations** of an organization. (Ex. manufacturing/ production, services, etc.) Please circle the appropriate number to indicate the extent to which you consider the statement applies to your organization.

	Not at all important	Somewhat important	Quite Important	Very Important	Extremely Important	Not Applicable, or Do Not Know

Importance that is attached to having the following characteristics of products in your primary product line:

High performance of product	1	2	3	4	5	NA
High durability (long life) of product	1	2	3	4	5	NA
High reliability of product	1	2	3	4	5	NA
Easy (cost and time) servicing of product	1	2	3	4	5	NA
Promptness in solving customer complaints	1	2	3	4	5	NA
Short delivery (lead) time	1	2	3	4	5	NA
Delivery on due date (ship on time)	1	2	3	4	5	NA
Large number of product features	1	2	3	4	5	NA
Large number of product options	1	2	3	4	5	NA

The importance given to each of the following management priorities in manufacturing:

Lowering production cost	1	2	3	4	5	NA
Increasing labor productivity	1	2	3	4	5	NA
Optimizing capacity utilization	1	2	3	4	5	NA
Conformance of final product to design specification	1	2	3	4	5	NA
Ability to introduce new products into production quickly	1	2	3	4	5	NA
Ability to adjust capacity rapidly within a short time period	1	2	3	4	5	NA
Ability to make design changes in the product after production has started	1	2	3	4	5	NA
Reducing inventory	1	2	3	4	5	NA
Reducing production lead-time	1	2	3	4	5	NA

The importance given to each criterion in evaluating a production managers' performance by optimization in:

Cost	1	2	3	4	5	NA
On-time delivery	1	2	3	4	5	NA
Production cycle time	1	2	3	4	5	NA
Productivity	1	2	3	4	5	NA

To what extent do you organizationally *integrate activities* with your supplier and customers:

Suppliers							Customers					
None				Extensive			None				Extensive	
1	2	3	4	5	NA	Access to planning systems	1	2	3	4	5	NA
1	2	3	4	5	NA	Sharing production plans	1	2	3	4	5	NA
1	2	3	4	5	NA	Joint use of EDI/web networks	1	2	3	4	5	NA
1	2	3	4	5	NA	Sharing the knowledge of inventory mix/levels	1	2	3	4	5	NA
1	2	3	4	5	NA	Customized packaging	1	2	3	4	5	NA
1	2	3	4	5	NA	High delivery frequencies	1	2	3	4	5	NA
1	2	3	4	5	NA	Sharing use of logistics equipment/containers	1	2	3	4	5	NA
1	2	3	4	5	NA	Sharing use of third-party logistical services	1	2	3	4	5	NA

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Section 4: The following statements describe your organization's use of the **internet.** Please circle the appropriate number to indicate the extent to which you consider the statement applies to the use of the Internet in your organization.

	Not at all important	Somewhat important	Quite Important	Very Important	Extremely Important	Not Applicable, or Do Not Know

The importance your organization currently places on the use of Internet to reach:

New customers directly..	1	2	3	4	5	NA
New markets directly...	1	2	3	4	5	NA
New geographical locations directly.......................	1	2	3	4	5	NA
New customers through intermediaries....................	1	2	3	4	5	NA
New markets through intermediaries.......................	1	2	3	4	5	NA
New geographical locations through intermediaries.....	1	2	3	4	5	NA

The importance your organization currently places on the use of Internet to improve:

Integration of intermediaries................................	1	2	3	4	5	NA
Integration of distributors...................................	1	2	3	4	5	NA
Integration of retailers.......................................	1	2	3	4	5	NA
Existing distribution channels..............................	1	2	3	4	5	NA
Tracking of the distribution of your product.............	1	2	3	4	5	NA

The importance your organization currently places on the use of Internet to provide:

Information to potential customers.........................	1	2	3	4	5	NA
Pricing to potential customers..............................	1	2	3	4	5	NA
Personalized information/web pages to current customers...	1	2	3	4	5	NA
Personalized marketing based on current customer preferences...	1	2	3	4	5	NA
Personalized marketing based on demographics of potential customers...	1	2	3	4	5	NA

The importance your organization currently places on the use of Internet to reduce:

Time to process orders.......................................	1	2	3	4	5	NA
Cost to process orders.......................................	1	2	3	4	5	NA
Administrative costs...	1	2	3	4	5	NA
Time to fulfill orders..	1	2	3	4	5	NA
Time to place orders...	1	2	3	4	5	NA
Cost in placing orders..	1	2	3	4	5	NA
Cost of materials..	1	2	3	4	5	NA
Cost of doing business.......................................	1	2	3	4	5	NA

The importance your organization currently places on the use of Internet with suppliers to:

Share information..	1	2	3	4	5	NA
Integrate planning systems..................................	1	2	3	4	5	NA
Share production plans.......................................	1	2	3	4	5	NA
Integrate designs/design plans.............................	1	2	3	4	5	NA
Improve communication......................................	1	2	3	4	5	NA
Track status of orders..	1	2	3	4	5	NA

4

Section 4: (Continued)

	Not at all important	Somewhat important	Quite important	Very important	Extremely important	Not Applicable, or Do Not Know

The importance your organization currently places on the use of Internet with customers to:

Improve feedback	1	2	3	4	5	NA
Improve relationships	1	2	3	4	5	NA
Respond quicker to their needs	1	2	3	4	5	NA
Understand their wants and needs	1	2	3	4	5	NA
Offer complementary products within your industry	1	2	3	4	5	NA
Be the primary point of contact for your industry	1	2	3	4	5	NA
Provide expert information	1	2	3	4	5	NA
Dynamic pricing based on their current demand	1	2	3	4	5	NA
Allow them to track status of orders	1	2	3	4	5	NA
Communicate directly	1	2	3	4	5	NA

Section 5: The following statements describe how the Internet has affected your organization. Please answer based on the perceptions of your organization's performance.

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree	Not Applicable, or Do Not Know

Relationship Enhancement – The Internet has helped our organization improve relationship with:

Customers	1	2	3	4	5	NA
Suppliers	1	2	3	4	5	NA
Employees	1	2	3	4	5	NA
Government Agencies	1	2	3	4	5	NA
Community	1	2	3	4	5	NA

Revenue Expansion – The Internet has helped our organization:

Increase revenues	1	2	3	4	5	NA
Reach more potential customers	1	2	3	4	5	NA
Sell a larger variety of products	1	2	3	4	5	NA
Advertise in new markets	1	2	3	4	5	NA
Sell in new markets	1	2	3	4	5	NA

Time Reduction – The Internet has helped our organization reduce the time to:

Produce products/services	1	2	3	4	5	NA
Respond to customers	1	2	3	4	5	NA
Receive new orders	1	2	3	4	5	NA
Input new orders	1	2	3	4	5	NA
Place orders	1	2	3	4	5	NA
Receive payments from customers	1	2	3	4	5	NA
Send payments to suppliers	1	2	3	4	5	NA

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Section 5: (Continued)

	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree	Not Applicable, or Do Not Know
Cost Reduction – The Internet has help our organization reduce:						
Transactions costs with our customers.	1	2	3	4	5	NA
Transaction costs with our suppliers.	1	2	3	4	5	NA
Operation costs.	1	2	3	4	5	NA
The cost to market products/services.	1	2	3	4	5	NA
The cost to communicate with customers.	1	2	3	4	5	NA
The cost to communicate with suppliers.	1	2	3	4	5	NA
Performance –Our organization has attained optimal:						
Profitability compared to our competitors.	1	2	3	4	5	NA
Profitability compared to organization's objectives.	1	2	3	4	5	NA
Sales growth compared to the industry average.	1	2	3	4	5	NA
Sales volume compared to organization's objectives.	1	2	3	4	5	NA
Market share compared to our major competitor.	1	2	3	4	5	NA
Market share compared to organization's objectives.	1	2	3	4	5	NA
Performance in Marketing compared to our competitors.	1	2	3	4	5	NA
Performance in Marketing compared to organization's objectives.	1	2	3	4	5	NA
Performance in Operations compared to our competitors.	1	2	3	4	5	NA
Performance in Operations compared to organization's objectives.	1	2	3	4	5	NA

Section 6: Please check only one type listed below that best describes your organization.

Type 1 _____
 	
 This type of organization attempts to:
 • Locate and maintain a secure niche
 • Compete in a stable market
 • Offer a limited range of products or services
 • Protect its domain by offering:
   o Higher quality
   o Superior service
   o Lower prices
 • Ignore industry changes that do not have a direct or immediate impact
 • Concentrate on doing the best job possible in a limited area
	Type 2 _____
	
	 This type of organization attempts to:
	 • Operate within a **broad product/market domain**
	 • Operate in a domain that undergoes rapid changes and redefinition
	 • Be **"first-in"** in new product or market areas
	 • Respond rapidly to early signals that represent a new opportunity
	 • Be in many industries, but does not need to maintain market strength in all areas.

Type 3 _____ This type of organization attempts to: • Maintain a stable, limited line of products and services • Also moves quickly to follow a carefully elected set of the more promising new developments in the industry • Carefully monitor the actions of major competitors in compatible areas • Not to be "first in" with new products or services • Be **"second in"** with a more cost-efficient product or service.	Type 4 _____ This type of organization: • Does not appear to have a consistent product-market orientation • Is usually not as aggressive in maintaining established products and markets as some of its competitors • Is not as willing to take as many risks as other competitors • **Responds** in those areas where it is forced to by environmental or competitive pressures

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Section 7: General Information: Please provide the following information for statistical purpose.

1) What type of access do you have to the Internet at work?
- ☐ Phone line through PC
- ☐ Phone line through Network
- ☐ Networked T1 (DSL) Line
- ☐ T1 (DSL) Line with PC
- ☐ No Access
- ☐ Other _____

2) Do you need the Internet to perform everyday work duties?
- ☐ Yes
- ☐ No

3) Please indicate the category that best describes your major business
- ☐ Manufacturing
- ☐ Finance
- ☐ Insurance / Real Estate
- ☐ Medicine / Law / Education
- ☐ Wholesale / Retail
- ☐ Business Service
- ☐ Government
- ☐ Public Utility
- ☐ Communications
- ☐ Transportation
- ☐ Construction / Agriculture
- ☐ Computers
- ☐ Information Technology
- ☐ Other _____

4) Please indicate the range of annual sales: (in $)
- ☐ Less than 5 million
- ☐ 5 to < 25 million
- ☐ 25 to < 50 million
- ☐ 50 to < 100 million
- ☐ 100 to < 250 million
- ☐ 250 to < 500 million
- ☐ 500 to < 1 billion
- ☐ 1 billion and above

5) How long has your organization used the Internet?
- ☐ Less than 1 year
- ☐ 1 – 2 years
- ☐ 3 – 5 years
- ☐ 5 – 7 years
- ☐ 8 or more years

6) Please indicate your gender
- ☐ Male
- ☐ Female

Please identify your position within your organization
- ☐ Top Level Management
- ☐ Middle Level Management
- ☐ First Level Supervisor
- ☐ Professional employee without supervisory role
- ☐ Other _____

Please indicate the highest degree you have received
- ☐ High School
- ☐ Associate
- ☐ Bachelor
- ☐ Master
- ☐ Doctorate

Please indicate the your country of origin

If would like to have a copy of the summary report, please provide your email address is or attach your business card. Also please indicate the type of report you would like to receive.

- ☐ General Report of findings
- ☐ General Report compared to your company
- ☐ General Report compared to your company and industry
- ☐ No report

Email address:
_____

Your email will be used for receiving a summary report only, and will be kept in strictest confidence.

Thank you for time

7

Appendix D: Website Version of Survey

General Instructions

The anonymous information provided by you will be treated in the strictest confidence.

To receive a full report please provide your email at the end of this survey.

Thank you very much for your cooperation.

When you finish the questionnaire, please click on the Submit button. Thank you!

Section 1: The following statements describe **goals and objectives** that define an organization. Please circle the appropriate number to indicate the extent to which you consider the statement applies to your organization.

1. Not at all important	2. Somewhat Important	3. Quite Important	4. Very Important	5. Extremely Important

The importance your organization currently places on

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the following characteristics:

The development of new markets	○	○	○	○	○
A strong sense of organizational mission	○	○	○	○	○
An explicitly stated organizational strategy	○	○	○	○	○
A clear image of the organization's future	○	○	○	○	○
A strong entrepreneurial orientation	○	○	○	○	○
Long range planning	○	○	○	○	○
The use of formal forecasting procedures	○	○	○	○	○

The importance placed on your organization's strategy:

Develop new products and/or services	○	○	○	○	○
Provide unique products and/or services	○	○	○	○	○
Provide low cost products and/or services	○	○	○	○	○
Provide products and/or services in a timely manner	○	○	○	○	○

To what extent does your organization: Extensive

			4	5
Actively collect information about its external environment?	○	○	○	○	○
Extensively monitor the external environment?	○	○	○	○	○

To what extent do other organizations:

In your industry serve a more diverse set of customers/clients then your organization?	○	○	○	○	○
In your industry offer a broad range of products and or services than your organization?	○	○	○	○	○

○○○

Section 2: The following statements describe Marketing practices within an organization. Please circle the appropriate number to indicate the extent to which you consider the statement applies to your organization.

The importance your organization currently places on on the following aspects of product determination.	1	2	3	4	5
Offer a broad product/service line	○	○	○	○	○
Offer a focused product/service line	○	○	○	○	○
Develop a products/services that have a broad market appeal	○	○	○	○	○
Develop innovative new products/services	○	○	○	○	○
Utilize early adopters for new product/service ideas and feedback	○	○	○	○	○
Achieve or maintain short time from product/service concept to introduction	○	○	○	○	○
Use of premium pricing	○	○	○	○	○
Price below industry average	○	○	○	○	○
Use price promotions and discounts	○	○	○	○	○

The importance your organization currently places on on the following aspects of market analysis.	1	2	3	4	5
Systematically learn about customers	○	○	○	○	○
Analyze competitors objectives and actions	○	○	○	○	○
Systematically collect information about industry trends	○	○	○	○	○
Segmenting of markets	○	○	○	○	○
Systematically evaluating which markets to target	○	○	○	○	○
Focus marketing activities on specific segments	○	○	○	○	○
Attract new customers	○	○	○	○	○

The importance your organization currently places on on the following aspects of service.	1	2	3	4	5
Provide service with a high degree of consistency and accuracy	○	○	○	○	○
Respond promptly to customers' requests and problems	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○

The importance your organization currently places on on

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	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○

○ ○ ○

(Ex. manufacturing/ production, services ...) ... an appropriate number to indicate the extent to which ... applies to your organization

High performance of product	○	○	○	○	○
... long life of product	○	○	○	○	○
... ty of product	○	○	○	○	○
... (lead time) to servicing of product	○	○	○	○	○
... ness in solving customer complaints	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○

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Large number of product options   ○ ○ ○ ○ ○

The importance given to each of the following
management priorities in manufacturing

Lowering production cost	○	○	○	○	○
Increasing labor productivity	○	○	○	○	○
Optimizing capacity utilization	○	○	○	○	○
Conformance of final product to design specification	○	○	○	○	○
Ability to introduce new products into production quickly	○	○	○	○	○
Ability to adjust capacity rapidly within a short time period	○	○	○	○	○
Ability to make design changes in the product after production has started	○	○	○	○	○
Reducing inventory	○	○	○	○	○
Reducing production lead time	○	○	○	○	○

     ○ ○ ○ ○ ○
     ○ ○ ○ ○ ○
     ○ ○ ○ ○ ○
     ○ ○ ○ ○ ○

Access to planning systems	○	○	○	○	○	○	○	○	○	○
Sharing production plans	○	○	○	○	○	○	○	○	○	○
Joint use of EDI, web networks	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
Customized packaging	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○
	○	○	○	○	○	○	○	○	○	○

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Section 4: The following statements describe your organization's use of the internet. Please circle the appropriate number to indicate the extent to which the statement applies to the use of the internet in your organization.

To what extent your organization currently uses the internet to reach:

New markets directly	○	○	○	○	○
New geographical locations directly	○	○	○	○	○
Current customers through intermediaries	○	○	○	○	○
New customers through intermediaries	○	○	○	○	○
New markets through intermediaries	○	○	○	○	○
New geographical locations through intermediaries	○	○	○	○	○

To what extent your organization currently uses the internet:

... intermediaries	○	○	○	○	○
... distributors	○	○	○	○	○
...	○	○	○	○	○
... distribution channels	○	○	○	○	○
... the distribution of your product	○	○	○	○	○

To what extent your organization currently uses the internet to provide:

Information to potential customers	○	○	○	○	○
...	○	○	○	○	○
Personalized information web pages to current customers	○	○	○	○	○
... direct marketing based on current customer profiles	○	○	○	○	○
... direct marketing based on demographics of potential customers	○	○	○	○	○

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The importance your organization currently places on the
use of the Internet to reduce

	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
Time to place orders	⌀	⌀	⌀	⌀	⌀
Cost in placing orders	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
Cost of doing business	⌀	⌀	⌀	⌀	⌀

The importance your organization currently places on the
use of the Internet with them

Share information	⌀	⌀	⌀	⌀	⌀
Integrate planning systems	⌀	⌀	⌀	⌀	⌀
Share production plans	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
Improve communication	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀

	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
Offer complementary products on your web site	⌀	⌀	⌀	⌀	⌀
Be the primary point of contact in your industry	⌀	⌀	⌀	⌀	⌀
Provide expert information	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
	⌀	⌀	⌀	⌀	⌀
Communicate directly	⌀	⌀	⌀	⌀	⌀

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1. Strongly Disagree	2. Somewhat Disagree	3. Neutral	4. Somewhat Agree	5. Strongly Agree

	1	2	3	4	5
Customers	○	○	○	○	○
Suppliers	○	○	○	○	○
	○	○	○	○	○
Government Agencies	○	○	○	○	○
	○	○	○	○	○

The internet has helped our

	1	2	3	4	5
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○

	1	2	3	4	5
	○	○	○	○	○
customers	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○
	○	○	○	○	○

The internet has helped our

	1	2	3	4	5
with our customers	○	○	○	○	○
with our suppliers	○	○	○	○	○
	○	○	○	○	○
products services	○	○	○	○	○
	○	○	○	○	○
with suppliers	○	○	○	○	○

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Our organization has attained optimal:					
Profitability compared to our competitors	○	○	○	○	○
Profitability compared to organization's objectives	○	○	○	○	○
Sales Growth compared to the industry average	○	○	○	○	○
Sales Growth compared to organization's objectives	○	○	○	○	○
Market Share compared to our major competitor	○	○	○	○	○
Market Share compared to organization's objectives	○	○	○	○	○
Performance in Marketing compared to our competitors	○	○	○	○	○
Performance in Marketing compared to organization's objectives	○	○	○	○	○
Performance in Operations compared to our competitors	○	○	○	○	○
Performance in Operations compared to organization's objectives	○	○	○	○	○

○○○

Please check only one type listed below that best describes your industry of business unit.

Type 3

○
○

○

○
○

Type 4

○

○

○
○

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○ 　　　　　　　　　　　　　　　　　　　　　　○ 　　　　　　　　　　　　　　　　　　　　　
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○ 　　　　　　　　　　　　　　　　　　　　

Please indicate the range of your annual salary:

○ 　　　　　　　○ 　　　　　　　○ 　　　　　　　○ 　　　　　　　○

○ 　　　　　　　○ 　　　　　　　○

○ 　　　　　　　　　　　　○ 　　　　　　　○ 　　　　　　　○

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○ 　　　　　　　　

○ 　　　　○ 　　　　　　　○ 　　　　　　　○ 　　　　　　　○

Thank you again for your assistance. If you have any comments, please write in the following area.

Submit | Reset

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