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Professional Associations and Barriers to Intrapreneurship and Entrepreneurship

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ABSTRACT

This paper focuses on an entrepreneur in the Alaskan marine piloting industry who wanted to make changes to meet changing needs in the market, but faced obstacles from entrenched industry participants with established relationships with a powerful state-sanctioned board. This paper illustrates how professional associations working with and through the government can inhibit individual members from being innovative. This paper also reviews the literature pertinent to entrepreneurship and intrapreneurship. This should be of interest to those interested in the impact of organizational and other barriers to

entrepreneurial activity, as well as those interested in the marine piloting industry.

***Keywords**: entrepreneurship, intrapreneurship, marine piloting industry*

INTRODUCTION

While the benefits of innovative behavior for established organizations are well documented in the literature, it is paradoxical that many organizations by their very existence have inherent barriers to innovation (Manimala, et al., 2006). Such barriers become stronger and even more pervasive as organizations successfully grow and become larger. These organizations do not have the flexibility in their culture and operating systems to provide the rewards of personal autonomy and wealth which individuals look for (Morse, 1986). In fact, organizational barriers and constraints against innovative behavior can be significant and create a culture hindering, if not preventing, intrapreneurial ventures (McDermott, 2004). While research confirms that the business environment in countries throughout the world abounds with barriers to entrepreneurship, research is lacking in addressing bureaucratic regulations that impact entrepreneurial activity (Klapper, et al., 2004).

This paper illustrates how professional associations/organizations working with the government incorporate a variety of systems and procedures which can inhibit individual members from engaging in innovativeness. In other words, by their very nature, these associations can impose constraints which conflict directly with the entrepreneurial spirit inherent in the associations' members.

The Alaskan marine piloting industry consists predominantly of licensed pilots who function as independent business entities. These entrepreneurs obtain work through state-sanctioned pilot membership associations. The independent members and their piloting association, who must mutually agree to accept and train new members, control entry into the industry. Furthermore, the marine piloting associations set rates, control assets, dispatch jobs, perform billing functions, collect fees, and distribute income to their members. The tactics used by these associations in implementing the above functions directly impact and limit competition in the marine piloting industry. Hence, while these associations span the boundary between the free market and governmental organizations, such self-imposed constraints conflict directly with any member's entrepreneurial efforts which may be desirable in a changing environment. In many ways, the professional associations found in the marine industry resemble a closed-shop union.

This paper reviews literature pertinent to entrepreneurship and intrapreneurship and its importance to both corporate performance and society. It illustrates how ongoing business entities that begin as new ventures by highly motivated entrepreneurs become restricted by regulations generated and policed by their professional associations. Consequently, individual entrepreneurship is stifled.

The Alaskan marine piloting industry is an example of how a professional association, in conjunction with governmental entities, created bureaucratic barriers and provided self-serving associations positions of power over independent members. The paper describes a particular incident of an entrepreneurial-minded marine pilot seeking improvements in Alaska's shipping industry. The difficulties and barriers imposed by the marine piloting associations are discussed. As

a result of the associations' intrapreneurial barriers, the premier industry associations were weakened.

LITERATURE REVIEW

The Intrapreneurship Concept

A consensus definition for entrepreneurship has evolved defining the concept as the activities and related processes involved identifying opportunities that create value through innovation and operationalizing the opportunity (Churchill, 1992, p. 586). From the onset of the research on entrepreneurship within existing organizations, a variety of terms have been utilized to address the concept. For example, in the mid-1980s, Pinchot (1985) coined the term intrapreneuring. Other terms such as corporate entrepreneurship (Burgelman, 1983; Vesper, 1984; Guth and Ginsberg, 1990; Hornsby et al., 1993; Stopford and Baden-Fuller, 1994), corporate venturing (MacMillan, 1986; Vesper, 1990) and corporate entrepreneurship (Schollhammer, 1981, 1982; Jones and Butler, 1992) have been used to describe the entrepreneurial activities within an established organization.

Vesper (1990) refers to intrapreneurship as individuals inside an organization undertaking new activities while departing from the customary to explore and develop new opportunities. Stephenson and Jarillo (1990) suggested that individuals engaged in the process often pursue opportunities without consideration of the resources (human and capital) under their immediate control. According to Antoncic and Hisrich (2001), it is a process inside an existing organization that leads to new business ventures as well as innovative activities and marketing orientations within the organization. This process leads to new product and service development, administrative techniques, marketing strategies, and competitive postures.

Intrapreneurship and Economic Development

Since the early 1980s, academic researchers and business practitioners have emphasized that intrapreneurship is essential for both organizational growth and macroeconomic development. Specifically, these researchers and practitioners have documented the beneficial effects of intrapreneurship on the revitalization, innovation, productivity, profitability and overall performance of organizations in established economies. Additionally, intrapreneurship benefits not only the individual organization but other entities both within and outside a given industry (Schollhammer, 1981, 1982; Burgelman ,1983, 1985; Kanter, 1984; Pinchot, 1985; Rule and Irvin, 1988; McKinney and McKinney, 1989; Guth and Ginsberg, 1990; Zahra, 1991; Antoncic and Hisrich, 2003, 2004; Kemelgor, 2002; Batten, 2002; Goosen, et al., 2002; Thomson and NcNamara, 2001; Kuratko, et al., 2001; Zahra and Garvis, 2000; Barrett, et al., 2000; Manimala, Jose and Thomas, 2006).

While organizational behavior has been studied in a variety of cultures and cross-cultural settings (e.g., Early and Singh, 1995), multi-cultural and cross-cultural entrepreneurship research is lacking (Hills and La-Forge, 1992; Antoncic and Hisrich, 2001). Noting that in many countries there has been a shift from socialism to market-based systems, Hills and LaForge (1992) emphasized the importance of conducting entrepreneurship research in a variety of international settings. The United States has been a market-based economy in one of the most entrepreneurial countries in the world with a long history of entrepreneurship activity and research. However, there are still private sectors of the economy that have not been guided by a free market philosophy (Antoncic and Hirsch, 2001). These sectors have various barriers that limit, if not prohibit, a variety of activities that would not only increase competition but also provide greater customer satisfaction.

Barriers to Entrepreneurship and Intrapreneurship

While the importance of innovative behavior for established organizations has been recognized and well-documented, there is a propensity for established organizations to maintain the status quo despite significant changes taking place in their business environments. This is especially true for well-entrenched, larger organizations (Manimala, et al., 2006; Romanelli, 1987). Manimala, et al., point out that researchers have identified numerous instances where organizations have blocked innovation and intrapreneurship and this eventually led to their collapse. Morse (1986) notes that well-established organizations do not have the flexibility in their internal systems to provide the rewards of personal autonomy and wealth which entrepreneurial individuals strive for. McDermott and O'Connor (2002) note that it is extremely difficult to gather support within an established organization for radical innovations as the internal culture and organizational reward systems support low risk behavior. Further, established organizations may have a short-term financial orientation that has a negative impact on innovation (Hoskisson, et al., 1993). Antoncic and Hisrich (2000) note that the intrapreneurship scenario is even worse for developing and/or transition economies, and Sadler (2002) also identifies the lack of innovations and intrapreneurship in public sector organizations.

Antecedents of Intrapreneurship

Previous research has identified two key antecedents regarding organizational intrapreneurship. One refers to the intra-organizational environment which includes such factors as degree of open communications, formal control mechanisms, industry environmental scanning intensity, degree of organizational and management support, and organizational values (e.g., Antoncic and Hisrich, 2001). The other key antecedent refers to such external environmental factors as the degree of stability and the rate of change

in the marketplace and industry (Miller, 1983; Khandwalla, 1987; Covin and Slevin, 1991; Zahra, 1991, 1993; Badguerahanian and Abetti, 1995; Antoncic and Hisrich, 2001). Covin and Slevin (1989, 1981) also address the issue of environmental hostility (i.e., unfavorable environmental conditions and its relationship to an organization's entrepreneurial posture). According to Zahra (1991), a high degree of environmental hostility generates threats for the organization that in turn stimulates intrapreneurship. Two key hostile environmental factors identified by researchers are unfavorability of change and competitive rivalry (Zahra, 1993).

THE MARINE PILOTING INDUSTRY

Marine pilots are federally and state-licensed to navigate and dock ships in coastal waters. Pilotage in the United States operates under a dual licensing system. In 1789, Congress passed a statute specifying that states have control over the piloting of foreign vessels entering American ports and in 1871, Congress enacted other legislation specifying that the federal government has control over U.S. vessels operating in American ports. Licensed pilots are compulsory for certain size ships under both federal and state laws. The industry operates under an umbrella of state and federal agencies that deal with licensing, tariffs, identifying pilotage waters, and classifying ships for which the compulsory requirements apply. State and federal regulatory agencies generally have heavy pilot representation.

Associations of marine pilots generally have exclusive areas, ports, harbors and rivers in which they operate. Pilots generally function through bureaucratic associations that serve as central dispatch and billing/collection entities. The individual pilots do the work as independent contractors but pool their income and expenses through their associations. Pilotage tariffs are generally based upon a cost flow-

through scheme. Ships are charged for association overhead, reimbursement for direct costs, plus an allowance for the pilot's income. The charge, or tariff, is set by the state piloting board. Piloting is taught through apprentice type training. The trainee works under a licensed pilot resulting in a high degree of control by entrenched pilots who personally select whom they will take on as apprentices. Pilot associations have the discretion to provide advance money to apprentices during the training period.

The association form of industry control in the Alaskan piloting industry requires that members approve all changes in bylaws and operating rules. Since approximately 1/3 of the pilots are off at any time, this results in a voting process that is slow and not conducive to change. Enthusiasm for new thinking or solutions by junior pilots is restricted by the voting rules of the Associations that effectively give junior pilots no voice in Association matters. After trainees have been approved for membership, at least in Alaska, they need to buy into the association's assets. It is not uncommon to have new members on a reduced share (e.g., 50% or 75%). All new members share the pooled income based on this percentage until the new member has total license coverage for both ports and sizes and types of ships. This creates a two-tier level of membership with only full share members allowed to vote on Association matters. In Alaska, pilots earn above-average incomes with many earning more than $200,000 per year. When pilots are on duty (available for dispatch), it is a 24-hour commitment. Consequently, pilots work on/off in blocks of time and may be on duty for two months and then off duty for a month.

THE ALASKA MARINE PILOTING SITUATION

Alaska has more coastline than the rest of the United States. Physically separated from what is referred to as 'the lower 48' by

Canada, it was a territory of the United States until 1959 when it became the 49th state. Its economy was then, and is now, based largely on federal spending and resource extraction. It does not have a large population: in 1960, according to the United States Census, there were 226,000 residents. In 1980, the population increased to a little over 400,000 and by 1990, it was between 500,000 and 600,000. By 2000, the population was approximately 630,000 (U.S. Census Bureau).
The organization of the Alaskan marine pilot industry was patterned after other states. The State of Alaska created the Alaska Board of Marine Pilots (the board) which consists of two licensed marine pilots, two registered agents or managers of vessels which are required to use marine pilots, two public members, and either the commissioner or the commissioner's designee. This group of seven people is charged with recognizing pilot organizations formed within geographic regions established by the board. Regional pilot organizations provide for the timely dispatch of marine pilots and set rates for the provision of services. The board must approve rate changes, and pilot organizations may not deviate from them (Alaska Statute Title 08, Chapter 62).

Prior to the instance discussed here, there were two piloting associations in the state: the Southeast Alaska Pilots Association which was headquartered in Ketchikan and was responsible for providing services in Southeast Alaska, and the Southwest Pilots Association which was headquartered in Homer and provided piloting service from Prince William Sound out to the Aleutians. In the late 1980s three major changes were occurring in Alaska. First, the tour ship industry was expanding considerably. Second, the fishing industry was shifting from exclusively summer salmon fishing to year-round bottom fishing in the Aleutian Islands area. Third, there was a move from onshore salmon canning to on-ship processing, and these on-ship processing plants required licensed pilots. This resulted in a rapidly growing demand for licensed pilots, and organizational changes were

needed to better accommodate the market and pilots. In order to cope with the increased demand, piloting costs were skyrocketing for ships. To illustrate, if there was a need for a pilot in the Aleutian Islands, it was generally necessary to send someone from another area. Rather than flying scheduled airlines, a plane was chartered to expedite the pilot's travel. The higher cost of chartering was of no concern to the pilots since the charges were borne by the shipping company. In some cases, a $5,000 or $6,000 charter was required for a $417 pilot fee.

The changing environment created many opportunities for industry growth, higher industry income, and a need to better accommodate customer needs. However, the pilots' associations were doing little to accommodate these changes. In fact, the Aleutian Islands area received less attention as members of the Southwest Alaska Pilots Association focused on the growing Prince William Sound tour industry. An entrepreneurial-minded junior pilot member from the Southwest Piloting Association developed and suggested several specific strategies to address problems and opportunities. He recommended developing resident locations in five existing ports, with Dutch Harbor being a key port. This would allow pilots to live in the resident areas and have a better home life, reduce travel time, slash the considerable financial costs associated with the travel, and facilitate the development of greater local knowledge and expertise as pilots worked in smaller geographical regions.

The entrepreneur/junior pilot was interested in heading up the plan, recruiting and training new pilots who would do the work for less and provide a pilot pool from which the best pilots would begin training on the larger ships. Additionally, the pilot would keep available a pool of adequate pilots to service the increasing numbers of tour ships as well as the most profitable tanker traffic. Consequently, younger pilots would also have more opportunities to work and earn a substantial

income. This individual believed all parties would benefit in a win-win situation, including members of the established associations. Significantly, all billing and collection activities would still be conducted at the association level.

Unfortunately, members of the Southwest Pilots Association did not view his recommendations favorably, and therefore did not support the proposal. The largest shipping agent in the state, however, heard of the proposed plan and approached the entrepreneurial individual and suggested a joint effort in order to make the new plan operational. Shipping agents were hired by shippers to arrange for piloting services, reprovisioning ships, and arranging other needed products and services. The entrepreneur located two other licensed individuals in Homer that were qualified pilots and formed the Alaska Marine Pilots Association, which eventually gained recognition by the Alaska Board of Marine Pilots. Setting up shop in Dutch Harbor, Alaska, the group provided better services at a lower cost to ports west of Kodiak Island through the Alaska Peninsula and Aleutian Islands.

The Southwest Alaska Pilots Association perceived the new pilots to be competitors as opposed to colleagues and acted swiftly and negatively. Upon hearing rumors regarding the formation of the new group, training for those in the trainee stage was suspended. Purportedly, the established organizations started a whisper campaign to the effect that pilots in the new group were not qualified, or were second-rate. It was also rumored that established association meetings were almost exclusively devoted to discussing how to discredit or "get at" the new organization. Furthermore, it was common knowledge that licensing procedures were administered in a biased way at the state regulatory board level where the traditional associations were represented. The examiners who were members of the established associations delayed processing licenses for members of the new group.

Other actions were undertaken by the established organizations to curb the growth of the new organization. Efforts were made to get state statutes changed to restrict the waters that the new association could service. Attempts were made at the legislative level to incorporate new regulations and incorporate bureaucratic procedures that would make any operational or regulatory changes cumbersome. In addition, attempts were also made to lengthen the training requirements in a way that would impede the licensing of new pilots and the formation of new associations. New income pooling rules were approved by the established associations that effectively reduced the income its new members could earn during their early years as pilots, and increased the income of the older members. Finally, the Southwest Pilots Association spent several hundred thousand dollars on new facilities in Dutch Harbor. This allowed them to argue before the Alaska Board of Marine Pilots that they should be able to coexist in the Aleutians.

In spite of the actions of the established associations, other shipping agents joined the new group, and within two years the new association had doubled in size and had 90% of the piloting business in the Aleutian area. Most of the pilots and the new group had tonnage restrictions on their licenses and therefore could not service the occasional large ship. Thus, the established associations kept a token presence in the area. Within three years, the new association was doing $1.5 million in business. Its membership had grown to twelve and had the support of most, if not all, industry agents. This allowed them to better meet the demand in the region. In this situation, an opportunity for the traditional marine pilot associations was lost. Instead of seeing an opportunity for all involved, the established bureaucratic associations spent time energy and money building barriers instead of encouraging the entrepreneurial spirit of one of its members. One consequence of efforts to stymie the development of new piloting organizations was to increase the visibility and therefore

scrutiny of the very profitable marine piloting industry. Some observers believe that the turmoil hurt the image of marine pilots.

DISCUSSION

The structure of the marine piloting system means that pure entrepreneurship is blocked, since the creation of new piloting associations needs the approval of the Alaska Board of Marine Pilots. It is not possible for an independent entrepreneur, even a licensed one, to simply develop an organization to provide needed services. The fact that shippers are required to hire marine pilots through board-approved associations essentially creates a functional monopoly which can, and did, result in an indifference to changing customer service requirements; after all, the service is compulsory and alternative sources of service are prohibited from meeting those needs. Cost concerns of industry customers can be safely ignored because tariffs are based upon the cost flow-through method described earlier and reimbursement of out-of-pocket costs. There are two significant aspects to this: First, the discipline imposed by a free market cannot efficiently function, and second, significant changes have to be made by an intrapreneur, that is, by someone who can work within a controlling organizational system.

In this particular instance, given the lack of incentives on the part of existing pilots and their associations, intrapreneurial actions generated hostility and counterproductive behavior. The intra-industry environment was not conducive to innovative behavior. Further, the cumbersome administrative/bureaucratic organization and rules meant that innovations had to be approved by a board occupied by some hostile members. It is a credit to the innovators that they were able to persevere and follow through on the changes.

Who won and who lost in this instance? First, the innovators were successful, but clearly more resources and time were required to make the needed changes than would have been the case had the existing piloting association been supportive. The lag between the emergence of the need and the introduction of the new association also cost shippers. Finally, the existing association lost members and geographical coverage and spent considerable financial and time resources in fighting the needed change. Another negative consequence was that the battle raised awareness of politicians and others about the existence of this lucrative, low-risk industry, and undoubtedly cost the existing piloting organizations political capital. Clearly, then, the bureaucratic barriers cost all participants.

CONCLUSION

Entrepreneurial and intrapreneurial actions are the means by which industries adapt to meet changing demands in the marketplace. Where governmental controls exist through laws, regulations, and government-approved regulatory bodies, there exists the likelihood that needed changes can be blocked or delayed. The Alaska marine piloting case illustrates how all parties can be detrimentally affected. This case supports previous literature describing regulations and bureaucratic organizations that protect private interest of entrenched industry leaders. In other words, both governmental regulations and bureaucratic regulations do affect the entrepreneurial spirit and process in an established industry. Both the literature and this case suggests that there is a real danger in that associations of entrenched members can generate new barriers, in some cases with the government's inadvertent support, which can delay or kill entrepreneurial efforts.

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The Relationship among e-Retailing Attributes, e- Satisfaction and e-Loyalty

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ABSTRACT

This paper investigates the relationship among e-retailing attributes, e-satisfaction, and e-loyalty. We identify five attributes (shopping convenience, product selection, informativeness, price, and customization) of e-retailing that potentially affect e-satisfaction and impact e-loyalty. Data collected from 238 online customers demonstrate that shopping convenience and informativeness except product selection, price and customization affect e-satisfaction and informativeness, price, and customization except shopping convenience and product selection impact e-loyalty. Also, the data show that e-satisfaction strongly affect e-loyalty.

Keywords: *convenience, selection, informativeness, price, customization, e-satisfaction, e-loyalty*

INTRODUCTION

According to Korea National Statistical Office (2006), E-commerce sales for 2005 were $381 billion, B2B sales were $340 billion and increased 14.2% up, B2G $31 billion and 6.2% up, B2C $8.4 billion and 22.9% up. However, e-retailing also comes with its own set of challenges. Consumers are able to compare and contrast competing products and services with minimal expenditure of personal time or effort (Srinivasan et al., 2002). According to Kuttner (1998), the Internet is a nearly perfect market because information is instantaneous and buyers can compare the offerings of sellers worldwide. The result is fierce price competition and vanishing brand loyalty. The antecedents to customer satisfaction are well documented in classical contexts (Oliver, 1997; Szymanski and Hise, 2000). Alomaim et al. (2003) assert that the importance of customer satisfaction is to achieve good financial performance in services in physical world, and the same can be said of e-commerce where a customer can be lost if unable to access a Web site or if the experience prove unsatisfactory. According to Szymanski and Hise (2000), their research adds to current insights into the role of financial security in online shopping by documenting its relationship to e-satisfaction and suggests that of the four factors (convenience, merchandising, site design, and financial security) in their regression model, convenience is tied for first in terms of its relative impact on e-satisfaction. Kotler(2000) suggested that the advantages of e-commerce for both consumers and businesses were convenience, savings, selection, personalization, and information and these 5 factors were an important drive for the potential power of B2C Internet shopping.

The antecedents of customer loyalty in the traditional brick-and mortar marketplace have been studied in detail (Sirohi et al., 1998). However, there are several variables unique to e-retailing that have

been evaluated in a few of the existing customer loyalty literature. Srinivasan et al. (2002) have identified eight factors that potentially affect e-loyalty. Of the 8Cs considered, customization, contact interactivity, cultivation, care, community, choice, convenience, and character, all but convenience, were found to have a significant impact on e-loyalty. E-loyalty was also found to have a positive impact on positive word-of-mouth and willingness to pay more. A few previous studies on e-satisfaction and e-loyalty have been separated and the antecedents of two variables are partly overlapped but different. Because the antecedents of e-satisfaction and e-loyalty suggested in this paper are considered as the benefits of e-commerce for both consumers and businesses, we propose shopping convenience, product selection, informativeness, price, and customization as independent variables.

The present paper is structured as follows. First, current researches are reviewed and a number of hypotheses are derived with respect to the relationship among e-retailing attributes (shopping convenience, product selection, informativeness, price, and customization), e-satisfaction, and e-loyalty. These are summarized in a theoretical model. Second, the research design is presented and the path model is tested by means of an empirical study of online shopping. A presentation and discussion of the results follows. Next, the managerial implications of the findings are discussed. Finally, the limitations of the research and suggestions for future research are presented.

THE ANTECEDENTS OF E-SATISFACTION

Shopping Convenience

E-retailing is promoted widely as a convenient avenue for shopping. Shopping online can economize on time and effort by making it easy to

locate merchants, find items, and procure offerings (Balasubramanian, 1997). Convenience refers to the extent which a customer feels that the website is simple, intuitive, and user friendly. Schaffer (2000) argued that a convenient website provides a short response time, facilitates fast completion of a transaction, and minimizes customer effort. Because of the nature of the medium itself, online customers have come to expect fast and efficient processing of their transactions. If customers are stymied and frustrated in their efforts to seek information or consummate transactions, they are less likely to come back (Cameron, 1999). The positive relationship between convenience and e-satisfaction evidenced in the existing researches (Szymanski and Hise, 2000; Jun and Chung, 2006) is captured in the following hypothesis.

H1: The convenience of online shopping will have a positive effect on e-satisfaction.

Product Selection

Marketing research firms have found that two-thirds to four-fifths of Internet buyers engage in narrowly defined searches for specific products (Solomon, 1999). Importantly, online buyers' perceptions that e-commerce offers them better selection, however, refers to the selection available on the Internet in general, rather than the selection on individual sites, which is often perceived as limited as compared to the retailer's offline stores and even catalogs (Modahl, 2000). For one, superior product selections can increase the probability that consumer needs will be met and satisfied. This is especially likely when consumers desire items not widely distributed (e.g., specialty goods), produced in limited quantities, or unavailable at brick-and-mortar stores because shelf space is limited (Szymanski and Hise, 2000). Also, the wider selection of products can include items of better quality that may be attractive to consumers. The lower search costs traditionally

associated with online shopping are thought to result in consumers buying better quality items (Bakos, 1997). Bizrate includes an overall score for an e-retailer, and ratings on the attributes of ease of ordering, product selection, product information, price, on-time delivery, product representation, customer support, privacy policies and shipping and handling (Tam, 2002). Researchers have developed attributes to predict intention to return to the website (Rice, 2002), satisfaction with a website (Alpar, 2001) and intentions to buy from the website (Loiacono et al., 2002). It seems reasonable to expect that e-satisfaction would be more positive when consumers perceive online stores to offer superior product selections.

H2: The product selection of online shopping will have a positive effect on e-satisfaction.

Informativeness

Well-documented feature of the web is the ability for information to be made easily available to consumers in a manner equivalent to more traditional sources of information. Cook and Coupey (2001) argued that the increased availability of information on the web has the potential to result in more knowledgeable consumers, who are then able to make better quality decision, who will then experience greater satisfaction with any purchases they make. Ballantine (2005) explored the effects of interactivity and product information on consumer satisfaction in an online retail setting and argued that the amount of product-related information affected consumer satisfaction of online shopping. Also, Jun and Chung (2006) identified the positive relationship between informativeness and e-satisfaction.

H3: The informativeness of online shopping will have a positive effect on e-satisfaction.

Price

The central role of price as a purchasing determinant as well as in post-purchasing processes is well recognized. In a qualitative study focusing on switching behavior in services, Keaveney (1995) reports that more than half of customers switched because of poor price perception (compared to competitors). Varki and Colgate (2001) arrived at similar results in their study of the banking industry; particularly that price perception directly influences customer satisfaction, the likelihood of switching, and the likelihood of recommendation to others. With respect to pricing, the internet provides both new threats and new opportunities for company. When the internet's best known retailing success story, Amazon.com, began trading in 1994, it emphasized low prices as the primary reason why customers should support it. What distinguishes the internet from traditional sales channels for most customers is that prices are expected to be generally lower on the internet (Karlsson et al., 2005). If the internet as a communication technology makes markets more efficient, then one might expect lower prices to arise where customers' transaction costs are lowered. Furthermore, the elimination of intermediaries means that they do not raise the price of the products without adding value (Verma and Varma, 2003).

H4: The price level (lower/higher) of online shopping and its possibility positive (negative) will effect on e-satisfaction.

Customization

Many e-retailers have already begun to incorporate some degree of customization into their practices. In the current study, customization is operationally defined as the extent to which an e-retailer's web site can recognize a customer and then tailor the choice of products, services, and shopping experience for that customer (Srinivasan et al., 2002). There are multiple reasons why customization is expected to

affect e-satisfaction. Customization creates the perception of increased choice by enabling a quick focus on what the customer really wants. Customization can also signal high quality and lead to a better real match between customer and product (Ostrom and Iacabucci, 1995). In addition, individuals are able to complete their transactions more efficiently when the site is customized. A large product selection can, in fact, irritate consumers and drive them to use simplistic decision rules to narrow down the alternatives (Kahn, 1998). If the company is able to accurately tailor or narrow choices for individual customers, it can minimize the time customers spend browsing through an entire product assortment to find precisely what they want. It seems to expect that customization of online shopping will affect e-satisfaction positively.

H5: The customization of online shopping will have a positive effect on e-satisfaction.

E-LOYALTY

Loyal customers are more likely to spread positive word-of-mouth (Gremler and Brown, 1999), buy additional services and accept premium prices (Zeithaml et al., 1996). Thus, we define e-loyalty as a customer's favorable attitude toward the e-retailer that results in repeat buying behavior through previous studies (Srinivasan et al., 2002). According to Schaffer (2000), 30 percent of the consumers who leave a website without purchasing anything do so because they are unable to find their way through the site. Sinioukov (1999) suggested that enabling consumers to search for information easily and making the information readily accessible and visible is the key to creating a successful e-retailing business. A website that is logical and convenient to use will also minimize the likelihood that customers make mistakes

and will make their shopping experience more satisfying. The outcomes will likely enhance customer e-loyalty.

H6: The convenience of online shopping will have a positive effect on e-loyalty.

Many consumers do not want to deal with multiple vendors when shopping. Bergen et al. (1996) noted that consumer search costs associated with shopping across retailers increase with the number of competing alternatives. In contrast, an increase in the number of available alternatives at a single e-retailer can greatly reduce the opportunity costs of time and the real costs of inconvenience and search expended in virtual store shopping. The e-retailer that offers greater choice can emerge as the dominant, top-of-mind destination for one-stop shopping, thereby engendering e-loyalty

H7: The product selection of online shopping will have a positive effect on e-loyalty.

As noted by Berger (1998), companies need to use their databases effectively to cultivate consumers. By proactively offering desired information, a company is inviting a customer to come back. It is relatively straightforward and inexpensive for e-retailer to not only recognize a customer but also reach out to that customer (such as through email promotions) and coax him or her along the route to purchase. An additional benefit of such cycles of stimuli and responses is that the retailer's knowledge base regarding the customer is continuously enhanced, lessening the customer's incentive to defect to another seller who has to build such knowledge from scratch (Srinivasan et al., 2002).

H8: The informativeness of online shopping will have a positive effect on e-loyalty.

The price transparency has advantages and disadvantages for marketers. Even if product characteristics, such as extra features or performance capabilities, cause or merit the higher price, customers shopping on the Internet may tend to focus on the price (Coupey, 2001). The price cue, however, is likely multidimensional, taking on a positive or negative role in consumers' decision making; that is, price itself facilitates or debilitates possibility of purchase (Lichtenstein et al., 1993). In the empirical study it was found that price-quality ratio and price fairness were more important to customers than relative price (Matzler et al., 2006). Therefore, price on the Internet shopping can affect e-loyalty.

H9: The price of online shopping will have a positive effect on e-loyalty.

There are multiple reasons why customization is expected to affect e-loyalty. Customization increases the probability that customers will find something that they wish to buy. A survey by NetSmart Research indicated that 83% of Web surfers are frustrated or confused when navigating sites (Lidsky, 1999). By personalizing its site, an e-retailer can reduce this frustration. Customization creates the perception of increased choice by enabling a quick focus on what the customer really wants. Also, individuals are able to complete their transactions more efficiently when the site is customized. These advantages of customization make it appealing for customers to visit the site again in the future (Srinivasan et al., 2002).

H10: The customization of online shopping will have a positive effect on e-loyalty.

An early investigation carried out by Johnson et al. (2000) into online search behavior suggested that customer loyalty could be linked to experience with internet shopping. Srinivasan et al. (2002) have demonstrated that e-loyalty is likely to have a positive impact on two customer-related outcomes, namely on a willingness to pay more and WOM promotion. Szymanski and Hise (2000) have conducted an exploratory study into e-satisfaction, which is widely regarded as an essential pre-requisite for loyalty (Oliver, 1999). More recently, in a study of online purchasing of books and flights, Harris and Goode (2004) demonstrated that loyalty is both directly and indirectly influenced by service quality, perceived value, satisfaction and trust.

H11: The e-satisfaction of online shopping will have a positive effect on e-loyalty.

PROPOSED MODEL AND METHODOLOGY

The model shown in Figure 1 is proposed to test empirically the key conceptual ideas embedded in online shopping. E-satisfaction is depicted in Figure 1 as the outcome of consumer perceptions of online convenience, selection, informativeness, price, and customization. Also e-loyalty is depicted in Figure 1 as the outcome of consumer perceptions of online convenience, selection, informativeness, customization, and e-satisfaction. An instrument with multiple-item scales for the constructs of interest was developed and pretested. Then, a sample of 270 university students who have experienced online shopping was drawn from convenient sampling because the sampling units are accessible, easy to measure, and cooperative. The survey method of personal interview was conducted at Gyeongnam region of Korea from 1 Feb. 2007 to 15 Feb. 2007. 238 questionnaires were used to empirical test of this research.

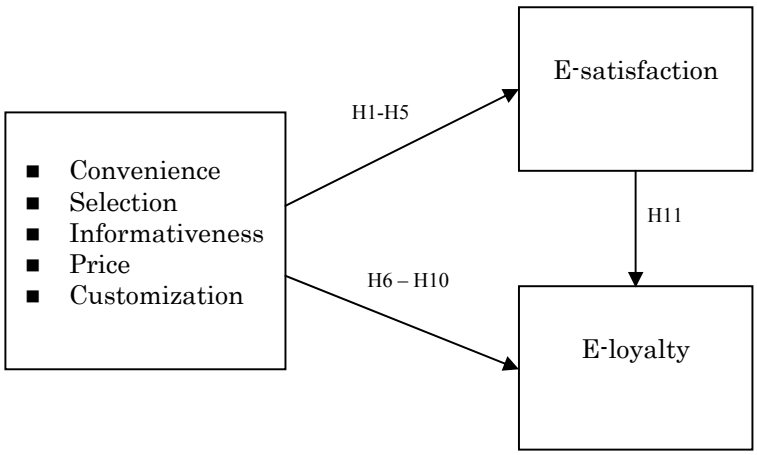

Figure 1 Proposed Model explaining the Antecedents and Consequent of E-satisfaction

The demographic characteristics of the sample are as follows: the sample is composed of 48.6% males and 51.4% females, internet experiences of 4 years above are 92.3%, the purchase experiences of online shopping 97.4%, and the extent of subscribers to online community 73.9%.

Measurement

All measures used in this study were estimated on seven point Likert scale. Satisfaction with overall e-retailing is measured by adapting one commonly employed measures of satisfaction: the degree to which the consumer is satisfied/dissatisfied (Oliver, 1997; Zeithaml et al., 1996) with online shopping. We conducted in-depth discussions with twenty online shoppers to generate the items for capturing shopping convenience, product selection, informativeness, price, and customization. Three academic researchers then evaluated these items

for face validity. Based on their feedback, several items were modified. We then pretested the questionnaire with thirty online shoppers selected randomly. Respondents were explicitly asked to indicate any ambiguities or potential sources of error stemming from either the format or wording of the questionnaire. Inputs from these respondents were used to further refine and modify the instrument. In addition, the items for capturing shopping convenience, product selection, informativeness, price, and customization were measured from Srinivasan et al. (2002), Szymanski and Hise (2000), Wolfinbarger and Gilly (2003), Karlsson et al. (2005), Ballantine (2005), and Matzler et al. (2006). E-loyalty was measured using items adapted from Zeithaml et al.(1996), Srinivasan et al. (2002), and Soderlund (2006).

Analysis of Scale Items

We conducted an exploratory factor analysis (principle components analysis with varimax rotation) to determine whether the scale items loaded as expected. We refined the scales by deleting items (Ps4, I3) that did not load meaningfully on the underlying constructs and those that did not highly correlate with other items measuring the same construct. What we find is that a seven-factor solution is more appropriate. The seven factors explain 67.5% of the variance in the data, all eigen values are above one, all items load heavily onto one of the factors, and all seven factors are easily interpreted (see Table 1). We then calculated Cronbach's alphas for the scale items to ensure that they exhibited satisfactory levels of internal consistency. The Cronbach's alphas are as follows: shopping convenience (.734), product selection (.719), informativeness (.798), price (.749), customization (.814), e-satisfaction (.935), and e-loyalty (.874). The internal consistency estimates of all scales were above the cutoff point of 0.7 recommended by Nunnally and Bernstein (1994).

Table1 Factor Loading for Scale Items

	Factors						
Items	e-Satisfaction	e-Loyalty	Price	Informativeness	Customization	Shopping Convenience	Product Selection
Es2	.864						
Es3	.840						
Es1	.815						
El1		.848					
El2		.830					
El3		.693					
El4		.625					
P5			.746				
P1			.733				
P3			.730				
P2			.629				
P4			.617				
I4				.771			
I1				.729			
I5				.725			
I2				.684			
C2					.867		
C1					.844		
C3					.741		
Sc3						.737	
Sc2						.737	
Sc4						.694	
Sc1						.647	
Ps5							.779
Ps1							.649
Ps2							.640
Ps4							.637
Eigen Value	6.955	3.326	2.430	1.657	1.464	1.267	1.136

Before testing the hypothesized relationship in the research model, the scales used to operationalize the constructs were examined through the estimation of the measurement model. Confirmatory factor analysis was used to assess the unidimensionality and validity of the constructs. The fit indicates of CFA shown in Table 2 are acceptable

χ^2/df=209.039(113), P=0.000, CMIN/DF=1.850, GFI=0.902, AGFI=0.852, CFI=0.954, NFI=0.907, RMSEA=0.064) (see Table 2).

Table 2 Confirmatory factor analysis

Variables	Items	Estimates	Standardized Estimates	S. E.	C. R.	Composite Reliability	AVE
Shopping Convenience	SC3	0.878	0.661	0.160	5.499	0.928	0.866
	SC4	1.000*	0.773				
Product Selection	PS1	0.864	0.714	0.118	7.350	0.957	0.919
	PsS	1.000*	0.910				
Informativeness	I4	1.000*	0.922	0.088	10.784	0.973	0.947
	I5	0.953	0.855				
Price	P1	0.979	0.791	0.139	7.062	0.948	0.900
	P3	1.000*	0.793				
Customization	C1	0.908	0.793	0.084	10.753	0.970	0.917
	C2	1.000*	0.874				
	C3	0.764	0.659	0.082	9.314		
e-Satisfaction	ES 1	0.766	0.827	0.042	18.183	0.990	0.970
	ES 2	0.977	0.967	0.035	27.788		
	ES 3	1.000*	0.941				
e-Loyalty	El 1	0.984	0.892	0.059	16.753	0.980	0.925
	El 2	1.000*	0.908				
	El 3	0.798	0.707	0.067	11.996		
	El 4	0.720	0.601	0.076	9.508		

χ^2/df=209.039 (DF=113), P=0.000, CMIN/DF=1.850, GFI=0.902, AGFI=0.852, NFI=0.907, TLI=0.938, CFI=0.954, RMSEA=0.064

Note: * is designated to standardize estimates

Discriminant validity was evaluated by testing whether pairs of constructs were correlated less than unity. Inspection of the correlation matrix and the respective standard errors reveals that none of the correlations are within two standard errors of 1.0. Therefore, there was evidence for discriminant validity for the constructs used in this study. An examination of the pair-wise correlations among the variables

provides preliminary support for the hypotheses. The pair-wise correlations also reveal significant and positive relationships among the independent variables as expected (see Table 3). Having established adequate reliability and validity, the findings were subsequently analyzed using SPSS version 12 and AMOS 5.0.

Table3 Correlation Matrix

VAR	Mean	SD	1	2	3	4	5	6	7
SC	5.24	1.23	1.000						
PS	5.28	1.36	0.287**	1.000					
IN	4.43	1.12	0.222**	0.248**	1.000				
PR	4.75	1.35	0.180**	0.379**	0.204**	1.000			
CU	3.18	1.31	-0.016	-0.090	0.211**	0.096	1.000		
ES	4.64	1.21	0.341**	0.121	0.441**	0.168*	0.179**	1.000	
EL	4.43	1.26	0.274**	0.111	0.414**	0.286**	0.326**	0.580**	1.000

SC: Shopping Convenience; PS: Product Selection; IN: Informativeness; PR: Price;
CU: Customization; ES: e-Satisfaction; EL: e-Loyalty
Note: Significance levels are denoted as ** p<0.01, * p<0.05 (2-tailed)

Path Analysis and Hypothesis Testing

Following measurement purification, the path relationships within the research model were analyzed by structural equation modeling (SEM) using AMOS 5.0. In this instance, AMOS 5.0 was used for data analysis as the proposed research model consists of a simultaneous system of equations having latent constructs and multiple indicators. The fit indices of the research model shown in Figure 2 are acceptable (χ^2/df=178.709(113), GFI=0.915, CFI=0.969, NFI=0.921, RMSEA=0.053) (see Figure 2). The results of the SEM shown in Table 4 provide support for eight of ten hypotheses. Shopping convenience and informativeness are significantly and positively related to e-satisfaction (H1=0.342, t=3.444, H3=0.387, t=4.916). No support is

provided for H2 (H2=-0.131, t=-1.363), H4 (H4=0.067, t=0.756), and H5 (H5=0.050, t=0.679). Informativeness, price, and customization significantly and positively related to e-loyalty (H8=0.192, t=2.544, H9=0.213, t=2.534, H10=0.133, t=1.950). No support is provided for H6 (H6=0.126, t=1.419) and H7 (H7=-0.104, t=-1.162). e-Satisfaction is significantly and positively related to e-loyalty (H11=0.453, t=5.918).

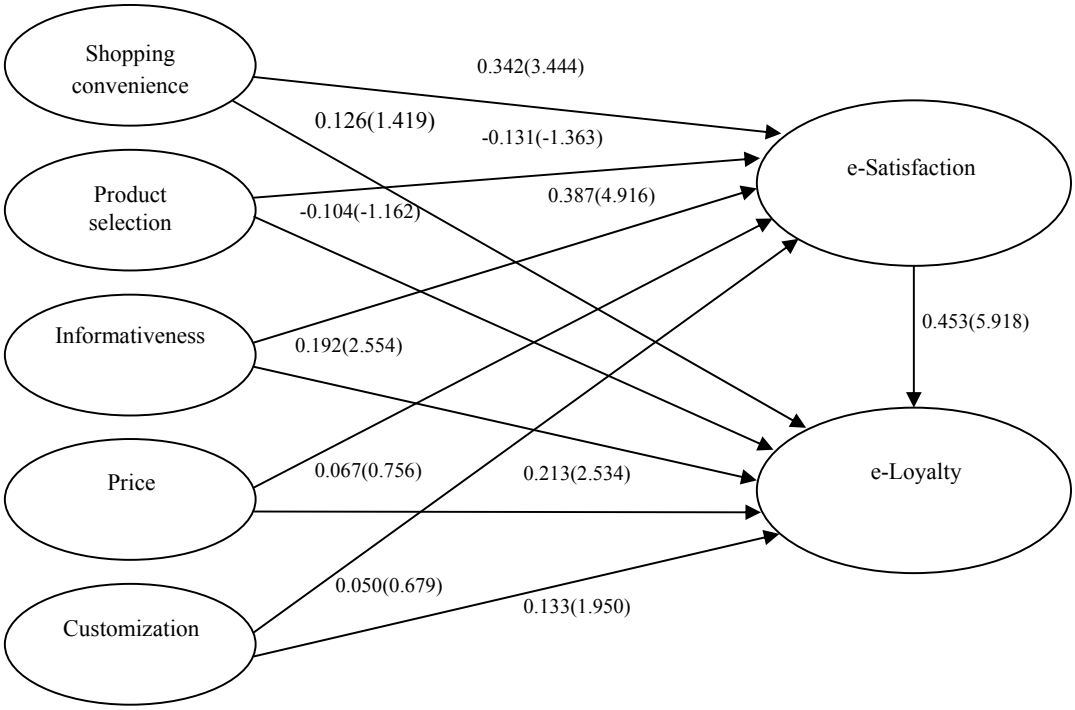

Figure 2 A Path Model of Relationship Strength

χ^2/df =178.709(DF=113), P=0.000, CMIN/DF=1.581, GFI=0.915, AGFI=0.872, NFI=0.921, TLI=0.958, CFI=0.969, RMSEA=0.053

Table 4 Parameter estimates for the research model

Parameter	Description			Standard estimates	t-value	Hypothesis supported
H1	Shopping convenience	→	e-Satisfaction	0.342	3.444***	Yes
H2	Product selection	→	e-Satisfaction	-0.131	-1.363	No
H3	Informativeness	→	e-Satisfaction	0.387	4.916***	Yes
H4	Price	→	e-Satisfaction	0.067	0.756	No
H5	Customization	→	e-Satisfaction	0.050	0.679	No
H6	Shopping convenience	→	e-Loyalty	0.126	1.419	No
H7	Product selection	→	e-Loyalty	-0.104	-1.162	No
H8	Informativeness	→	e-Loyalty	0.192	2.554**	Yes
H9	Price	→	e-Loyalty	0.213	2.534**	Yes
H10	Customization	→	e-Loyalty	0.133	1.950*	Yes
H11	e-Satisfaction	→	e-Loyalty	0.453	5.918***	Yes

Note: Significance levels are denoted *p<0.10, **p<0.05, ***p<0.01

DISCUSSION AND CONCLUSION

Our findings have both managerial and research implications. They show that informativeness has a positive effect on e-satisfaction more than shopping convenience. Thus, e-retailers should provide customers of e-retailing the good and useful information on product features. Shopping convenience of e-retailing is the second predictor of e-satisfaction. However, they show that product selection, price and customization do not have positive effects on e-satisfaction. Although product selection such as the broader choice range of products and many kinds of products at website has the advantage of off-line, consumers who want to buy specific products may be not consider it as an important element in B2C. If price is very cheap and attractive in online shopping, it may be strongly related to e-satisfaction. Also in

terms of online firms customization may be a difficult task, because it can go with cost up and certain products can not be customized.

Price has a positive effect on e-loyalty more than informativeness and customization. It is inferred that because satisfaction is perception of individual customer and loyalty is intention, price and customization can not affect e-satisfaction but affect e-loyalty. If consumers perceive the price very cheap and attractive, it can enhance e-loyalty. Moreover, it shows that customized service, recommend of appropriate product, and suitable ordering procedures of e-retailing are important elements to improve e-loyalty. However, shopping convenience and product selection do not have positive effects on e-loyalty. Because of the nature of the medium itself, online customers have come to expect fast and efficient processing of their transactions. If customers are stymied and frustrated in their efforts to seek information or consummate transactions, they are less likely to come back (Srinivasan et al., 2002). Also if e-retailers do not provide the dominant, top-of-mind destination for one-stop shopping, thereby shrinking e-loyalty. From a research perspective, our analysis provides a little conceptualization of the relevant antecedents of e-satisfaction and e-loyalty.

There are some limitations of this research that should be considered when interpreting its findings. E-satisfaction and e-loyalty analysis should also be carried out with simultaneous comparisons of online retailing to brick-and-mortar retailing, directing marketing, and catalog retailing. Studying whether e-satisfaction and e-loyalty are stable over time might also prove interesting. This study does not control for such differences across product and service categories. Researchers can develop richer models that capture and explain these differences. Electronic markets will lead to intense price competition resulting in lower profit margins. To compete successfully, e-retailers will need to develop and maintain e-satisfaction and customer loyalty.

Toward this task, e-retailers must first thoroughly understand the antecedents of e-satisfaction and e-loyalty.

APPENDIX of SCALE ITEMS

Scale	Items
Shopping Convenience	Sc1. This website is very convenient to use. Sc2. It takes a short time to shop at this website. Sc3. This website provides ease procedures of ordering. Sc4. A first time buyer can make a purchase from this website without much help.
Product selection	Ps1. The broader choice range of products at this website is provided. Ps2. Many kinds of products at this website is provided. Ps3. This website provides a "one-stop shop" for my shopping. Ps4. This website provides the products which other sites can't easily. Ps5. This website provides the products which I want because of handling many kinds of products.
Informativeness	I1. This website provides the rich information on features and quality of the products. I2. This website provides the accurate information on features and quality of the products. I3. This website provides various kinds of peripheral information (payment, delivery, and return). I4. This website provides the good information of products. I5. This website provides the useful information of products.
Price	P1. This website provides cheaper products. P2. The pricing policy of products at this website is flexible. P3. The price at this website is very cheap and attractive. P4. This website provides auction and reverse auction. P5. This website provides pool auction.
Customization	C1. This website provides the customized service for me. C2. This website makes purchase recommendations that match my needs. C3. This website makes ordering purchase for me.
E-satisfaction	Es1. I am satisfied with the offerings at this website. Es2. I am satisfied with the purchases at this website. Es3. I am satisfied with the products at this website.
E-loyalty	El1. I say positive things about this website to other people. El2. I recommend this website to anyone who seeks my advice. El3. I will frequently visit this website. El4. I will increase the visit frequency of this website.

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Using GST To Analyze the Collapse of AOL

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ABSTRACT

In 1972 Fremont E. Kast and James E. Rosenzweig published "General Systems Theory: Applications for Organization and Management " in the Academy of Management Journal. Over the more than thirty years since publication this article has become a classic. The writing is quite theoretical and abstract. This paper will take the highly conceptual, often abstruse, terminology used in the article and take the current status of AOL (America Online) to illustrate the mechanics articulated and thereby illustrate the applicability and relevance of the article today.

Keywords*: America Online, Case Study, Entropy, System Theory*

INTRODUCTION

en tro py (µn"tr…-p¶) *n. pl.* **en tro pies 1.** *Symbol* **S** For a closed thermodynamic system, a quantitative measure of the amount of thermal energy not available to do work. **2.** A measure of the disorder or randomness in a closed system. **3.** A measure of the loss of

information in a transmitted message. **4.** A hypothetical tendency for all matter and energy in the universe to evolve toward a state of inert uniformity. **5.** Inevitable and steady deterioration of a system or society. [German *Entropie* Greek *en-* in; See **en-** 2 Greek *trop¶* transformation; See **trep-** in Indo-European Roots.] (1992)

The crisis that exists in AOL is well documented (Bosavage, 2006). America Online emerged from an amalgam of early PC communication attempts, online gaming companies, and communications services which were founded, expanded, transformed and finally consolidated after six years of trial and error (1983-1989). Although "America Online" was initially a conglomerate of several separate online services the company became one in 1991 using a graphic interface over the DOS operating system. In 1991 it had about 150,000 users and ranked a distant third to CompuServe and Prodigy (Swisher, 1998, p.59-60). AOL went public in 1992 on NASDAQ offering 2 million shares at $11.50 each (Swisher, p.62). From that point on the growth of the company was phenomenal. In 1993 it had 500,000 members, in 1994, one million members, by 1995 it had 4.5 million, by 1996, 7 million, and it hit 10 million members in the United States with one million additional abroad in 1997.

In 1997 AIM (America Online Instant Messenger) debuted. The AIM feature was enormously popular. This exponential growth continued. In 1998 AOL acquired CompuServe and Netscape and had 15 million subscribers. In 1999 it developed a partnership with Sun Microsystems and in 2001 AOL merged with Time Warner and was worth $200 billion (Bosavage, 2006). AOL peaked in members with 34 million in 2002. By the 2Q of 2006 AOL had fewer than 17.7 million subscribers, is losing nearly 1 million a Quarter, and is worth only $20 billion. (At last estimate, March 2007, there were 12 million U.S. subscribers.) (AP News) How can such a meteoric rise be so quickly reversed?

GENERAL SYSTEMS THEORY

Although Fremont E. Kast and James E. Rosenzweig wrote their seminal article "General Systems Theory: Applications for Organization and Management," (Kast & Rosenzweig, 1972) more than thirty years ago, it remains a staple for Information Systems' Theorists in their study of "Analysis and Design." Kast and Rosenzweig give a masterful historical and theoretical presentation in a little more than ten short pages of text. It is the concept of "entropy," which becomes the fundamental *tour de force*, enabling the authors to vivify the concept of system and its infra as well as supra interactions. Although "cybernetics" is mentioned explicitly only once in regard to the concept of "feedback," its impact is latent throughout this paper. If "cybernetics" is indeed based on "Negative feedback" as is stated in the article (Kast & Rosenzweig, p. 16) and gets its etymology from the Greek *kybernetes* (steersman, governor, pilot, or rudder), one has to question where AOL went wrong and why it has maintained the wrong direction into near obsolescence. In the General Systems Theory (GST) article the authors argue that "... questions of organizational effectiveness must be concerned with at least three levels of analysis. The level of the environment, the level of the social organization as a system, and the level of the subsystems (human participants) within the organization" (Kast & Rosenzweig, p. 20). They go on to state "Perhaps much of our confusion and ambiguity concerning organizational effectiveness stems from our failure to clearly delineate the level of our analysis and even more important, our failure really to understand the relationships among these levels" (Kast & Rosenzweig, 20).

Nowhere are these "levels" and their "relationships" better articulated than in the works of Talcott Parsons. In an earlier paper the author uses Parsons to explain a "simple" technological change in the adoption

on the mouse and pointing devices in modern computing (Robak, 2001). It is appropriate to now expand this "Parsonian Perspective" to articulate the actions on "entropy" in the analysis of corporate demise. Parsons uses four levels of action separate yet interrelated. They are Cultural, Societal, Personality, and Organismic. Parsons explains the relations among the subsystems through the term "cybernetic hierarchy of control" (Turner & Maryanski, p. 80). "The systems vary in the amount of "informational control" and "energy" and each level is necessary for control and regulation as well as provision of energy for the next" (Robak, p. 37). The direction is opposite from that taken in the previous paper since "control of the mouse," would emanate from the Organismic because the eye-hand coordination necessary for proper mouse movement is within this realm. In fact, the last two levels (Personality and Behavioral Organism) are realms within the actor; one concerning mental activity, the other physical, and these last two can be bifurcated in the mouse example. However, in the AOL example, the analysis is at the Macro level and the separation is unnecessary.

FUNCTIONAL REQUISITES

Control of the overall Macro System comes from the Cultural System and works its way to the Social System then to the Personality System. The "Functional requisites" are Adaptation; Integration; Goal Attainment; and Latency (also known as pattern maintenance). Turner and Maryanski (1979) provide a concise yet thorough description. "Each of these in turn, rests primarily within a given action system but there are interchanges which allow for the viability of all of the subsystems. The primary adaptive subsystem is the Organismic, the Personality deals with goal attainment, the Social System meets integrative problems, and the Cultural will deal with latency. It is important to remember that the interchanges among these subsystems

are what allow for total system efficacy." (Robak, 2001). Table 1 presents functional requests.

Table 1. Description of Functional Requests

Items	Description
Adaptation	All action systems must seek resources from the environment, convert them into usable facilities, and then distribute them to the rest on the system.
Integration	All action systems must maintain coherent interrelationships among their constituent parts, and inhibit tendencies for abnormalities in the relations among the parts.
Goal Attainment	All action systems must set goals, establish priorities and allocate resources in order to achieve them.
Latency	All action systems must (a) generate use units that can fit into the system (the problem of "pattern maintenance"), and (b) reduce tensions within units of the system ("tension management"). (p. 75).

Given these overall parameters, how did entropy prevail so as to bring a company with such tremendous momentum to a halt? An additional factor to consider is that of "Cultural Lag," as is articulated by William Fielding Ogburn (Ogburn, 1922). Culture consists not only of social institutions and social ways, but also of the material objects existing and being generated by that society. Objects of technical relevance serve to exacerbate this phenomenon. Rarely was this truer than with the introduction of the Internet and the World Wide Web. Artifacts such as Internet Service Providers (ISPs) and web browsers were introduced, then used, then taken for granted, in a very short period of

time. People and companies that could properly capitalize on their usage would quickly gain a competitive edge.

CompuServe Information Service was first introduced in 1979 by an Ohio-based organization and it initially served investors allowing them to access stock quotes (current and historic) at a moment's notice. It was acquired by H&R block in1980 and added features such as Electronic Mail, Online Shopping, and airline schedules and reservations. Its growth was slow but stable and peaked at 3 million users in 1995. Prodigy, a brainchild of IBM and Sears, Roebuck and Company in 1987, actually had the internet lead in 1993 with more than 40% of the online market, while at that time, America Online located in Vienna, Virginia was just really beginning with fewer than 500, 000 subscribers. Its phenomenal growth is described at the beginning of this paper and peaked in 2002 with 34 million members and along with its Time Warner merger was thought to be worth $200 billion. Along the way it had acquired CompuServe (1998), Netscape, Global Network Navigator (1995), formed a partnership with Sun (for the purpose of Netscape sharing), and popularized Instant Messenger. Most of the early growth was under Steve Case who joined AOL in 1983 and rose to CEO in 1991 and Chairman in 1995, he resigned as Chairman in 2003.

AOL attracted most of its users when the primary mode of connection was "dial-up." It had a restrictive ("walled garden"), yet attractive approach to the Internet. The AOL approach was deemed to be "less technical" and therefore "easier" for those who were new to the internet; it also had "parental controls" which appealed to those adults who had children who would be using the internet. After the introduction of "instant messaging" those children would be hooked, being able to interact with their friends at all hours. As one can see the early features of AOL fit the emerging internet culture quite well and

indeed, this was the biggest reason for rapid adoption in the early years, as it quickly swept past CompuServe and Prodigy on its way to domination at the beginning of the new millennium. Despite some initial difficulty with inability to connect all of the users in this growth phase (in the early years of overuse and under capacity AOL was often referred to as "America On Hold!"), AOL persevered and its initial momentum carried it through. At the beginning of its growth phase, it carpet bombed all potential users with 3½ inch floppy disks sent through the mail or as magazine inserts, then AOL continued its carpet bombing with CD-ROMs when they became the medium of choice. This technique was both unique and positively received as the masses became more technologically savvy. Although this led to large-scale churning, the overall results worked well and subscribers increased by leaps and bounds. In order to minimize users leaving once they began to use AOL, they made it difficult to leave. When, as time passed, more and more subscribers decided that AOL was no longer the ISP that was needed; the courts agreed that this technique was unjust. Several million dollars were paid in penalties and costs by AOL as a settlement for this draconian practice. In addition, AOL was found to inflate its advertising revenues and this accounting misdeed resulted in payments of several billion dollars to settle a class-action suit in this regard.

How did this very successful venture turn so bad so quickly? The answer can best be summarized as entropy! A look at its inability to allow for interchanges at the cultural and social system levels as have been delineated by Talcott Parsons led to rapid deterioration within the Goal Attainment and Latency "functional requisites." For entropy to be prevented there must be a proactive and open interchange among the primary system and all of its supra and infra contemporary systems as well as subsystems. The environment in today's business

world is multifaceted and complex. Also, not to be ignored is the plexus of subsystems which exist within any system.

GROWTH

Kara Swisher (1998, p. xv) opens her book with a vignette which would position us at the personality system in the Parsonian "cybernetic hierarchy of control." It is the personality level that has "power" as its "generalized medium of exchange" (Turner & Maryanski, p.82) and its base "functional requisite" is goal attainment. The vignette is entitled "Meet Mr. Bill," and takes place in May of 1993. The opening paragraph reads "I can buy 20 percent of you, began Bill Gates in a most reasonable and even tone, a tone that was flatly matter-of-fact, neither angry nor blustery. The legendary co-founder of the software giant Microsoft Corporation rocked back and forth as he spoke; his hands touched lightly, forming a ten-fingered globe. The pose ---- which would become much more famous over the next few years --- struck one person in the small stuffy room as vaguely comforting, as if Gates were a learned sage about to impart the ultimate wisdom to the thick-headed masses gathered before him." (Swisher, p. xv). It continues "I can buy 20 percent of you or I can buy all of you, or I can go into this business myself and bury you."

This statement is directed at Steve Case who was the CEO of AOL. At the time AOL had about one-half of a million subscribers and had yet to begin its ascent into the large company that it would become. The medium of power is obvious and this vignette sets to goals for both Case and Gates. (Gates does not buy any part of AOL but decides to put into motion the creation of MSN, his answer to AOL.) Initially, the goal for Gates is to "bury" AOL, and for Case the goal is simply survival. The next ten years tell us much. MSN, although marginally successful, does not "bury" AOL and indeed, AOL reaches its peak of

34 million members in 2002. In this instance the energy from the personality system flows to the social system (for all of the specific steps toward the organizational development of the enterprise) and then the energy from the enterprise flows to the cultural system which allows AOL to become the accepted and most powerful ISP and indeed, force which at this point in time structures the Internet as well as the World Wide Web.

DECLINE

The decline begins at the Cultural level. There were cultural changes occurring (some subtle, others open and overt) which, in most cases, were ignored or overlooked that led to the dismantling of the AOL empire. These changes, since they were inextricable intertwined with emerging technology, were classic examples of "Cultural Lag" (Ogburn) which in turn exacerbated the dismembering of AOL. First was the emergence of broadband. As cable providers and telephone companies (through DSL) began to provide high-speed internet connectivity, users began to drift away from "dial-up" connections. In addition, these high-speed providers offered their own free portals to the Internet, making belonging to a specific ISP less important. These portals were often supplied by other internet services such as Yahoo, Excite, or Google, which often allowed the end-user to configure and individualize his/her own home page, in an easy-to-do manner. By this time even those slow to adopt computers and internet utilization became much more comfortable with "low-cost" dial-up companies such as NetZero and EarthLink (in the late 1980s there were over 400 ISPs which increased to more than 7000 in the late 1990s (Cooper, 2002)). Thus, all of sudden there are numerous available internet portals along with a variety of prices and services. On the Cultural level the "killer application" appears which is the Internet. Individuals now think nothing of purchasing a Personal Computer if only to have access to

the Internet. For the majority of the population the computer and the Internet become both desired and necessary. This was a big cultural obstacle which within twenty years is taken for granted even by the most reluctant adopters.

With broadband, information is easy to get and it can be attained faster. This of course gave rise to early "search engines," e.g., Archie, Gopher, etc., which facilitated the Internet as an information purveyor. Once the culture accepted the PC and then the Internet, the Social Systems sprang up to support, expedite, and simplify its usage even further. Other inventions such as the personal information manager and the cell phone made "text messaging" and instant communications by voice preferred to the "instant messaging" of AOL. In addition, with wireless communication everywhere the need for AOL in its traditional "dial-up" mode became superfluous. Mergers between two technological companies often result in dysfunction, with the corporate culture of one often prevailing to the expense of the other. The classic early example of this would be Sperry and Burroughs to form Unisys. Unisys tends to retain the corporate culture of Sperry while the Burroughs corporate culture was largely subsumed by Unisys. This phenomenon was exacerbated when AOL merged with Time Warner (two very different corporate cultures) in 2001. This resulted in disaster with AOL Time Warner reporting a $99 Billion loss in 2002, the largest loss, at the time, ever reported by a company.

So, in addition to the entropy caused by AOL not paying careful attention to the occurrences in its own area (effectively the developments within and around the Internet were disregarded), AOL did not give proper consideration to the ramifications of a merger with Time Warner. It appears as if Steve Case became self-involved and lost focus in order to gain perceived power, a fact very well documented by Nina Munk in her book Fools Rush In (2004). The principals, Steve

Case, Jerry Levin, Ted Turner, and Dick Parsons, were motivated by power, their attention was on the Personality System and, for all practical purposes, the Social and Cultural Systems were neglected. In this situation the vital resource keeping the "General System" viable was information, itself. When the egos of the main participants of the "General System" made the Personality System the primary driving force of the enterprise to the exclusion of the other major phases the equilibrium of the entire system is disturbed and entropy rapidly deteriorates that system.

CONCLUSION

The classic GST article written by Fremont E. Kast and James E. Rosenzweig is dissected and employed in this paper to explain the radical rise of AOL from a start-up company to a $200 billion power with 34 million members to an inconsequential enterprise which is struggling to remain in existence. There were two key concepts from the article which were reflected upon in order to expedite the explication: 1) the phenomenon of entropy; and, 2) the assessment of the three levels on analysis (environment, social organization as a system, and the level of subsystems (human participants) within the organization. In order to better apprehend and understand the systems, the theory of Talcott Parsons was applied to this assessment.

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An Extended Model of Adoption of Technology in Households: A Model Test on People Using A Mobile Phone

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ABSTRACT

Individual adoption of technology has been studied extensively in the workplace (Brown & Venkatesh, 2005). Far less attention has been paid to adoption of technology in the household (Brown & Venkatesh, 2005). Obviously, mobile phone is now integrated into our daily life. Indeed, according to the more recent forecast of Gartner Research, 986 millions of mobile phones have been sold throughout the world in 2006 (Ouellet, 2006). And, as the tendency is showing up, mobile phone use will be continuously increasing in the future. The purpose of this study is then to investigate who uses a mobile phone, and why? In other

words, we try to identify who really are the users of a mobile phone and what are the determining factors who make such that they are using a mobile phone? On the basis of the theoretical foundations developed by Brown and Venkatesh (2005) to verify the determining factors in intention to adopt a computer in household by American people, this study examines the determining factors in the use of mobile phone in household by Canadian people. Data were gathered from 327 Atlantic Canadian people who own a mobile phone. Data analysis was performed using the structural equation modeling software Partial Least Squares (PLS). The results revealed that about half of the variables examined in the study showed to be determining factors in the use of mobile phone by people in household.

Keywords: *Adoption of Technology, Model Test, Mobile Phone*

INTRODUCTION

Since numerous years, mobile phone is used for different professional purposes, particularly by senior managers in the workplace. And this technology is more and more used in the workplace since mobile applications have been integrated to actual enterprise business strategies. Individual adoption of technology has been studied extensively in the workplace (Brown & Venkatesh, 2005). Far less attention has been paid to adoption of technology in the household (Brown & Venkatesh, 2005). Obviously, mobile phone is now integrated into our daily life. According to the more recent forecast of Gartner Research, 986 millions of mobile phones have been sold throughout the world in 2006 (Ouellet, 2006). And, as the tendency is showing up, mobile phone use will be continuously increasing in the future. The purpose of this study is then to investigate who uses a mobile phone, and why? In other words, we try to identify who really are the users of a mobile phone and what are the determining factors who make such that they are using a mobile phone?

Few studies have been conducted until now which investigate the intention to adopt a mobile phone by people in household (in the case of those who do not yet own a mobile phone) or the use of mobile phone in the daily life of people in household (in the case of those who own a mobile phone). Yet we can easily see that mobile phone is actually completely transforming the ways of communication of people around the world. It is therefore crucial to more deeply examine the determining factors in the use of mobile phone by people in household. This is the aim of the present study. The related literature on the actual research area of mobile phone is summarized in Table 1. In addition to the summary of literature on the actual research area of mobile phone presented in Table 1, other researchers have identified some factors which might increase the use of mobile phone by people in household. For example, in a large study carried out in 43 countries of the world, Kauffman and Techatassanasoontorn (2005) noted a faster increase in the use of mobile phone in countries having a more developed telecommunications infrastructure, being more competitive on the wireless market, and having lower wireless network access costs and less standards regarding the wireless technology. And a study involving 208 users by Wei (in press) showed that different motivations predict diverse uses of mobile phone. According to the Wei's findings, mobile phone establishes a bridge between interpersonal communication and mass communication. As we can see in the summary of literature related to mobile phone presented above, few studies until now examined the determining factors in the use of mobile phone by people in household. Thus, the present study brings an important contribution to fill this gap as it allows a better understanding of the impacts of mobile phone usage in people's daily life. It focuses on the following two research questions: (1) Who are the buyers of mobile phone for household use? and (2) What are the determining factors in the use of mobile phone by people in household?

Table 1. Related Literature Survey (adapted from Isiklar & Büyüközhan, 2007, p. 267)

Research Area	***References***
Mobile phone diffusion and its impacts on people's daily life.	LaRose (1989) Kwon & Chidambaram (2000) Botelho & Costa Pinto (2004) Funk (2005) Andonova (2006)
Mobile phone ownership and usage.	LaRose (1989) Kwon & Chidambaram (2000) Palen et al. (2000) Aoki & Downes (2003) Selwyn (2003) Davie et al. (2004)
Mobile phone ownership and usage from a behavioral and psychological perspective.	Karjaluoto et al. (2003) Wilska (2003) Davie et al. (2004)
Effects on human health and daily activities.	Repacholi (2001) Salvucci & Macuga (2002) Weinberger & Richter (2002) Sullman & Baas (2004) Treffner & Barrett (2004) Westerman & Hocking (2004) Balik et al. (2005) Balikci et al. (2005) Eby et al. (2006) Rosenbloom (2006) Törnros & Bolling (2006)
Evaluation and design of mobile phone features for user interface and user satisfaction.	Chuang et al. (2001) Chen et al. (2003) Han & Wong (2003) Chae & Kim (2004) Han et al. (2004) Lee et al. (2006)
Analytical evaluations of mobile phone-related observations.	Tam & Tummala (2001) Campbell & Russo (2003) Han & Wong (2003) Wang & Sung (2003) Lai et al. (2006)

The paper builds on a framework suggested by Fillion (2004) in the conduct of hypothetico-deductive scientific research in organizational sciences, and it is structured as follows: first, the theoretical approach which guides the study is developed; second, the methodology followed to conduct the study is described; finally, the results of the study are reported and discussed.

THEORETICAL APPROACH

This study is based on the theoretical foundations developed by Venkatesh and Brown (2001) to investigate the factors driving personal computer adoption in American homes as well as those developed by Brown and Venkatesh (2005) to verify the determining factors in intention to adopt a personal computer in household by American people. In fact, Brown and Venkatesh (2005) performed the first quantitative test of the recently developed model of adoption of technology in households (MATH) and they proposed and tested a theoretical extension of MATH integrating some demographic characteristics varying across different life cycle stages (see Danko & Schaninger, 1990) as moderating variables. With the exception of marital status (we included sex instead) and behavioral intention (we included user satisfaction instead (see Hobbs & Osburn, 1989)), all the variables proposed and tested by Brown and Venkatesh (2005) are used in this study, but none of them is tested as moderating variable. And we added two new variables in order to verify whether people are using mobile phone for security and mobility. The resulting theoretical research model is depicted in Figure 1.

Figure 1 shows that Brown and Venkatesh (2005) integrated MATH and Household Life Cycle in the following way. MATH presents five attitudinal beliefs grouped into three sets of outcomes: *utilitarian*,

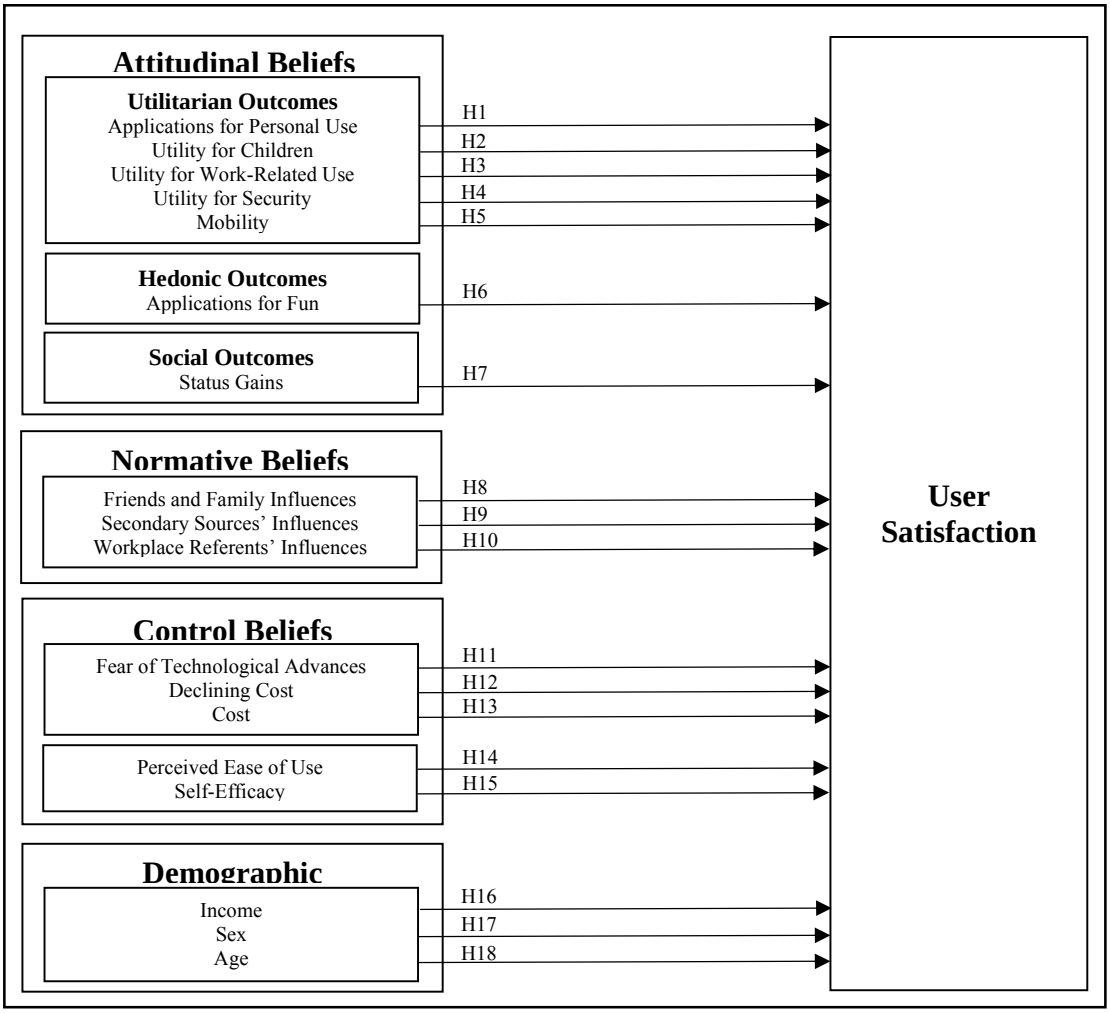

Figure 1. Theoretical Research Model

Table 2. Variables and Definitions

Beliefs and Characteristics	***Variables***	***Definitions***
Attitudinal Beliefs	Applications for Personal Use	The extent to which using a mobile phone enhances the effectiveness of household activities (adapted from Venkatesh & Brown, 2001).
	Utility for Children	The extent to which using a mobile phone enhances the children's effectiveness in their activities (adapted from Venkatesh & Brown, 2001).
	Utility for Work-Related Use	The extent to which using a mobile phone enhances the effectiveness of performing work-related activities (adapted from Venkatesh & Brown, 2001).
	Utility for Security	The extent to which using a mobile phone increases the security of its user and his/her family.
	Mobility	The extent to which a mobile phone allows to use only this telephone to perform all personal and professional activities.
	Applications for Fun	The pleasure derived from mobile phone use (adapted from Venkatesh & Brown, 2001). These are specific to mobile phone usage, rather than general traits (adapted from Brown & Venkatesh, 2005; see Webster & Martocchio, 1992, 1993).
	Status Gains	The increase in prestige that coincides with the purchase of a mobile phone for home use (adapted from Venkatesh & Brown, 2001).
Normative Beliefs	Friends and Family Influences	"The extent to which the members of a social network influence one another's behavior" (Venkatesh & Brown, 2001, p. 82). In this case, the members are friends and family (Brown & Venkatesh, 2005).
	Secondary Sources' Influences	The extent to which information from TV, newspaper, and other secondary sources influences behavior (Venkatesh & Brown, 2001).
	Workplace Referents' Influences	The extent to which coworkers influence behavior (Brown & Venkatesh, 2005; see Taylor & Todd, 1995).
Control Beliefs	Fear of Technological Advances	The extent to which rapidly changing technology is associated with fear of obsolescence or apprehension regarding a mobile phone purchase (adapted from Venkatesh & Brown, 2001).
	Declining Cost	The extent to which the cost of a mobile phone is decreasing in such a way that it inhibits adoption (adapted from Venkatesh & Brown, 2001).
	Cost	The extent to which the current cost of a mobile phone is too high (adapted from Venkatesh & Brown, 2001).
	Perceived Ease of Use	The degree to which using the mobile phone is free from effort (Davis, 1989; also adapted from Venkatesh & Brown, 2001).
	Self-Efficacy (or Requisite owledge)	The individual's belief that he/she has the knowledge necessary to use a mobile phone. This is closely tied to computer self-efficacy (Compeau & Higgins, 1995a, 1995b; see also Venkatesh & Brown, 2001).
Demographic Characteristics	Income	The individual's year gross income (see Wagner & Hanna, 1983).
	Sex	The individual's sex (male or female) (see Danko & Schaninger, 1990).
	Age	The individual's age (see Danko & Schaninger, 1990). In this case, age is calculated from the individual's birth date.

hedonic, and *social*. Utilitarian beliefs are most consistent with those found in the workplace and can be divided into beliefs related to *personal use*, *children*, and *work* (we added beliefs related to *security* and *mobility*). The extension of MATH suggested and tested by Brown and Venkatesh (2005) presents three normative beliefs: *influence of friends and family*, *secondary sources*, and *workplace referents*. As for control beliefs, they are represented in MATH by five factors: *fear of technological advances*, *declining cost*, *cost*, *perceived ease of use*, and *self-efficacy* (or *requisite knowledge*). And, according to Brown and Venkatesh (2005), integrating MATH with a life cycle view (*marital status* (we included *sex* instead of *marital status*), *age*, and *presence/age of children*) that includes *income* (see Wagner & Hanna, 1983) allows to provide a richer explanation of household personal computer adoption (household mobile phone usage in this study) than those provided by MATH alone. Finally, as shown in Figure 1, the dependant variable of the theoretical research model developed is related to *user satisfaction* (satisfaction in the use of mobile phone by people in household). All of the variables integrated in the theoretical research model depicted in Figure 1 are defined in Table 2.

We can see in Table 2 that the definitions of MATH variables integrated in the theoretical research model proposed in Figure 1 are, in the whole, adapted from the theoretical foundations developed by Venkatesh and Brown (2001) to investigate the factors driving personal computer adoption in American homes. As for the definitions of the variables related to the household life cycle view and income, they were taken from Danko and Schaninger (1990) as well as Wagner and Hanna (1983), respectively. And the definitions of the two new independent variables that we added to the model are from our own. In fact, we defined these variables in accordance with which we wanted to measure regarding security and mobility before to develop and validate items measuring them on the basis of the definitions formulated.

In the reminder of the section, we develop eighteen research hypotheses (H1-H18) for the model suggested in Figure 1, which integrates MATH beliefs with some household life cycle variables (income, sex, and age) and our two new variables related to security and mobility.

H1: *Applications for personal use increase satisfaction in the use of mobile phone by people in household.*

H2: *Utility for children increases satisfaction in the use of mobile phone by people in household.*

H3: *Utility for work increases satisfaction in the use of mobile phone by people in household.*

H4: *Utility for security increases satisfaction in the use of mobile phone by people in household.*

H5: *Mobility increases satisfaction in the use of mobile phone by people in household.*

H6: *Applications for fun increase satisfaction in the use of mobile phone by people in household.*

H7: *Status gains increase satisfaction in the use of mobile phone by people in household.*

H8: *Friends and family influences increase satisfaction in the use of mobile phone by people in household.*

H9: *Secondary sources' influences increase satisfaction in the use of mobile phone by people in household.*

H10: *Workplace referents' influences increase satisfaction in the use of mobile phone by people in household.*

H11: *Fear of technological advances decreases satisfaction in the use of mobile phone by people in household.*

H12: *Declining cost increases satisfaction in the use of mobile phone by people in household.*

H13: *Cost decreases satisfaction in the use of mobile phone by people in household.*

H14: *Perceived ease of use increases satisfaction in the use of mobile phone by people in household.*

H15: *Self-efficacy increases satisfaction in the use of mobile phone by people in household.*

H16: *Income decreases satisfaction in the use of mobile phone by people in household.*

H17: *Sex (male vs. female) increases satisfaction in the use of mobile phone by people in household.*

H18: *Age decreases satisfaction in the use of mobile phone by people in household.*

In the next section of the paper, we describe the methodology followed to conduct the study.

METHODOLOGY

The study was designed to gather information concerning mobile phone use decisions in Atlantic Canadian households. The focus of the study is on individuals who own a mobile phone. We conducted a telephone survey research among individuals of a large area in Atlantic Canada. In this section, we describe the instrument development and validation, the sample and data collection, as well as the data analysis process.

Instrument Development and Validation

To conduct the study, we used the survey instrument developed and validated by Brown and Venkatesh (2005) to which we added three new scales, the first two measuring other dimensions in satisfaction in the use of mobile phone by people in household, that is, utility for security and mobility, and the last one measuring user satisfaction as such. The survey instrument was then translated in French (a large part of the population in Atlantic Canada is speaking French) and both the French and English versions were evaluated by peers. This review assessed face and content validity (see Straub, 1989). As a result, changes were made to reword items and, in some cases, to drop items that were possibly ambiguous, consistent with Moore and Benbasat's (1991) as well as DeVellis's (2003) recommendations for scale development. Subsequent to this, we distributed the survey instrument to a group of 25 MBA students for evaluation. Once again, minor wording changes were made. Finally, we performed some adjustments to the format and appearance of the instrument, as suggested by both peers and MBA students, though these minor changes had not a great importance here given the survey was administered using the telephone. As the instrument was already validated by Brown and Venkatesh (2005) and showed to be of a great reliability, that we used the scale developed by Hobbs and Osburn (1989) and validated in their study as well as in several other studies to measure user satisfaction, and that we added only few items to measure the new variables utility for security and mobility, then we have not performed a pilot-test with a small sample. The evaluations by both peers and MBA students were giving us some confidence that we could proceed with a large-scale data collection. The specific measures are presented in Appendix A.

Sample and Data Collection

First, in this study, we chose to survey people in household over 18 years taken from a large area in Atlantic Canada who own a mobile

phone. To do that, undergraduate and graduate students studying at our faculty were hired to collect data using the telephone. A telephone was then installed in an office of the faculty, and students, one at a time over a 3 to 4-hour period, were asking people over the telephone to answer our survey. And in order to get a diversified sample (e.g., students, retired people, people not working, people working at home, and people working in enterprises), data were collected from 9 a.m. to 9 p.m. Monday through Friday over a 5-week period. Using the telephone directory of the large area in Atlantic Canada chosen for the study, students were randomly selecting people and asking them over the telephone to answer our survey. The sample in the present study is therefore a randomized sample, which is largely valued in the scientific world given the high level of generalization of the results got from such a sample. Once an individual had the necessary characteristics to answer the survey and was accepting to answer it, the student was there to guide him/her to rate each item of the survey on a seven points Likert-type scale (1: strongly disagree … 7: strongly agree). In addition, the respondent was asked to answer some demographic questions. Finally, to further increase the response rate of the study, each respondent completing the survey had the possibility to win one of the 30 Tim Hortons $10 gift certificates which were drawn at the end of the data collection. To that end, the phone number of each respondent was put in a box for the drawing. Following this process, 327 people in household answered our survey over a 5-week period.

Data Analysis Process

The data analysis of the study was performed using a structural equation modeling software, that is, Partial Least Squares (PLS-Graph 3.0). Using PLS, data have no need to follow a normal distribution and it can easily deal with small samples. In addition, PLS is appropriate when the objective is a causal predictive test instead of the test of a whole theory (Barclay et al., 1995; Chin, 1998) as it is the case in this

study. To ensure the stability of the model developed to test the research hypotheses, we used the PLS bootstrap resampling procedure (the interested reader is referred to a more detailed exposition of bootstrapping (see Chin, 1998; Efron & Tibshirani, 1993)) with an iteration of 100 sub-sample extracted from the initial sample (327 Atlantic Canadian people). Some analyses were also performed using the Statistical Package for the Social Sciences software (SPSS 13.5). The results follow.

RESULTS

In this section of the paper, the results of the study are reported. We begin to present some characteristics of the participants. Then we validate the PLS model developed to test the research hypotheses. Finally, we describe the results got from PLS analysis to test the research hypotheses.

Participants

The participants in this study were either relatively aged or relatively young, with a mean of 39.8 years and a large standard deviation of 14.5 years. These statistics on the age of the participants are, in fact, consistent with the growing old population phenomenon. Near from two third of the participants were female (62%). Near from 80% of the participants were married (50.9%) or single (28.4%). The gross yearly income of the respondents in the study was in the range of $0 to $50,000. Indeed, 72.4% of the respondents were winning between $0 and $50,000, and, from this percentage, 35.5% were winning between $30,000 and $50,000. And 5.5% of the respondents were winning $100,000 or over. Concerning the level of education, 25.5% of the participants in the study got a high-school diploma, 26.4% got a college degree, and 39.6% completed a baccalaureate. Only 2.1% of the participants got a doctorate, which is relatively consistent with the whole population in general. Finally, the respondents in our study were

mainly full-time employees (52.5%), retired people (12%), students (11.7%), self employed (9%), part-time employees (7.4%), and unemployed (4.6%). These last statistics on the respondents' occupation help to explain the large standard deviation on their age reported above. Indeed, 11.7% of the respondents were young students, while 12% were retired people. So the difference in age between the two groups is very large.

Validation of the PLS Model to Test Hypotheses

First, to ensure the reliability of a construct or a variable using PLS, one must verify the three following properties: individual item reliability, internal consistency, and discriminant validity (Yoo & Alavi, 2001; see the paper for more details). To verify individual item reliability, a confirmatory factor analysis (CFA) was performed on independent and dependent variables of the theoretical research model. A single iteration of the CFA was necessary given all loadings of the variables were superior to 0.50 and then none item was withdrawn nor transferred in another variable in which the loading would have been higher. Indeed, in the whole, items had high loadings, which suppose a high level of internal consistency of their corresponding variables. In addition, loadings of each variable were superior to cross-loadings with other variables of the model. Hence the first criterion of discriminant validity was satisfied. And to get composite reliability indexes and average variance extracted (AVE) in order to satisfy the second criterion of discriminant validity and to verify internal consistency of the variables, we used PLS bootstrap resampling procedure with an iteration of 100 sub-sample extracted from the initial sample (327 Atlantic Canadian people). The results are presented in Table 3.

Table 3. Means, Standard Deviations, Composite Reliability Indexes, Correlations, and Average Variance Extracted of Variables

Variable	*M*	*SD*	*Reliability Index*	*Correlations and Average Variance Extracted*[c]																		
				1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*
1. Applications for Personal Use	3.84	2.16	**0.82**	**0.77**																		
2. Utility for Children	2.07	2.52	**0.96**	.27	**0.94**																	
3. Utility for Work-Related Use	3.17	2.46	**0.91**	.39	.10	**0.88**																
4. Utility for Security	5.62	1.68	**0.89**	.21	.16	-.04	**0.85**															
5. Mobility	3.55	2.12	**0.88**	.30	.05	.23	.09	**0.84**														
6. Applications for Fun	2.88	2.23	**0.89**	.35	.05	.23	.13	.25	**0.82**													
7. Status Gains	2.45	1.72	**0.93**	.18	.15	.19	.13	.31	.37	**0.90**												
8. Friends and Family Influences	3.66	2.27	**0.93**	.26	.05	.16	.13	.19	.43	.40	**0.88**											
9. Secondary Sources' Influences	3.24	2.25	**0.90**	.17	.09	.08	.10	.09	.25	.23	.36	**0.87**										
10. Workplace Referents' Influences	3.12	2.41	**0.98**	.26	-.03	.37	.04	.19	.31	.29	.53	.33	**0.98**									
11. Fear of Technological Advances	3.21	1.97	**0.83**	-.06	.10	.04	.10	-.09	.04	.15	.13	.15	.16	**0.79**								
12. Declining Cost	4.14	1.94	**0.89**	.17	.13	.08	.12	.12	.06	.05	.04	.13	.08	-.04	**0.85**							
13. Cost	4.38	1.83	**0.96**	.07	.01	.04	.16	.13	.04	.22	.16	.07	.10	.24	-.09	**0.96**						
14. Perceived Ease of Use	5.69	1.45	**0.88**	.19	-.05	.09	.15	.27	.24	.18	.17	-.02	.20	-.11	.15	.00	**0.80**					
15. Self-Efficacy	6.39	1.02	**0.93**	.18	-.14	.04	.12	.18	.12	.03	.11	-.08	.12	-.12	.15	-.00	.66	**0.91**				
16. Income[a]	NA	NA	**NA**	.04	.11	.09	-.12	-.11	-.32	-.23	-.24	-.05	-.04	-.07	.02	-.11	-.05	-.00	**NA**			
17. Sex[a]	NA	NA	**NA**	-.04	-.03	-.22	.27	-.02	.09	-.06	.06	.00	-.04	.04	-.11	.03	-.03	-.02	-.22	**NA**		
18. Age[b]	39.80	14.49	**NA**	.12	-.24	.20	.04	.21	.46	.22	.31	.16	.37	-.05	-.03	.10	.31	.18	-.41	.16	**NA**	
19. User Satisfaction	5.46	1.48	**0.86**	.18	.04	-.09	.31	.20	.21	.11	.16	.06	.03	-.10	.21	-.06	.40	.27	-.13	.10	.06	**0.71**

[a]This variable was coded as a nominal variable. It was measured in terms of non quantified distinct categories.

[b]This variable was coded as a continuous variable. It was measured using the respondents' birth date.

[c]Boldfaced elements on the diagonal of the correlation matrix represent the square root of the average variance extracted (AVE). For an adequate discriminant validity, the elements in each row and column should be smaller than the boldfaced element in that row or column.

As shown in Table 3, PLS analysis indicates that all square roots of AVE (boldfaced elements on the diagonal of the correlation matrix) are higher than the correlations with other variables of the model. In other words, each variable shares more variance with its measures than it shares with other variables of the model. Consequently, discriminant validity is verified. Finally, as supposed previously, we can see in Table 3 that PLS analysis showed high composite reliability indexes for all variables of the theoretical research model. The variables have therefore a high internal consistency, with composite reliability indexes ranging from 0.82 to 0.98.

Hypothesis Testing

To test the research hypotheses, we developed a PLS model similar to those of Fillion (2005), Limayem and DeSanctis (2000), Limayem et al. (2002), and Yoo and Alavi (2001). The PLS model is depicted in Figure 2. As we can see in Figure 2, the t-value (2.26) and beta coefficient (0.15) got in the PLS structural equation model indicate that the path from utility for work-related use to user satisfaction is significant ($p < 0.01$). In short, as we anticipated, in this study, utility for work increased satisfaction in the use of mobile phone by people in household. Consequently, hypothesis 3 is supported. Figure 2 shows that the path from utility for security to user satisfaction is very significant ($t = 3.69$, beta = 0.22, $p < 0.001$). In other words, as we expected, the new variable utility for security that we added in this study to the model suggested by Brown and Venkatesh (2005) increased satisfaction in the use of mobile phone by people in household. As a result, hypothesis 4 is supported. The t-value (1.7) and beta coefficient (0.09) got in the PLS structural equation model presented in Figure 2 indicate that the path from mobility to user satisfaction is significant ($p < 0.05$). Therefore, as we anticipated, the new variable mobility that we added in this study to the model proposed by Brown and Venkatesh (2005) increased satisfaction in the

use of mobile phone by people in household. Hypothesis 5 is then supported. As shown in Figure 2, the t-value (1.76) and beta coefficient (0.11) got in the PLS structural equation model indicate that the path from applications for fun to user satisfaction is significant ($p < 0.05$). In short, as we expected, in the present study, applications for fun increased satisfaction in the use of mobile phone by people in household. And hypothesis 6 is supported.

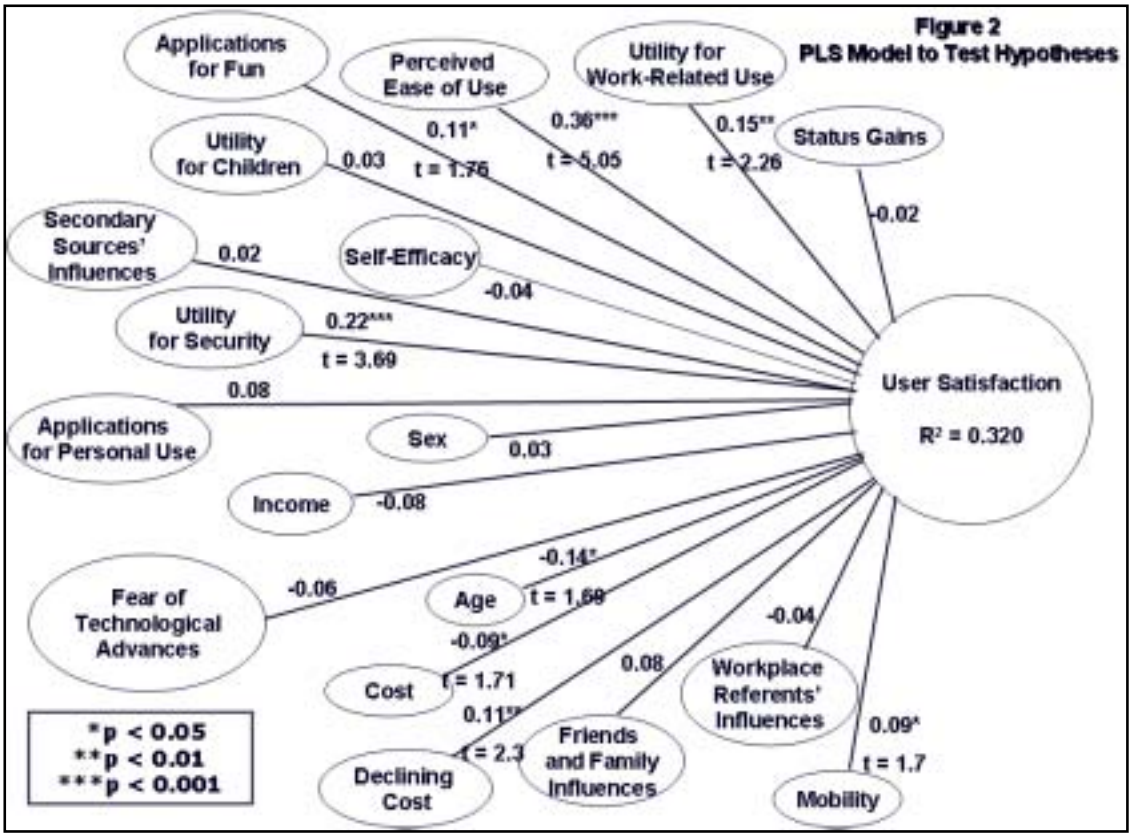

Figure 2. PLS Model to Test Hypotheses

We can see in Figure 2 that the path from declining cost to user satisfaction is significant ($t = 2.3$, beta = 0.11, $p < 0.01$). Thus, as we expected, in this study, declining cost increased satisfaction in the use of mobile phone by people in household. Consequently, hypothesis 12 is supported. As shown in Figure 2, the t-value (1.71) and beta coefficient (-0.09) got in the PLS structural equation model indicate that the path from cost to user satisfaction is significant ($p < 0.05$). Therefore, as we anticipated, in this study, cost decreased satisfaction in the use of mobile phone by people in household. Hence hypothesis 13 is supported. The high t-value (5.05) and beta coefficient (0.36) got in the PLS structural equation model indicate that the path from perceived ease of use to user satisfaction is very significant ($p < 0.001$). In this study, we expected that this largely used variable, originating from Davis's (1989) technology acceptance model (TAM), would increase satisfaction in the use of mobile phone in household. So our expectations revealed to be exact. Consequently, hypothesis 14 is supported. Figure 2 shows that the path from age to user satisfaction is significant ($t = 1.69$, beta = -0.14, $p < 0.05$). Thus, as we anticipated, in this study, age decreased satisfaction in the use of mobile phone by people in household. As a result, hypothesis 18 is supported. Finally, Figure 2 shows that the t-values and beta coefficients related to all the other variables in the model are too low to be significant. Thus, hypotheses 1, 2, 7, 8, 9, 10, 11, 15, 16, and 17 are not supported.

DISCUSSION AND CONCLUSIONS

The last section of the paper is devoted to a discussion about the results of the study and some conclusions. And to support our discussion and conclusions, we provide the reader with a more detailed view of the PLS structural equation model developed to test the research hypotheses, including the percentages of variance explained of variables (see Table 4).

Table 4. Beta Path Coefficients, T-Values, and Percentages of Variance Explained of Variables

Variable	*Beta*	*t*	*R^2*
Applications for Personal Use	0.08	1.15	0.039
Utility for Children	0.03	0.54	0.000
Utility for Work-Related Use	0.15**	2.26	0.029
Utility for Security	0.22***	3.69	0.055
Mobility	0.09*	1.7	0.006
Applications for Fun	0.11*	1.76	0.038
Status Gains	-0.02	0.34	0.000
Friends and Family Influences	0.08	1.17	0.002
Secondary Sources' Influences	0.02	0.34	0.001
Workplace Referents' Influences	-0.04	0.64	0.001
Fear of Technological Advances	-0.06	0.53	0.014
Declining Cost	0.11**	2.3	0.027
Cost	-0.09*	1.71	0.009
Perceived Ease of Use	0.36***	5.05	0.086
Self-Efficacy	-0.04	0.58	0.001
Income	-0.08	1.07	0.001
Sex	0.03	0.49	0.000
Age	-0.14*	1.69	0.011

*p < 0.05; **p < 0.01; ***p < 0.001.

As shown in Table 4 (and Figure 2), the eighteen independent variables examined in the study explained 32 percent ($R^2 = 0.320$) of the variance in satisfaction in the use of mobile phone by people in household. And we can also see in Table 4 that the eight variables who showed to be significant (see also the significant beta path coefficients in Figure 2), that is, utility for work-related use, utility for security, mobility, applications for fun, declining cost, cost, perceived ease of use and age, explained alone 26.1 percent of the variance in satisfaction in the use of mobile phone by people in household. Thus, these eight variables are assuredly very important factors to take into account in future studies on the mobile phone and on the part of mobile phone providers, and more particularly perceived ease of use and utility for security which explained alone 14.1 percent of this variance (see Table

4). It is very interesting to see here that the two new variables that we added to the Brown and Venkatesh's (2005) theoretical research model, that is utility for security and mobility, showed to be very significant ($p < 0.001$ and $p < 0.05$, respectively; see Table 4) in satisfaction in the use of mobile phone by people in household. Indeed, the present study showed that people are, to some extent, using a mobile phone for a matter of security (the mobile phone is useful for their own security and those of their families) and mobility (the mobile phone provides them with the possibility to use only this telephone to perform all their personal and professional activities). So here are two new variables which we might add to the integrated research model of MATH and household life cycle characteristics suggested by Brown and Venkatesh (2005) to test in future studies. In addition, these two new variables might be included in the sales marketing plan of mobile phone providers.

In the large-scale study in which Brown and Venkatesh (2005) integrated MATH and some household life cycle characteristics (as moderating variables), the integrated model explained 74 percent of the variance in intention to adopt a personal computer for home use, a substantial increase of 24 percent over baseline MATH that explained 50 percent of the variance. In the present study, we used the integrated model proposed by Brown and Venkatesh (2005), with the exception of the household life cycle variable marital status (we added sex instead). We also added two new independent variables to the model, namely, utility for security and mobility. But we used the other household life cycle variables as independent variables in our research model instead of moderating variables as did Brown and Venkatesh (2005). Finally, given that we investigated the perceptions of people already using a mobile phone instead of those having the intention to adopt a mobile phone, as did Brown and Venkatesh (2005) for the personal computer, we used the dependent variable user satisfaction

instead of behavioral intention. And the model explained 32 percent of the variance in satisfaction in the use of mobile phone by people in household (see Table 4 and Figure 2). Thus, in this study, our research model explained a smaller percentage of variance than those explained by MATH alone (without the household life cycle characteristics and using behavioral intention as dependent variable).

Further, in a previous study in which we investigated the intention to buy a mobile phone by people in household (see Fillion & Berthelot; this paper has been also submitted in Management Review: An International Journal), we also used the theoretical research model suggested by Brown and Venkatesh (2005) to which we added the same two independent variables utility for security and mobility than we included in the present study in which we investigated satisfaction in the use of mobile phone by people in household. And our model explained 50 percent of the variance in intention to buy a mobile phone, while in the present study our model explained 32 percent of the variance in satisfaction in the use of mobile phone. Of course, the dependent variable was different in the two studies. Indeed, we used behavioral intention in the previous study and user satisfaction in the present study. Hence we can see that the variable behavioral intention is probably more appropriate as dependent variable in the research model proposed by Brown and Venkatesh (2005) than is user satisfaction, even when the model is augmented of some new independent variables. However, it is to be noted that, in the model we used in this study, more independent variables showed to be good predictors in satisfaction in the use of mobile phone by people in household than did independent variables in the model we used in the previous study in intention to adopt a mobile phone for household use. So though the result of our test seems, at first, not to be very conclusive, in this study, we found several interesting things to

advance knowledge in this new and exciting field of adoption and use of technology in households.

First, we found eight very important variables that seem to be good predictors in satisfaction in the use of mobile phone by people in household, and more particularly ease of use, declining cost as well as the two new variables that we added to the Brown and Venkatesh's (2005) model, utility for security and mobility (see Table 4). These eight variables are also very important to take into account by mobile phone providers to design new mobile phones still better adapted to people's needs and to do their sales marketing. Second, we found that people are, to some extent, using a mobile phone for a matter of security and mobility, given our two new variables utility for security and mobility showed to be very significant (see Table 4). Third, we found that it is probably more appropriate to use the dependent variable behavioral intention instead of user satisfaction in the model proposed by Brown and Venkatesh (2005), even augmented of our two new independent variables utility for security and mobility, given the percentage of variance explained in intention to adopt a mobile phone for household use in our previous study is relatively higher. But, according to us, it is also appropriate to include user satisfaction as dependent variable in the model given we found more good predictors in satisfaction in the use of mobile phone in the present study than in the previous one in which we used behavioral intention as dependent variable. The dependent variable *use behavior* proposed by Thompson et al. (1991) might also be tested in future studies. Also, we suggest the test of new independent variables which might explain a greater percentage of variance in satisfaction in the use of mobile phone by people in household in future studies. To that end, we recommend three new independent variables in the next paragraph. Finally, the results of this study provided the evidence that it is probably better to use the household life cycle variables as moderating variables in the

model, as did Brown and Venkatesh (2005), given the percentage of variance explained in intention to adopt a new technology in household by the model tested by these authors was significantly higher. We can then anticipate here that if we would been using the household life cycle variables as moderating variables in our theoretical research model instead of independent variables, the percentage of variance explained by the model in satisfaction in the use of mobile phone by people in household would have been probably higher.

It would be interesting in future studies to add some other new variables to the actual theoretical research model (those suggested by Brown and Venkatesh (2005) augmented with the two new variables that we tested in the present study, depending, of course, on the technology examined) in order to try to explain yet more variance in satisfaction in the use of a new technology in household. For example, the variable *attention* might be added in social outcomes (a lot of people, particularly young and old people, are feeling to be alone in the actual stressing world, in which both men and women are working and get very busy, so the mobile phone might be a good way to communicate with other people everytime and everywhere to get the feeling to be less alone), the variable *social norm* might also be added in social outcomes (who knows, people might be using a mobile phone just to do as everybody!), and the variable *control* might be added in utilitarian outcomes (some people might be using a mobile phone to control other people in their family or others; maybe another kind of Big Brother!). It would be also interesting to test the actual model in other situations and with other populations. For example, in a subsequent study, we tested the actual model with Atlantic Canadian people who are using high speed Internet at home. As in this study, we used the dependent variable user satisfaction given the respondents were already using high speed Internet. The results of the study will follow in a subsequent paper. It will be interesting to see whether the

results remain the same as those got from people who are using a mobile phone at home.

Regarding the limitations of this study, as pointed out by Brown and Venkatesh (2005), the primary limitation is the reliance on a single informant. It is possible that other members of the household would have provided different responses concerning the motivations to use a mobile phone at home. Future research in household use of technology should incorporate responses from multiple members of the household to truly assess the nature of household use. A second limitation of the study is that it was conducted in only one area in Atlantic Canada. If the study would have been carried out in the whole Atlantic Canada, its results would be of a higher level of generalization. But the fact that the sample of the study was a randomized sample allows a high level of generalization of its results. Another limitation of the study is the administration of the survey instrument over the telephone. Some respondents might have not very well understood some items of the survey instrument over the telephone and then provided more or less precise ratings on these items, introducing the possibility of some response bias. But the method we privileged in this study to administer the survey instrument is not an exception to the rule. Each method has its own limitations.

To conclude, much more research will be needed on the use of technology in households in order to better understand its impacts on people's daily life. The research will allow, among others, at least to minimize, if not to remove, some negative impacts of technology in people's daily life in the future and to develop new technologies still better adapted to people's needs. We will continue to inquire into this new and exciting field.

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APPENDIX A

List of Items

Following are the instructions that were provided to the participants to focus on the use of mobile phone at home.

Hello, my name is ... I am calling you concerning a study on the mobile phone conducted by two researchers at the Faculty of administration of the University… Do you have a mobile phone? If no, thank you and bye. If yes, could you answer our survey please? Your participation would be much appreciated, but it is free and you can refuse to answer some questions or stop to answer the survey at any time. The objective of the study is to better understand why people at home are using a mobile phone. The survey takes about 10 minutes of your time to complete. And some questions about your personal information will be asked to you at the end of the survey. You will have the chance to win one of the 30 $10 Tim Horton gift certificates which will be drawn at the end of the data collection. For more details about the ethical aspects of the study, feel free to contact the *Faculté des Études Supérieures et de la Recherche* (FESR) at the University…

Please note that there is no right or wrong answer. For each question we would like to know on a scale from one to seven whether you strongly agree or strongly disagree, with one being strongly disagree and seven being strongly agree.

Variables	*Items (Seven-point Likert-type scales, with 1 = strongly disagree and 7 = strongly agree)*
Applications for Personal Use	I find that the mobile phone has tools for personal productivity.
	I find that the mobile phone has tools to support household activities.
	The mobile phone has software that helps with activities at home.
Utility for Children	The mobile phone provides applications that my kid(s) can use.
	The mobile phone has useful applications for my kid(s).
	I find the mobile phone to be a useful tool for my kid(s).
Utility for Work-Related Use	The mobile phone is useful for me to work-at-home.
	The mobile phone provides applications related to my work.
	I am able to work at home more effectively because of applications on my mobile phone.
Utility for Security	I find the mobile phone to be useful for my security.
	The mobile phone provides applications related to my security.
	I find the mobile phone to be useful for the security of my family.
Mobility	A mobile phone allows having only this telephone to perform all personal and professional activities.
	I use only my mobile phone to perform all my personal and professional activities.
	The applications provided by the mobile phone allow using only this telephone to perform all personal and professional activities.
Applications for Fun	The mobile phone provides many applications that are enjoyable.
	I enjoy playing games on the mobile phone.
	The mobile phone has applications that are fun.
	I am able to use the mobile phone to have fun.

Variables	*Items (Seven-point Likert-type scales, with 1 = strongly disagree and 7 = strongly agree)*
Status Gains	People who have a mobile phone at home have more prestige than those who do not.
	People who have a mobile phone at home have a high profile.
	Using a mobile phone is a status symbol.
Friends and Family Influences	My friends think I should use a mobile phone for personal use.
	Those in my social circle think I should use a mobile phone for personal use.
	My family members think I should use a mobile phone for personal use.
	My relatives think I should use a mobile phone for personal use.
Secondary Sources' Influences	Information from newspapers suggests that I should use a mobile phone for personal use.
	Information that I gather by watching TV encourages me to use a mobile phone for personal use.
	Based on what I have heard on the radio, I am encouraged to use a mobile phone for personal use.
Workplace Referents' Influences	My coworkers think I should use a mobile phone for personal use.
	My peers at work think I should use a mobile phone for personal use.
Fear of Technological Advances	The trends in technological advancement make me worried.
	I am afraid that today's best mobile phones will be outmoded fairly soon.
	I am worried about the rapid advances in mobile phone technology.
Declining Cost	The cost of mobile phones is constantly reducing.
	I believe the cost of mobile phones will continue to reduce in the future.
	I think we will see better mobile phones for a lower price in the near future.

Variables	*Items (Seven-point Likert-type scales, with 1 = strongly disagree and 7 = strongly agree)*
Cost	Mobile phones that are available today are too expensive.
	I think mobile phones are quite pricey.
	I consider a mobile phone to be an important purchase.
Perceived Ease of Use	The interaction with a mobile phone is clear and understandable.
	Interacting with a mobile phone does not require a lot of mental effort.
	I find a mobile phone is easy to use.
	I find it easy to get a mobile phone to do what I want it to do.
Self-Efficacy	I feel comfortable using a mobile phone on my own.
	If I wanted to, I could easily operate a mobile phone on my own.
	I can use a mobile phone even if nobody helps me.
User Satisfaction	I am satisfied with the technical quality of my mobile phone.
	I am satisfied with the access to technical support provided by the provider of my mobile phone.
	I am satisfied with the equipment (applications, games, tools, etc.) provided with my mobile phone.
	I am satisfied with the ease of operation of my mobile phone.
	I am satisfied with the technical reliability of my mobile phone.
	I am satisfied with my usage of my mobile phone.

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