Heiner Evanschitzky,
Gopalkrishnan R. Iyer (Eds.)

E-Services

Opportunities and Threats

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DUV GABLER EDITION WISSENSCHAFT

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E-Services

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Preface

The book series, *Applied Marketing Science - Angewandte Marketingforschung* aims to bridge the gap between scientific rigor and practical relevance in the transfer of cutting-edge theoretical and applied knowledge between scholars and practitioners. The series explores classic and contemporary theories and themes in global competitive networks, inter-organizational relationships, customer relationship management, and competitive advantages as conceived, developed, and applied in the field of marketing. Some major themes pursued by books in this series include:

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•   Das Beziehungsgeflecht zwischen Unternehmen und Kunden

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•   Das Verhalten der Konsumenten

•   Die Herausforderungen des Markenmanagements

•   Das Management von Marketing Channels

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E-Services: Opportunities and Challenges – An Overview

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Abstract

Interactivity is a dominant focus in today's online business environments. This special issue of the *Journal of Value Chain Management* offers an introduction and systematic overview of the prospects and challenges of the new and emerging practice of 'E-Services.' Articles in this issue cover appropriate frameworks for understanding e-services, engage in research in this field, and offer insights from empirical applications. This opening paper offers a brief overview of the papers included in this special issue and outlines the key opportunities and challenges for marketing and management.

Keywords: E-Services, Chapter Overview

Introduction

It is now increasingly being recognized that every marketing transaction is actually a service transaction. This realization has coincided with a new and renewed emphasis on the interactivity offered by the Internet. While the earlier era of the Internet placed an overt stress on digitization and marketing of products that were readily digitized, the new era is centered on the user rather than the product or the marketer. The new era of the Internet recognizes, and rightly so, that the Internet can be a powerful medium for the provision of services as well. E-services is a domain of thought and practice that lies at the intersection of a resurrected emphasis on services within marketing and the reincarnation of the Internet as a medium indispensable for customer contact and interaction.

The new "better, bigger, and bolder" version of the Internet has the potential to fundamentally transform the ways in which services are conceptualized and delivered. When the fundamental features of the Internet are applied to services, it can be readily seen that e-services encompasses not only the firm's relationship with its customers, but also the broader environment in which the service is rendered. Similar to other transactions over the Internet, the service relationship between the firm and its customer is no longer location dependent. Moreover, the service does not require the participation of live firm personnel. Growth of outsourced services and the enhanced reliance on technology for service provision are indications that e-services offer tremendous opportunities for economic expansion. Just as the manufacturing economy of the 1950s emphasized the physical distribution role of marketing and enabled economic growth, the services component of marketing is brought to the fore in this new age of the Internet.

As a domain for marketing thought and practice, e-service provides various opportunities and challenges for practitioners as well as academics. Viewed as an emergent phenomenon, e-service calls attention to the need for new frameworks of thought as well as new applications of strategy. Viewed as a radical concept in the development of marketing thought, e-service may well be the metaphor for a new era of marketing. And, viewed as the ultimate goal in the development of the Internet, e-service represents the culmination of the interactivity so far only suggested by the Internet.

The collection of papers in this issue provides the conceptual frameworks, analytical tools and application instances for a focused study of e-services. In their lead article to this issue, "E-Services: A Framework for Growth," Sheth and Sharma develop an analytic framework for analyzing e-services according to two dimensions: level of digitalization and level of co-creation. The framework suggests that particularly in case of low levels of co-creation and high levels of digitalization, e-services will penetrate the market space since both the service provider and the customer alike will prefer the electronic provision of the service. The authors suggest that the entertainment and media industry will be most effected by these developments.

Hofacker, Goldsmith, Bridges, and Swilley synthesize research that is relevant for a dedicated study of e-services. In their paper, "E-Services: A Synthesis and Research

Agenda," they distinguish goods and services from e-services. Based on ten distinct features of e-services, they review relevant literature and consider various theoretical, research and managerial issues pertinent for e-services. In particular, the authors consider the service production process, service operations and fulfillment, service quality and failure, and service relationship management.

Customer experience is just as important for e-services as in the traditional conceptualization of service within marketing. In their paper, "Enriching the Customer Experience: Implication for E-Marketers," Kim and Kim use an established framework that suggests four customer experience categories. This framework is applied to e-services, stressing the importance of four related experience-dimensions, 'entertainment,' 'educational,' 'esthetic,' and 'escapist.' The authors point out that successful e-service proveders will need to improve the experience quality of during the service delivery process.

The role of e-services in the effective and efficient functioning of firms is expanding and evolving. This evolution is significantly impacting customer and market behaviors. As a result, most firms have started developing and enhancing the e-services functionality to effectively deliver products and services. E-services can be used to automate, informate, and transform customer relationships and marketplaces. In his paper "Opportunities of International E-Services: A Conceptual Model," Sharma highlights the scope of e-services in changing marketplaces and discusses e-services in an international context, pointing out that e-service strategies are contingent on county's state of infrastructure and marketing institutions.

Mittal and Tsiros state the importance of loyalty for e-services. In their paper "Customer Loyalty in Electronic Mediated Enviromnents," they report results from a qualitative study where consumer descriptions of their brand experiences were used to develop key loyalty themes. Consumer loyalty can be characterized along seven consumption bases, though different brands and categories are positioned differently along these bases. Results show that loyalty is building up over time as consumption proceeds through the stages of adoption, conversion, and (dis)adoption. A key factor in converting new adopters to be loyal identified by the authors is the extent of efficiency and effectiveness perceived along these loyalty bases.

Companies need to explore multiple ways to satisfy their customers. In the paper "Efficient Product Choice through Ontology-based Recommendation Systems," Tilipakis and Douligeris examine the issue of electronic-aided search that is necessary prior to trasactions in the case of e-services. They present the basic elements of a prototype recommender system for customer relationship management that is based on ontologies. The semantic web underlying the electronic recommender system is well suited to increase customer satisfaction with the service delivery process since it reduces a customer's search time and by so doing, increases the time that can be used to consume and interact.

The research titled "The Role of Service Type, Familiarity, Contact and Internet Experience When Shopping Online for Services" presented by Scarpi, Dall'Olmo Riley, and Manaresi, investigates consumers' likelihood of purchasing services online. Ser-

vice type, contact with service provider prior to online purchase, familiarity with service provider, and experience with Internet purchasing are considered in a consumer experiment. Results indicate that for car insurance and travel, a need for a face-to-face contact with the service provider prior to online purchase and a preference for buying on the Internet services from a familiar provider are favorable for the success of an e-service provider.

Mulitchannel retailing as an application of e-services is considered by Gajanan and Basuroy. In their paper "E-Services and the New World of Retailing," three questions are explored and integrated in a conceptual model: How do consumers perceive and respond to different multi-channel attributes? What types of consumers and retailers and what product categories influence specific multi-channel integration efforts? Do all retailers benefit from extending multi-channel options to their entire product-line and services? The authors outline a method for collecting data and testing the hypotheses presented in their conceptual model.

A service-engeneering prespective on e-services is applied by Böttcher, Meyer, and van Husen. In their paper, "Systematic development of E-Services through Co-Design of Soft-ware and Service: Results of an empirical study," they state that existing models cover only the singular development of software as well as of services. Since modern e-services are based on a tight interlocking of software and service components, the authors assume that existing development processes are not sufficient for the design of complex e-services. Hence, their paper provides a unique insight into the current state of the art of the development of e-services in German companies. Based on these results, the authors attempt to provide a base over which subsequent research could develop a suitable engineering model.

As can been seen from the wide range of topics covered in this issue, the area of e-services holds tremendous academic promise and has the potential to be a priority concern for practitioners. While the papers in this issue deal with a wide range of topics, academic research still has a long way to go in developing conceptual and theoretical insights and establishing (or falsifying) key propositions through empirical research. Further research in this fruitful domain is clearly needed, and we hope that the papers in this issue will stimulate research and offer valuable insights for practitioners.

E-Services – A Framework for Growth

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Abstract

Businesses are undergoing a paradigmatic shift as they are moving from the logic of exchange of "goods," which usually are manufactured output, to one in which service provision rather than goods is fundamental to economic exchange. The key assets in the context of the emerging paradigm of business are interactivity, connectivity, uncovering customer needs and providing customized offerings. As a platform, E-services can provide these functionality for firms. The growth of e-services is expected to be dramatic due to both, the emerging paradigm of business as well the universality of the Internet. This paper provides a framework for analyzing e-services.

Keywords: E-Services, Paradigm Shift, Framework

Introduction

Businesses are undergoing a paradigmatic shift as they are moving from the logic of exchange of "goods," which usually are manufactured output, to one in which service provision rather than goods is fundamental to economic exchange (Vargo and Lusch 2004). Firms are increasingly focusing on interactivity and connectivity; providing customized offerings to better fit the customer's needs; and identifying firm resources (both internal and external) to better satisfy the needs of customers (Vargo and Lusch 2004). In this context, Achrol and Kotler (1999) suggest that businesses will increasingly adopt a customer consulting framework that would enable them to evaluate the services that the customer needs and also provision the service. Ultimately, in this evolving logic of business, the most successful organizations will be those whose core competence is marketing and all its related market-sensing processes (Day 1999; Haeckel 1999).

The key assets in the context of the emerging paradigm of business are interactivity, connectivity, uncovering customer needs and providing customized offerings. E-services is a platform that can provide these functionality for firms. The growth of e-services is expected to be dramatic due to both, the emerging paradigm of business as well the universality of the Internet.

The reasons for the shift toward e-services are both reduced costs as well as improved delivery that leads to higher customer satisfaction and loyalty. While some initial aspects of e-services were seen in the voice telecommunication era, it is the prevalence of the Internet that is changing business operations. Conceptually, e-services will dovetail the concept of a service factory (Chase and Garvin 1989) in that services will be created and distributed on the web. We already see the increased level of e-services in markets such as financial services, travel and etailing. This foreword provides a framework to understand the growth of the domain of e-services. We highlight products and service firms that will be the earliest adopters of e-services and areas in which e-service penetration will take a slower path.

Our Framework

We suggest that adoption of services will be based on the products and services that a firm markets. We classify products and services on two dimensions – degree of digitization and ability for co-creation.

The first dimension of our framework is the degree to which the product or service can be digitized. For example, iTunes is an example of a digitized platform in that the entire interaction and delivery of the product or service (music) is digitized. In contrast, a physical product such as shoes cannot be digitized although the processes around it can. For example, a firm, Otabo (www.otabo.com) has digitized all the processes around shoe making (measurements, order taking) but the shoe cannot be digitized and needs to be manufactured and physically delivered to the customer. There are some

products and services that have very little scope for digitization. Examples are commodities such as steel, copper and rubber.

The second dimension is the ability to co-create the offerings. Co-creation involves both the marketers and the customer interacting in aspects of the design, production and consumption of the product or service (Sheth, Sisodia, and Sharma 2000; Prahalad and Ramaswamy 2004). We see this process in services (e.g., hair styling) but will increasingly see it for physical products (e.g., Dell Computers). Some firms provide standardized products and services that have low levels of co-creation (e.g., online payment). Some products and services provide moderate levels of co-creation in that the product or service is not changed but the customer can create their own outcome. Examples are airlines where flights are fixed but customers can create their own itinerary and choose seats. Another example is a mobile phone where the customer can co-create ring tone and screens. Finally, some firms may provide products and services that require high levels of co-creation (e.g., legal services).

Based on the dimensions, we can classify products and services in a two by two matrix.

	Low	**High**
High	**High Level of E-Services Penetration** Entertainment Media Telecommunications Services	**Moderate Level of E-Services Penetration** Financial Services Travel Government Services
Low	**Lowest Level of E-Services Penetration** Consumer Goods (FMCG) Commodities Utilities	**E-Services Penetration in Fulfillment** etailers Legal Services B2B Services (Procurement and Payment)

Level of Digitization (vertical axis, High / Low)

Level of Co-creation (horizontal axis, Low / High)

We expect the highest level of penetration to take place in industries that are high in levels of digitization and have low levels of co-creation. In these cases, we expect the high levels of penetration because both consumers and firms will prefer to use the e-services platform. Examples of this type of e-services are in the area of media. Most newspapers, magazines, TV stations and even radio stations provide information through both the media channel as well as the Internet. Some of the entertainment (music download, pay-per-view) also have high penetration of e-services. Eventually, in these industries providing e-services becomes a form of operation and not providing e-services makes firms less competitive. Therefore, high levels of e-services penetration are expected.

In industries that have high levels of co-creation and high levels of digitization, some of the simpler processes will migrate toward an e-services platform. For example, consumers can book, pay, and print tickets and boarding passes through an e-services platform, but the actual travel takes place in a physical environment. Similarly, financial firms have been able to digitize most transactions which lead to an increased use of the e-services platform. However for firms in this cell, not all co-creation can be conducted through e-services. For example, flights are taken in a physical world and account modifications require human intervention. Therefore, we expect moderate levels of e-services penetration. An increase in co-creation in industries that had little co-creation also results in lower levels of e-services penetration. As an example, newer technologies that allow customers to co-create entertainment (e.g., pause movies for later watching or shift programming) show lower levels of e-services penetration.

In cases, where the product and service cannot be digitized, but there are high levels of co-creation, e-services will be utilized in the fulfillment processes. For example, an etailer such as Amazon will conduct all of the customer transactions on an e-services platform leaving only the physical distribution. Similarly, lawyers are shifting some of the basic services to the web while retaining the complex and personalized cases for traditional contact. B2B firms have moved most of the procurement and payment to an e-services platform. For example, HP uses an e-services platform OB10 to process all invoices.

Finally, when both co-creation and digitization potential is low, firms will be slow to adopt e-services platforms. The reason is that the benefits of an e-service platform are not obvious to the customers or firms. Examples are fast moving consumer goods, commodities and water and electricity utilities that have limited e-services platform.

Challenges to E-Services

The future of e-services is bright but some challenges remain. The first challenge and primary obstacle to the e-services platform will be penetration of the Internet. In some developing countries, the access to the Internet is limited and the speeds are also limited. In these cases, firms and customers will continue to use traditional platforms. The second issue of concern is fraud on the Internet. It is anticipated that the fraud on the e-commerce Internet space costs $2.8 billion. Possibility of fraud will continue to reduce the utilization of the Internet. The third issue is of privacy. Due to both spyware and security holes in operating systems, there is concern that the transactions that consumers undertake have privacy limitations. For example, by stealthily following online activities, firms can develop fairly accurate descriptions of customer profiles. Possibility of privacy violations will reduce the utilization of the Internet. The final issue is that e-services can also become intrusive as they reduce time and location barriers of other forms of contact. For example, firms can contact people through mobile devices at any time and at any place. Customers do not like the intrusive behavior and may not use the e-services platform.

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E-Services: A Synthesis and Research Agenda

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Abstract

Services marketing research increases in both intensity and relevance as services contribute an increasing share of the world's economy and as firms and their customers increasingly interact through electronic networks. E-services present sharp new challenges to both researchers and practitioners because the processes from beginning to end of the e-service value chain are markedly different than those for offline services and because the electronic environment offers increased flexibility throughout the value chain. This flexibility creates the requirement to impose some sort of structure on all of the possible service and channel design choices. E-service flexibility creates an opportunity, and the need, to think about the consumer early in the design process. Finally, flexibility makes it difficult, but critically important, to consider various scenarios suggesting future developments in e-services. Our goal is to provide an overview of the past and some projections for the future in the new field of e-services.

Keywords: E-Services, Flexibility, Self-Service Technologies, Service Processes

Introduction

The spread of electronic networks continues to transform business, marketing, and consumer behavior. One feature of this transformation is the appearance of the e-services phenomenon that arises at the border of two business domains of study: services marketing and e-commerce. Although some think about e-commerce in terms of the marketing of tangible goods (such as books, clothing, and electronics) online, a growing proportion of online activity is strictly devoted to the consumption of experiences: both hedonic and utilitarian.

Of course, in the eyes of many observers, selling tangible goods online is itself an e-service, one which substitutes for physical retailing. It is therefore natural that services scholars would turn their attention to what is arguably the most important innovation in retail service delivery in many years, namely the ability to deliver service to a mass market with little to no direct human intervention. But the online world has seen a new category of service emerge which is neither a substitute for, nor a complement to, any offline offering. The emergence of purely virtual value chains, for example, in the form of Web portals, is frequently ignored in both e-commerce and services marketing texts (but see Fisk, Grove, and John 2003 for a notable exception). This new product category presents researchers with the need to develop and extend marketing theory, to investigate the new topics the theories suggest, and to formulate actionable recommendations for e-service managers. In order to further clarify the opportunities posed by e-services, we begin with some examples and a simple classification scheme.

Three Prototypical Examples of E-Service

We discuss examples illustrating three extant types of e-services: (1) complements to existing offline services and goods, (2) substitutes for existing offline services, and (3) uniquely new core services.

Organizations may add value to existing goods and services with complementary e-services. For instance, FedEx enhances the perception of tangibility while reducing both perceived and actual risk by letting customers track packages online. Major airlines allow passengers to conveniently change seats online. Cisco offers technical support and other after-purchase services on its website. As an additional benefit, use of this direct channel allows firms to unobtrusively collect information about their customers, thus permitting service improvements based on customer knowledge (Iqbal, Verma, and Baran 2003).

Many firms utilize e-services as virtual substitutes for classic offline services. Retailers do this when they provide additional benefits online (e.g. more sizes or colors, longer product lines, backordering capability, and cost reduction). For instance, Amazon provides extensive availability compared to bricks-and-mortar bookstores, and offers value-added features, such as book reviews to assist in selection. Netflix makes it possible to search tens of thousands of movie titles and receive DVDs by mail along with pre-labeled return packages. Recommendation (Ansari, Essegaier, and Kohli 2000) and customization (Rust and Kannan 2003) strategies are typically implemented more

efficiently online than in person; they can generate significant competitive advantage both through lower cost and increased customer benefits.

Finally, firms are developing new core e-services in the form of offerings that do not and generally could not exist as offline services. For instance, the online game provider World of WarCraft simultaneously hosts hundreds of thousands of gamers interacting in a shared virtual universe. Google Map's geographic service is available to an out-of-towner trying to find an address, to a business creating a real time parking spot exchange in Manhattan, to a government agency performing epidemiological analysis, and to a real estate broker offering an infomercial on local housing offerings. Google Maps can provide a unique pattern of benefits with greater flexibility and more information than a traditional paper map. However, the benefits are limited by service design considerations as we note that directions provided in person may offer greater customization as well as responses to specific questions that may not be answered online.

Complementing an offline service, substituting for an offline service, and offering a purely virtual core service are all identifiable as e-services. In all three cases service is provided by a programmed algorithm using network software rather than offered using human interaction. We now discuss related observations, beginning with a more formal definition of e-services.

What Is an E-Service?

E-services have previously been defined as "those services that can be delivered electronically," (Javalgi, Martin, and Todd 2004, p. 561) and similarly as "provision of services over electronic networks" (Rust and Kannan 2003, p. 38). Boyer, Hallowell and Roth (2002, p. 175) use the definition, "interactive services that are delivered on the Internet using advanced telecommunications, information, and multimedia technologies." The first two of these definitions focus on the fact that delivery is electronic, and beg the question "what is a service?" or "what benefits are expected by the customer?" The third definition is concerned with the infrastructure necessary to deliver an e-service, but still does not define the term. Thus, it is important to clarify what we mean by "e-service" before we continue.

Lovelock and Wirtz (2004, p. 9) define service as "an act or performance offered by one party to another…an economic activity that creates value and provides benefits for customers…by bringing about a desired change in, or on behalf of, the recipient." This definition brings out both the process by which the service is produced and the outcome, in the form of benefits, that the customer receives. Both the service production processes and the outcomes are relevant when we consider e-services, as well.

Regarding the service production process, an e-service is created and stored as an electronic code comprised of binary numbers, because it exists in a digital environment. Building on this, we observe that, by definition, the result of translating an act or performance into binary numbers is called an algorithm. Hahn and Kauffman (2002) have also identified e-services with algorithms. Using this idea, we could define e-service as: *"an act or performance that creates value and provides benefits for customers through a process that is stored as an algorithm and typically implemented by net-*

_____

worked software." Thus our definition highlights the distinction between service production (a stored algorithm delivered by software) and service outcome (the desired benefit received by consumers).

We believe that the flexibility of algorithms and networked software combined with the requirement imposing structure on the service experience are distinguishing features of e-service which help to define the opportunities available to marketers. As an illustration, consider Yahoo!, which offers a calendar service to subscribers. The service production process begins with Yahoo! programmers who create and store the algorithms (procedures stored on computers that can be used to accomplish a task) that produce the calendar service. These algorithms can be programmed to behave in millions of different ways, producing different features, appearances, interactions and benefits, all of which might differ considerably from a physical calendar. Visually maintaining the metaphor of a paper calendar allows the consumer to bring her "calendar schema" to bear during the service experience. The benefit sought by a user of this service might be a reminder of an important birthday; thus, she creates a calendar entry for the date of the birthday either through her cell phone or Web browser. Before e-services were available, such a benefit might have been provided by a human personal assistant. Today the consumer might decide to have that Yahoo! reminder delivered to an email inbox or to a phone number, or she might receive the reminder through a cell phone, PDA, laptop or desktop machine. An e-service is logically independent of the devices that create, store, and deliver it. This logical independence of the service delivery process - perhaps we can dare to call it "separability" - creates an additional level of flexibility.

Given the above process- and outcome-oriented definition of e-services, the question arises: what should services researchers study in the e-services value chain? We believe researchers should consider the design of the service process, any customer interaction required by the process as the service is consumed, and the outcome of the process, the latter directly reflecting the service benefits that the customer expects to receive. Emphasizing processes highlights flexibility and the arbitrariness of imposed structure in the design stage: e-service processes, as algorithms, may or may not be designed to imitate traditional service processes. In addition, they can be inventoried, repurposed, reassembled with different properties, recombined, customized, repackaged, re-branded, transferred or forwarded, delivered to various devices, and re-consumed. An e-service outcome, on the other hand, may be measured in the traditional way relative to customer expectations: satisfaction depends on reactions to any experiential aspects of the service delivery process and on the perceived results, as compared to expectations.

We wish to continue comparing production processes and outcomes of e-services to those of more traditional services; thus we next consider properties of services and how they might apply to e-services. We then offer a selective review of the e-services literature, primarily to aid in identifying important themes. Based on this review, we highlight additional topics that in our view could benefit from a service-centric approach, but which have received only minimal attention from services researchers.

Properties of E-Services

We proceed by discussing four commonly-cited properties of services and their mana-
gerial consequences: intangibility, heterogeneity, inseparability of production and con-
sumption, and perishability (see Zeithaml, Parasuraman, and Berry 1985). In doing so
we note that these traditional differences between services and goods have recently
come under fire (see Lovelock and Gummesson 2004) because they do not offer a
clear distinction between services and goods, and because they represent a negative
definition of services in terms of "what tangible goods are not" (Vargo and Lusch
2004b). For our purposes, however, they are useful in distinguishing e-services from
more traditional services. Lovelock and Gummesson suggest identifying services as
those purchases that do not result in ownership for the buyer; rather, benefits are ob-
tained through access or temporary possession. This "nonownership" dimension is
helpful in identifying e-services as a unique product category and we will use it also.

Intangibility

We might assume an e-service is less tangible than the same service delivered in per-
son. In prototypical or pure cases of e-services, previous work on intangibility (i. e.
Laroche et al. 2004) will be especially relevant. In other cases, such as continuously
delivered services (insurance), services which involve processing possessions rather
than people (package delivery), or where there is an important symbolic component
(plane reservation, ticket to a play) an e-service conveys increased tangibility.

The specific delivery mechanism (DVD, kiosk, hand held device, personal computer)
and format (web page, email, video, text message, voice menu) also offer an important
contribution to tangibility. Although an e-service designer has considerable choice and
flexibility in terms of delivery options, an e-service consumer has only a fixed set of
senses and limited information processing capability. Thus, choice of channel should
take into consideration the specific type of intangibility (Laroche, Bergeron, and Gou-
taland 2001) and how that plays to the weaknesses and strengths of the human infor-
mation processor.

To elaborate further on possible weaknesses, if the consumer must deal with more than
a few items of information simultaneously, a large computer screen might be called for
instead of a cell phone screen or an auditory e-service. Otherwise the limitations of
short-term memory (Bettman 1979) might reduce the benefits of the service. Similarly,
the richness of the interaction afforded by the combination of the available bandwidth
and the input and output devices determines the sorts of problem-solving possible in
the mediated environment (Yadav and Varadarajan 2005), the amount and type of
product complexity that can be conveyed by the seller and specified by the buyer, as it
also dictates how compelling the brand experience is for the e-service. Interaction de-
sign likewise might need to take into account whether the benefit is reduction in uncer-
tainty (adding data points) or reduction in ambiguity (Daft and Lengel 1986). Many of
the strengths of consumer information processing grow over time with experience.
Visual metaphors (Carroll and Thomas 1982) that honor schemas can leverage previ-
ous consumer knowledge while rendering the service process more tangible.

Heterogeneity

Heterogeneity represents variability in the quality and essence of a particular service. Given the error checking capabilities of networked software, an e-service is likely to be far more homogeneous than other services because it is not labor intensive (from the point of view of the firm), and so therefore does not incur as much risk of human error. In fact, upon production, an e-service is more homogeneous than a typical physical good. Rather than study heterogeneity in this sense, e-services researchers have focused on the impact of variability due to consumer participation (Parasuraman 2000), on customization and personalization (Goldsmith 1999), and on consumer heterogeneity in preferences for experience goods (Villas-Boas 2006). Variability is also added by the consumer's software configurations and preferences and hardware environment.

Inseparability of Production and Consumption

Because "place" is not a property attributable to networked software (Kobrin 2001), e-services are highly flexible in terms of physical separation between consumer and producer. A musical band can record a song, which is an experiential product, and sell it on a website. We might determine that the service production (performing the song) and the service consumption (listening to it) have been separated in both space and time. Of course, the same song can be copied by the consumer to different media or played on an MPEG player or the car or home stereo system, or sampled and used in creating a new work of art. This example shows that the flexibility of an e-service can render it more separable than a physical good. However, if we consider an online music retailer that offers a variety of access methods, including downloading, we might classify that as a case where the consumer must be "present" on the website in order to consume the service.

In either case, we believe that management's strategic goal should be to develop the ability to offer as many benefits as possible (Vargo and Lusch 2004a) by encouraging the sorts of transformations described above (e.g. copying, sampling), and by using updates, outtakes, newsletters, interactive chats with musical groups, and so forth.

Perishability

Vargo and Lusch (2004b) argue that, in some cases, services are not perishable and can be inventoried. An e-service, being an algorithm, offers an excellent example of just such an exception, as it can be stored indefinitely by the firm (server disk) or consumer (CD or other media). We conclude that e-services are not necessarily perishable, as a consumer who has enjoyed a downloaded copy of *The Iliad and the Odyssey* might confirm. Unlike goods or offline services, binary numbers delivered by software can be consumed over and over again without being used up. Further, unlike offline services, an e-service such as the downloaded song mentioned above can be copied and given to someone else and yet still be retained. While offline services cannot be inventoried, e-services, as illustrated by song exchange, frequently have the opposite problem in that they are too easily inventoried, *i.e.*, they are *non-excludable in supply* (Krishnan, Smith, and Telang 2003), meaning that management cannot prevent consumers from copying, storing, and exchanging. Once again, a service-centric view-

point helps to manage this problem. For example, game provider World of WarCraft gives away the PC software used to play the game and charges players instead for access to the interactive server.

Nonownership

Lovelock and Gummesson (2004, p. 34) propose that nonownership uniquely identifies services, which is to say that there is no transfer of ownership in services. This is true for both offline services and online services, although e-services have the additional characteristic of being *non-rival in demand* (Asvanund et al. 2004) meaning that consumption can occur simultaneously without reducing the other consumer's utility.

Thus, e-services exist at the nexus of the intangible product and the use of software to perform functions previously carried out by humans. They embody the need satisfactions of traditional services, but use a unique technology. Before reviewing the current literature on e-services, we summarize the difference between goods, traditional services and e-services in Figure 1.

Figure 1: Distinguishing Features of Goods, E-Services and Services

GOODS	E-SERVICES	SERVICES
1. Tangible	1. Intangible, but need tangible media	1. Intangible
2. Can be inventoried	2. Can be inventoried	2. Cannot be inventoried
3. Separable consumption	3. Separable consumption	3. Inseparable consumption
4. Can be patented	4. Can be copyrighted, patented	4. Cannot be patented
5. Homogeneous	5. Homogeneous	5. Heterogeneous
6. Easy to price	6. Hard to price	6. Hard to price
7. Can't be copied	7. Can be copied	7. Can't be copied
8. Can't be shared	8. Can be shared	8. Can't be shared
9. Use equals consumption	9. Use does not equal consumption	9. Use equals consumption
10. Based on atoms	10. Based on bits	10. Based on atoms

E-Service Themes

We reviewed the e-services literature, considering theoretical, research and managerial issues raised for e-services by some of the traditional concerns of services marketing. The themes we discuss were selected because they addressed e-services in a marketing, e-commerce, or services context. Table 1 presents the framework for our discussion showing categories and sub-categories, some key articles, and a concise description of some key issues addressed.

Table 1:   Theoretical, Research, and Managerial Progress in the Study of E-Services

Theme	Theory	Research	Management	Illustrative Citations
Who Produces the E-Service?				
Multi-Channel Service Provision	Rethink flexible B2C channel strategy in light of strengths and weaknesses of specific channels. There is a need in B2B to integrate sales force activities into e-channel functions.	There is variability in the way end-consumers experience channels. The B2B focus is less on channel dilemma and conflict and more on cooperation in a networked supply chain.	Transfer simple processes like order taking to the e-channel and use mass customization, sales and service force effort to increase order getting.	Boyer, Hallowell, and Roth (2002) Montoya-Weiss, Voss, and Grewal (2003) Bendoly et al. (2005) Johnson and Bharadwaj (2005)
Self-Service Technologies	Psychological notions such as affect, attitude, self-efficacy and need for cognition play an important role in SST adoption.	Optimism, innovativeness, need for human interaction, fun, and other variables have been investigated.	E-services should be easy, reliable, convenient, and should minimize overload and risks.	Dabholkar (1996) Meuter et al. (2000) Parasuraman (2000) Bobbitt and Dabholkar (2001) Dabholkar and Bagozzi (2002) Meuter et al. (2005)
Co-production	Co-production is a two-edged sword with possible advantages and disadvantages to the firm.	Self-service has a negative impact on social bonds and may not improve satisfaction due to the self-serving bias.	Managers should carefully integrate self-service into existing personal service rather than replace personal service.	Selnes and Hansen (2001) Bendapudi and Leone (2003)
Service Operations and Fulfillment				
Back Room Processes	Data "completeness" (no data gap) and post purchase support are critical for customer retention.	A new gap exists: the data gap, where customers and providers may not have access to necessary data. Coordinating fulfillment (guarantees) and inventory strategy (stockout likelihood) has been investigated.	Inventory policy, IT policy, organizational structure, and customer abilities, and customer needs, wants and expectations must all be aligned to provide quality E-Service.	Heim and Sinha (2001) Boyer, Hallowell, and Roth (2002) Garnder, Hanna, and LaTour (2002) Brohman et al. (2003) Piccoli et al. (2004) Cao and Zhao (2004) Cao and Gruca (2004) Iyer, Germain, and Frankwick (2004) Rabinovich (2004) Posselt and Gerstner (2005)

Online Servicescape and Service Quality			
Service-scape	Web site design can create flow, arousal, and other positive, or negative, affective reactions.	Aesthetics, professionalism and various design element details can prime attitude and behavior.	Create visually attractive and professional looking interfaces.	Hopkins, Raymond, and Grove (2003) Williams and Dargel (2004) Edvardsson, Enquist, and Johnston (2005) Vilnai-Yavetz and Rafaeli (2006) Stevenson et al. (2000) Mandel and Johnson (2002)
Service Quality	E-Service quality dimensions do not perfectly overlap with offline service quality dimensions.	Ease of Use, Design, Trust Factors and Reliability imply quality to the consumer.	Key goals are to provide reliable and responsive support, personalization, efficiency, credibility, and ease of use.	Jiang, Klein, and Crampton (2000) Cox and Dale (2001) Yoo and Donthu (2001) Broderick and Vachirapornpuk (2002) Yang and Jun (2002) Santos (2003) Wolfinbarger and Gilly (2003) Zeithaml, Parasuraman, and Malhotra (2003) Parasuraman, Zeithaml, and Malhotra (2005) Collier and Bienstock (2006) Bauer, Falk, and Hammerschmidt (2006)
E-Service Failure, Recovery, Satisfaction, and Loyalty			
Service Failure, Service Recovery	Traditional models have been extended, and new models developed for new technologies and how consumers react to them.	Previous experience plays a key role in explaining how consumers react to service failure and recovery.	Describes specific steps managers can take to avoid failure and recover effectively.	Kolesar and Galbraith (2000) Holloway and Beatty (2003) Holloway, Wang, and Parish (2005) Tax, Colgate, and Bowen (2006)
Satisfaction and Loyalty	Application of existing theory with extensions.	Confirms what we know about offline satisfaction. Adds new aspects.	Design sites and procedures to enhance satisfaction, ensure security, build trust.	Szymanski and Hise (2000) Meuter et al. (2000) Gummerus et al. (2004) Harris and Goode (2004) Evanschitzky et al. (2004)
Customer Relationship Management	There are unique aspects of E-Service: including interactivity, personalization, and real-time adjustments in offerings. Online switching costs are surprisingly high.	Standard CRM features seem not to encourage traffic to a site. New features need to be developed.	Managers need to relearn how to build relationships with e-service customers and to develop new CRM techniques.	Rust and Lemon (2001) Feinberg and Rajesh (2002) Fruchter and Sigué (2005)

We identify two frequent e-commerce application contexts, which marketers originally developed for offline services. First, much of e-services research focuses on online re-

tailing, a substitute for a physical service. This is most clearly evident in work on e-service quality, historically an important research stream in offline services and now translated for the Web (e. g. Parasuraman, Zeithaml, and Malhotra 2005; Zeithaml, Parasuraman, and Malhotra 2003). A second and related point is that e-services are also frequently conceptualized as supplementary or peripheral services provided by companies whose main business is offline or whose value proposition predates the Internet era. This is particularly evident in research on Self-Service Technologies (SSTs) (Dabholkar 1996) and Servicescapes (Bitner 1992). We now review these and other common themes that have emerged over the past few years. Our review of these e-service themes begins at the start of the e-service value chain with a discussion of e-service production; including multi-channel production, co-production, and self-service. In the second theme, the focus is maintained on back-office value-adding activities including service operations and fulfillment. In the third theme, we turn to more "customer facing" aspects of e-services, reviewing research on the servicescape and service quality. In the fourth theme we cover the classic services topics of e-service failure, recovery, satisfaction and loyalty. Our final theme concerns service relationship management.

Who produces the service?

Firms now have a variety of service channels at their disposal, which can be used alone or in combination with other channels. We begin this section by discussing e-service in the context of multi-channel service provision. In a multi-channel context, who produces the service becomes, at least partially, a strategic decision for the firm, endowing additional flexibility and potential for competitive advantage.

We note that there us a disparity, or at least difference in emphasis, that is apparent in the background literature on "who produces a service." Prahalad and Ramaswamy (2004) and Vargo and Lusch (2004a) make a general argument in favor of allowing customers to co-create offerings with self-service technology. Specific benefits to the consumer of adding an Internet channel include customization, interactivity, global access, real time access and multimedia displays (Viswanathan 2005). There are also strategic benefits to the firm: channel flexibility (the information mix, product representation, and site and interface design), market lock-in (switching costs), and positive consumption externalities (many e-services become more valuable as more consumers use them), according to Viswanathan (2005).

We discuss externalities in the *Virtual Communities* section below, but for now, we need to acknowledge that the rosy picture painted by the above list of firm benefits is not universally shared. Bendapudi and Leone (2003) offer a cautionary view, pointing out that self-serving bias will lead to customers claiming more responsibility for a self-service success and taking less blame for a self-service failure. Similarly, self-service technologies reduce the impact of social bonds and feelings of social obligation (Selnes and Hansen 2001). There are important implications for loyalty in these cases. Surely more research is needed to determine exactly when and where co-production is beneficial, and how to mitigate its potential negative consequences for loyalty.

Despite these cautionary notes, managers should reap a net benefit in the increased flexibility derived from having multiple service channels. Factors that trade off in choice of service channels include labor market availability or shortages (Rayport, Jaworski, and Kyung 2005), the amount of customer support desired and the cost of that support (Simons, Steinfield, and Bouwman 2002), the channel's physical capacity to perform various service outputs (Seiders, Berry, and Gresham 2000; Wallace, Giese, and Johnson 2004), the fit between the user's task and the channel software (Dishaw and Strong 1999), and the level of service product complexity (Boyer et al. 2002).

Of course, consumers are not neutral with respect to how they deal with complexity; they bring their own preferences and abilities to this arena. Empirical research shows that the service channel features preferred by consumers vary greatly (Iqbal et al. 2003), adding to the difficulty of designing channel strategy. Consumers differ in self-efficacy (McKee, Simmers, and Licata 2006), need for social interaction (Dabholkar and Bagozzi 2002; Meuter et al. 2000), readiness to accept self-service technology (Parasuraman 2000), and in their ability to perform the tasks demanded by it (e. g. Dellaert and Stremersch 2005). Both the cognitive limitations of consumers and the demands of branding tell us that consistency and seamlessness are important goals of management in a multi-channel service environment (Bendoly et al. 2005; Sousa and Voss 2006).

At this point we note an interesting disparity between the SST literature, which tends to focus on adoption (Bhappu and Schultze 2006; Lee and Allaway 2002; Meuter et al. 2005), and the customer relationship management literature, which is retention-oriented. We believe it would be useful for scholars to contemplate the full SST life cycle, a topic we address later. For now, we continue to address the e-service value chain, turning to service operations and fulfillment.

Service Operations and Fulfillment

Because e-service delivery is executed by software algorithms rather than human actors, the service development process differs from that of interpersonal services, resembling manufacturing operations more than classical service operations (Meyer and Zack 1996). In addition to being software-intensive, e-services are data-intensive, and data availability and accessibility, or *data completeness* (Brohman et al. 2003), is a key driver of e-service value and convenience. It is the nature of information assets, including both algorithms and customer data, to be capable of being used, reused and recombined in various ways. For example, Google combines software and feedback from customer search input to create added value for Web surfers. It combines historical search input with data on click through probability to create added value for advertisers. Recombining these sorts of company assets is at the heart of what strategy theorists refer to as "dynamic capabilities" (Amit and Zott 2001). Companies offering new core e-services are among the most dynamic in the economy.

For e-retailers, processes occurring behind the scenes can also be critical. We can divide online retail experience into pre- and post-sale time periods. Evidence is beginning to emerge of important recency effects; in particular, post-sale influences outweigh pre-sale factors in repurchase intention (Posselt and Gerstner 2005). The rela-

tionship between delivery waiting time, inventory policy, and operations decisions are examined in papers by Rabinovich (2004) and Cao and Zhao (2004). These provisions are important to the successful provision of e-services.

In the business-to-business marketing sphere, e-service is about collaboration and relationship building. B2B e-service plays an important role in the trend towards supply chain integration and coordination (Bridges, Goldsmith, and Hofacker 2005; Iyer, Germain, and Frankwick 2004). B2B suppliers often create more powerful electronic fulfillment mechanisms than do B2C e-retailers, and elaborate Enterprise Resource Planning (ERP) systems (Gardner, Hanna, and LaTour 2002) are used to create and maintain the data functionality necessary for high service levels.

The Online Servicescape and Service Quality

We have just seen that e-service managers must make many decisions that impact the outcome of the interactive service encounter. Likewise, e-service designers must make numerous decisions about the interactive experience of the service. Such design decisions occur at many levels and include the structure, look and feel of the entire website, the structure and individual elements appearing on particular pages, and even wording and graphical representation at the level of individual links. Taken as a whole, these physical design decisions have a large impact on affective and attitudinal reactions on the part of customers (Chang et al. 2002). Of particular interest are priming effects observed when background or otherwise subtle elements have a pronounced impact on attitude (Stevenson, Bruner, and Kumar 2000) and even choice (Mandel and Johnson 2002). Affective reactions to the functional and atmospheric design of a site ripple through to online behaviors from navigation to purchase (Boulding et al. 2005). Among other variables, color, navigation structure, and links have been shown to affect the decision to browse a website (Dailey 2004; Menon and Kahn 2002). Thus consumer behavior, satisfaction and enjoyment critically depend on the online servicescape. Given the flexibility and scope of the e-service design space, it is clear that researchers have merely scratched the surface of what could be investigated.

A particularly popular goal is to measure e-service quality. Many of the factor analysis dimensions commonly uncovered in this work represent properties of software (Design, Ease of Use), factors relating to trust (Security, Privacy) and interaction and fulfillment reliability. Sweeney and Lapp (2004) however used the critical incident technique and found that quality perception is based on the dimensions of Ease of Use, Content Quality, and Process (User Control and Speed).

Recently, Bauer, Falk, and Hammerschmidt (2006) have argued that previous e-service quality scales have been too utilitarian and ignore the hedonic qualities of a web site, which these authors see as related to enjoyment. In fact, they find that enjoyment is a leading influence in repurchasing behavior (Bauer et al. 2006).

Decades of offline service quality studies have converged reasonably well in terms of the dimensions uncovered (but see Brady and Cronin 2001). On the other hand, measuring e-service quality has so far resulted in only modest overlap from study to study. Some illustrative papers are presented in Table 2, along with the numerous dimensions reported. An important goal for future research should be to develop a more compre-

hensive understanding of what quality means for e-services, including how it can be measured, what common dimensions might be required across different e-services, and what aspects are unique to specific e-service contexts. At the very least, e-service quality researchers should note whether they are studying a complementary, substitute or core e-service.

Table 2: Dimensions of Online Service Quality from Selected References

Service Quality Dimensions	Authors
Ease of Use, Aesthetic Design, Processing Speed, Security	Yoo and Donthu (2001)
Intangibility, Simultaneity, Heterogeneity, Perishability	Cox and Dale (2001)
Reliability, Access, Ease of Use, Personalization, Credibility, Security (Internet Purchasers), Security, Responsiveness, Ease of Use, Availability, Reliability, Personalization, Access (Internet Non-Purchasers)	Yang and Jun (2002)
Ease of Use, Appearance, Linkage, Structure and Layout, Content, Reliability, Efficiency, Support, Communications, Security, Incentive	Santos (2003)
Fulfillment/Reliability, Website Design, Privacy/Security, Customer Service	Wolfinbarger and Gilly (2003)
Efficiency, System Availability, Fulfillment, Privacy	Parasuraman, Zeithaml, and Malhotra (2005)
Responsiveness, Reliability, Process, Functionality, Enjoyment	Bauer et al. (2006)
Ease of Use, Privacy, Design, Information Accuracy, Functionality, Order Condition, Timeliness, Order Accuracy, Interactive Fairness, Outcome Fairness, Procedural Fairness	Collier and Bienstock (2006)

E-Service Failure, Recovery, Satisfaction and Loyalty

Service failure and recovery have been examined extensively in offline situations (e. g. McCollough, Berry, and Yadav 2000; Tax, Brown, and Chandrashekaran 1998), but there is a paucity of research specific to the online environment. Here, we review some of the materials available for offline services and then extend the findings to e-services.

When a service does not perform as the provider intended, or as the customer expected, resulting in customer dissatisfaction, we say that a service failure has occurred. Although only a small percentage of customers who experience failure tell the provider about it, those who do offer the firm the opportunity to engage in service recovery. Successful recovery efforts mitigate dissatisfaction and salvage the customer's loyalty to the firm. As Zhu, Sivakumar, and Parasuraman (2004) note, failures may occur during the service production process, or they may not be noticeable until they are observed in the service outcome. Thus, recovery efforts should be targeted to either the process or the outcome, as appropriate.

Smith, Bolton, and Wagner (1999) describe process failures as being more symbolic, or having to do with inconvenience or unpleasantness during the delivery, and outcome failures as functional failures in the core service. We note that although there may be some overlap between the delivery process and the core service, particularly for experiential services, the distinction between delivery process and outcome contin-

ues to be important for e-services. For instance, e-service process failures can occur when moving from one web page to another is not seamless or when navigation is otherwise difficult, when error messages are seen instead of the desired screen, or when the steps involved in ordering service are slow, effortful, or unclear. Outcome failures can occur when the delivered service is not the same as what was requested, when the service is not delivered, or when it does not meet specifications.

Two articles (Holloway and Beatty 2003; Holloway, Wang, and Parish 2005) extend traditional theoretical models of service failure and recovery to online shopping by examining how the online purchasing experience differentially impacts consumer receptivity to online recovery efforts. Noting the absence of well-developed theoretical descriptions of online service failure, these researchers develop a typology of online service failures and describe how managers can avoid them. When failures do occur in e-services, recovery is particularly difficult, because the lack of a human front-line service provider means that a frustrated customer must deal with an unsympathetic technological interface (Kolesar and Galbraith 2000).

In addition to examining how service failure and recovery differ between offline and online service environments, we are interested in how e-service failure and recovery efforts influence online customer satisfaction and loyalty. We address this topic by reviewing literature describing customer satisfaction and loyalty in offline services, and then extending the ideas to e-services.

Service customer satisfaction is often described as a transactional comparison of perceived performance against expectations (e. g. Bitner 1990; Spreng and Singh 1993). Using this definition, we note that a customer must have at least one experience with a particular service in order to be satisfied or dissatisfied with it. Further, satisfaction may change dramatically following each encounter, as a customer compares her perception of the service received with her expectations of what the provider would deliver during that encounter. We believe that this definition can be applied to e-services.

With regard to satisfaction, it is important to decide whether to measure the gap between the customer's perceived service and expectations by obtaining a single measure of the difference or by using separate measures and calculating the difference. Although both methods have been used in the literature, the results are not necessarily the same (Churchill and Surprenant 1982). Oliver (1980) points out that a scale anchored by "better than expectations" and "worse than expectations" may resolve this disparity by directly measuring the gap without referring to expectation levels.

Another interesting measurement issue related to customer satisfaction with e-services is whether a single scale should be used or multiple items are needed. Consistent with Rossiter (2002), who states that if customers are clear as to whether or not they are satisfied, a more accurate measure may be obtained by a single question, some researchers (e. g. Bolton and Drew 1991; Cronin and Taylor 1992) have effectively used single-item scales to measure overall satisfaction with service encounters. Other researchers (e. g. Oliva, Oliver, and MacMillan 1992; Spreng and Singh 1993) believe that satisfaction measurement requires separate items for each element of the service experience, such as the contact person, core service, and delivery experience. When

multiple items are used, they are typically combined in the analysis (often additively) to obtain a single measure of satisfaction. Because we are concerned with the customer's experience in the service delivery process as well as the outcome, and because these are distinct constructs, we conclude that separate measures of satisfaction with the e-service process and the outcome should be obtained.

The literature mentioned thus far in regard to customer satisfaction suggests that, if customers have low expectations of the e-service process or outcome, they are more likely to be satisfied. However, there is an alternative explanation: Bridges (1992) and Oliver (1993) note that customer expectations may have an equivocal direction of impact. Low expectations may lead to a positive disconfirmation (and higher satisfaction), but the same low expectations may result in reduced affect due to assimilation. High expectations may lead to negative disconfirmation (and greater dissatisfaction), but may concomitantly result in positive affect due to assimilation. Within a certain threshold, assimilation (of the perceived service toward expectations) is likely to occur, but as the gap between the expected and the perceived performance increases, contrast effects become increasingly likely. Thus, outside the threshold, the potential for equivocal impact is reduced – obfuscation of the results of conflicting influences is less likely. These results are important in e-services because they impact decisions regarding marketing activities that influence customer expectations.

Some elements of the e-service experience may be especially important to customer satisfaction. For instance, Szymanski and Hise (2000) found convenience, website design, and financial security to be critical. Meuter et al. (2000) supported their findings, and extended them to SSTs. In general, the antecedents and consequences of satisfaction offline also apply to an online setting (Bansal et al. 2004). Further, as Bitner, Brown, and Meuter (2000, p. 124) observe, "Customers demand and expect effective service recovery when failures occur."

Satisfaction with and loyalty to e-service providers has been studied using theories derived from the offline study of these same topics. Several researchers observe that these constructs are the same online as offline, although they may be driven by unique characteristics of the two categories of service (Bitner, Brown, and Meuter 2000; Shankar, Smith, and Rangaswamy 2003). Shankar et al. further observe that the relationship between customer satisfaction and loyalty is typically stronger in online services than it is in offline services. Not surprisingly, because of the need to reduce risk in online environments, trust is also a pivotal driver of consumer loyalty (Harris and Goode 2004). In addition, specific customer concerns when buying services online include divulging sensitive information, lack of responsiveness, and security (Gummerus et al. 2004). Thus, although e-service satisfaction and loyalty are similar constructs to those used offline, they contain unique aspects and depend on different drivers that need to be described and studied.

It has been suggested in the trade press (Schrage 2001) that service customer loyalty may actually increase following a failure and recovery. Specifically, service providers are advised that they can increase the likelihood that customers will make another purchase if there is a failure and a successful recovery. However, this does not mean that

subjecting customers to service failure is always a good idea: several researchers (e. g. Maxham 2001; McCollough et al. 2000; Smith and Bolton 1998) find that satisfaction levels after recovery do not exceed satisfaction in the absence of a service failure, and they may actually be reduced. Harris et al. (2006) apply these ideas in an online environment and observe that, because consumers feel more in control of the situation online, inadequate service recovery has less impact than it does offline. This suggests that online service providers have greater leeway in their recovery efforts following a failure.

Service Relationship Management

Researchers have begun to study e-customer relationship management (e-CRM) to provide useful insights for e-service managers. Rust and Lemon (2001) propose that there are three aspects of e-service that are critical in effectively interacting with consumers: true interactivity, customer-specific, situational personalization, and the opportunity for real-time adjustments to a firm's offering. Surprisingly, however, e-CRM may not be associated with customer traffic to a website (Feinberg and Rajesh 2002). Thus, it appears that e-retailers are not only behind in implementing e-CRM features, they also may not understand what aspects of e-CRM are important in customer satisfaction.

We propose that the goals of e-service managers are similar to the goals of offline marketing managers. First, they want to *acquire* customer*s*, attracting them to the web site where it is hoped they will interact by seeking information, locating potential products, and ultimately buying. Second, e-service managers want to *retain* the most profitable customers who buy on the site by creating a relationship with them so that they revisit the site, it is hoped, as repeat buyers (Goldsmith and Bridges 2000). This is aspect of e-commerce is often referred to as "stickiness" (see Boyer et al. 2002). Third, managers want to *develop* these customers by means of up-selling and cross-selling to make them even more profitable. Fourth, they want to *consult* their customers as valuable sources of information about current and future market offerings, using customer input to improve marketing strategy. Finally, they want to *convert* their customers into brand representatives who promote the brand to other consumers through word-of-mouth both on and off line. For online services, e-CRM is a tool that will assist in achieving these goals.

The data found in company data warehouses can be mined to uncover unique and ever smaller customer segments, thereby revealing the needs, wants, and behaviors of distinct groups of customers already served by the firm. These target segments form "portfolios" of customer segments that can be managed for profitability (Selden and Selden 2006). New customers who fit the profiles of defined, desired segments can then be targeted by strategies to attract them to the website. Brohman et al. (2003) refer to this as a "profit-centric orientation" whereby the data are analyzed to reveal the most profitable customers. This activity would help to fulfill the customer acquisition task of e-service managers by profiling profitable consumer segments so that potential buyers could be identified and targeted with strategies designed to attract them to the website. Thus, more effective strategies for acquiring customers can be developed by

understanding existing customers and projecting this information to determine who the most likely future customers are to be. Moreover, converting existing customers into brand representatives will enhance the customer acquisition function.

Managers retain customers by satisfying their needs and wants and by creating value for them (Boyer et al. 2002). To accomplish these goals, managers should (1) specify the needs and wants their websites will satisfy for specific target markets, (2) make the websites simple, accessible, and easy to use, (3) promptly, completely, and accurately, fulfill orders, (4) provide information desired by customers about their transactions, and (5) provide any follow-up support desired by customers. These efforts should promote website loyalty among customers in the form of repeat visits to the website. Managers are aided in this effort by the phenomenon of "lock-in," or "consumers' decreased propensity to search and switch after an initial investment" (Zauberman 2003, p. 405). Research on lock-in shows that online consumers manifest a short-term orientation that leads them to pick a preferred site to use repeatedly even though this option may not lead to the lowest price for the sought product (Johnson, Bellman, and Lohse 2003). Consumers seem to avoid switching costs, trading off future lower prices or improved service in favor of the comfort and immediate utility of using familiar web sites (Zauberman 2003).

Once the relationship between customer and firm is established, managers should actively develop it to increase customer value and profit. However, customers differ in their levels of profitability. Some studies show that the top 20% of customers ranked by profitability create most of the profit, while the bottom 20% actually yield losses (Selden and Selden 2006). One aspect of developing e-service customer segments is to assist in deciding which customer are profitable and should be retained; it is also useful to understand what would be needed to make unprofitable customers profitable. Moreover, firms can increase customer share by using "permission marketing" to establish two-way communication with customers, leading to increases in the amount of business they do (Osenton 2002). Some of the actions needed include (1) improving service levels, (2) creating loyalty programs, (3) offering complementary products, (4) serving customers through additional channels, and (5) extending the product line with new options and price points (Sawhney and Zabin 2002). This is the function of e-CRM that uses the data warehouse to personalize the website for each customer, making it a valuable resource. Such features as reminders to customers of important purchase opportunities are possible with this technology.

The Internet enables companies to interact with customers as never before, learning ways to improve service, develop new products, and fine-tune marketing strategies. Managers may facilitate this by creating online brand communities. Managers can tap into the discussions of online brand communities to learn about current customer desires and concerns.

Word-of-mouth (WOM), one of the oldest marketing tools, has flourished on the Internet as eWOM, a powerful influence on the success of brands (Goldsmith 2006). Consumers are ready, willing, and able to communicate with vast numbers of their peers, sharing their opinions and information about brands. The management chal-

lenges include using eWOM to the advantage of the brand. Identifying, seeking out, and nurturing "brand evangelists" (McConnell and Huba 2003) should be a top priority. Not only are loyal customers more profitable, they may offer constructive information for improving the brand, new product ideas, and e-WOM. Their efforts on behalf of the brand will bring in new customers, thereby completing the circle: attract customers with a competitive value proposition and easy-to-use website, retain them with superior service, develop them into profitable customer segments, consult with them to gain valuable information, and convert them into brand evangelists so they will acquire new customers for the brand.

An important research endeavor would be to discover ways to lure customers from other websites, *i.e.*, to encourage brand switching. In the face of lock-in, this might prove to be a formidable task. Some possible strategies can be suggested, however. Websites might be made more attractive, easier to use, more personalizable, and more flexible, for example. Alternatively, websites might be designed to deliver more value in the form of greater capabilities. Reducing switching costs to permit easy transfer of information to the new site also might facilitate website brand switching. On the other side of the coin, the best ways to encourage lock-in should be uncovered. Continued satisfaction and increasing value are likely the most effective ways to do this, but the efficacy of creating switching barriers should be explored.

Suggestions and Challenges

Based on our selective review of e-services literature, we propose several new research topics that we feel are under-researched. In some cases, these new topics are extensions of one of the themes reviewed above, but we also find "out of the box" opportunities for research.

New Core Services

To date, the majority of e-services research relates to a previously existing offline service, as either a complement or a substitute. Key exceptions to this include van Riel, Liljander, and Jurriens (2001), Kim (2003), Gummerus et al. (2004), and Szmigin and Reppel (2004) who have looked at Web portal sites. Portals such as Google are altering the services landscape in a very profound way (O'Reilly 2005). Unlike its competitors (e.g. Microsoft), Google began as a pure e-service. While Microsoft struggles to produce desktop software updates once every several years, Google's networked software services are updated hourly. In addition, Google has redefined how advertising functions, moving from the traditional obtrusive model of broadcast media to leveraging the context afforded by networked software.

The blog hosting site MySpace is another interesting example of a new core e-service because it shows the potentially discontinuous relationship between e-service software development and competitive advantage. Long before MySpace and similar sites existed, Internet users had the opportunity to create free home pages with various e-service providers such as Geocities. Those sites guided the user through the process of

creating a home page, employing a simple editor. The software behind MySpace is nearly identical, but structures the user's output into a diary format. While sites that offer free home pages have languished, the News Corporation recently agreed to pay $580 million dollars for MySpace. E-service software details, especially where design elements impact social processes, can matter a great deal with respect to marketing outcomes.

For pre-existing businesses or businesses based offline, creating new e-services may involve rethinking the answer to "what business are we in?" Not only does the net-worked electronic environment imply changes for existing businesses (Raport, Jawor-ski, and Kyung 2004), it requires novel thinking to develop new products. Researchers can advance this goal by studying how successful e-service providers go about their development activities and reporting best practices in the literature. New e-sevices can be created by "decoupling" sections of the value chain from existing businesses and offering them online (Evans and Wurster 1999). Consumer researchers could contrib-ute by studying how existing diffusion theory can be adapted to consumer behavior in the electronic world (e.g. Goldsmith 2000).

What Happens When Service Becomes Less Personal

Traditionally, services involved face-to-face interaction at some point in the exchange, and as such, the social psychology literature on interpersonal relations was especially relevant as human resources were employed at all customer touch points. Today, busi-ness processes are amenable to radical reworking (Rayport et al. 2005); on the service development side of the value chain, successful e-service resembles nothing so much as software design (c. f. Verma et al. 2001). Clearly additional theories must be called into play in order to understand the totality of e-service strategy throughout the value chain. IT infrastructure must be brought into alignment (Henderson and Venkatraman 1993) with e-services strategy. At the consumption end, new services bring out the importance of usability (Venkatesh and Agarwal 2005) in the software-mediated envi-ronment. Recently, IBM has extolled a new academic curriculum under the heading "Services Science" which encompasses computer science, operations research, indus-trial engineering, business strategy, management sciences, social and cognitive sci-ences, and legal sciences (Chesbrough and Spohrer 2006). These efforts need to ex-pand as researchers study how consumers react to the varied and contradictory forces involved in producing e-services: increasing personalization using technology and de-creasing personal attention from real humans. Of particular interest is the development of human-like avatars; computer generated agents who assume the appearance and be-havior of humans. How ordinary consumers will react to these selling agents, and other recommendation systems, remains to be understood fully.

Virtual Communities

Virtual communities have been studied by marketers primarily in the context of word-of-mouth processes (Godes and Mayzlin 2004). Considerably less is known about how these social structures function to provide service. Yet in many of the new core ser-vices being offered online, important benefits are provided by the customers them-selves (Grove and Fisk 1997) and value creation tends to be peer-to-peer. Examples of

e-services where the customer co-produces service for other customers include auctions, blogging, video exchanges, movie fact databases, wikis, collaborative filtering, online gaming, ratings, and employment sites. Few services marketers have studied virtual community service processes; a key exception is offered by Wiertz et al. (2005) suggesting insights on how C2C communities provide technical support, in effect, on behalf of a vendor. There are a host of unexplored issues that confront firms sponsoring virtual communities, including the level and types of control to impose, and how to nurture the sense of community and grow social capital in a way that allows the firm to capture revenue. Likewise, there is little research on e-services provided by B2B hub participants (Kaplan and Sawhney 2000).

In many cases, the value proposition of innovative e-services emerges from intergroup exchange in two sided markets. Consider again the blogging site MySpace, where the two sides of a market are represented by those wishing to write blogs and those seeking to read them. MySpace generates value by making the market between readers and writers.

Unlike offline services, e-services like MySpace function as a public good - they are non-rival in demand. This means that consumption of service experienced by one individual does not reduce the potential consumption available to others. In fact, we see positive externalities, meaning that consumers enjoy a benefit derived from the presence of other consumers. Marketers and economists have studied the macro properties of systems with externalities (e. g. Srinivasan, Lilien, and Rangaswamy 2004), but how this phenomenon works at the level of the consumer has just begun to be studied (Chakravarti and Xie 2006). MySpace generates revenue by advertising, which is a cost imposed on participants. In the general case, we may ask about optimal pricing with respect to virtual communities, and how much sense it makes to subsidize one side or the other (Parker and Van Alstyne 2005).

The E-Service Life Cycle

When new technologies are first introduced, we are keenly aware of them. The properties of the newly designed interface are critical to mastering it. Management worries about adoption. Eventually, successful new technologies "disappear," becoming ubiquitous and part of the background to the way the world works (Weiser 1991).

In the U. S. prior to 1951, a human operator intervened to establish a long distance connection on behalf of a caller. Today, no one in the U. S. would consider direct dialing to be a self-service technology, but a half century ago it was. Likewise, young adults in the U. S. probably do not think of pumping their own gasoline as a self-service technology, although it is for their parents. The transition from visible self-service technology to embedded ubiquitous service (see also Watson et al. 2002) should prove highly interesting to study.

This leads us to ponder the general process by which an interpersonal service becomes an e-service. Here, we propose a key role for algorithmic complexity, which is a measure of the quantity of information (Chaitin 2003) in an algorithm or any other set of data. We now briefly introduce the concept of algorithmic complexity and show how it could be useful in understanding the evolution of e-services.

Algorithmic Complexity

Simple services are amenable to automation, while more complex services require human intervention and knowledge. Further, the level of complexity that can be automated is increasing. In the 1950's, AT&T replaced operators with circuit switching equipment. In the last several years, B2B hubs have pioneered combinatorial online auctions that facilitate package bidding, where firms can make offers or accept them conditional on other offers being accepted or not in arbitrary combinations (Anandalingam, Day, and Raghavan 2005). Clearly the latter is more complex than the former.

Because an e-service is an algorithm (Hahn and Kauffman 2002), we propose that the ability to implement that algorithm depends on the complexity of the underlying service process. Pentland (2003) used a measure of algorithmic complexity to assess the variability of business processes. To do so, he assumed that a business process is a generative structure that might produce a routine outcome or, as would be more likely in service work, produce a variety of patterns or events. Measuring the algorithmic complexity of service processes would provide a guide as to when they are likely to be translated into e-services, as well as under what circumstances the e-service could be optimally deployed (Boyer et al. 2002). It might also offer guidance as to how difficult those e-services will be to use (Dellaert and Stremersch 2005). On the B2B side, algorithmic complexity might be used to predict the degree of asset specificity (Rindfleisch and Heide 1997) of e-service processes, a key theoretical variable in transaction cost analysis.

Conclusions

Flexibility is a hallmark of an e-service (Bitner, Brown, and Meuter 2000; Viswanathan 2005). Because an e-service exists without the logistical and physical constraints inherent in an offline service, there is flexibility of product design, in the choice of interface, features, and benefits. Further, because e-services are stored as an algorithms (Hahn and Kauffman 2002), there is flexibility in how they are "inventoried" and in the ability to manipulate and transform them in various ways. As e-services are delivered by networked software, there is flexibility in terms of when, where, how, and on what device each service is performed. All of this leads to a potential embarrassment of riches. If e-services make anything possible, what are the best choices? We trust that e-services researchers will help answer these questions by studying how customers interact with e-service processes.

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Enriching the Customer Experience: Implications for E-Marketers

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Abstract

The significance of 'customer experience' on the Internet has been increasingly emphasized by both practitioners and academicians. However, they have used the term 'customer experience' in many different ways with little consensus about what experience really means and what its full implications are. Based on Pine and Gilmore's experiential framework (1999), this paper attempts to sort out online customer experiences into four broad categories: entertainment, education, estheticism, and escape. Each of the four dimensions is reviewed and applied to the context of e-marketing. The authors conclude the discussion by stating that not all goods and services should be marketed as experiences in order to be successful on the Internet.

Keywords: E-Marketing, Customer Experience, Experience Economy, Experiential Marketing

Introduction

Although exuberance over e-commerce has diminished from the dotcom fervor of the late 1990s (Rosa and Marter 2003), there is little doubt as to the long-term viability of Internet-based marketing for many consumer goods and services. In the United States, the growing population of online shopping households is expected to drive e-commerce to account for 13% of total retail sales in 2010, up from 7% in 2004, according to Forrester Research (Johnson, Leaver, and Yuen 2004). It is also reported that U.S. online shoppers will spend more than $300 billion by 2010, growing at a 15% compound annual growth rate. Such substantial growth may be due, in part, to the fact that innovative e-commerce firms offer superior customer experiences in ways not readily imitable in traditional offline settings (Childers et al. 2001; Kotha, Rajgopal, and Venkatachalam 2004).

The significance of 'customer experience' on the Internet has been increasingly emphasized by both practitioners (e.g., Hegman 2002; Rubinstein and Griffiths 2001; Wyner 2000) and academicians (e.g., Haeckel, Carbone, and Berry 2003; Mathwick, Malhotra, and Rigdon 2001; Schmitt 2003; Stafford and Gonier 2004). However, they have used the term 'customer experience' in many different ways with little consensus about what experience really means and what its full implications are. One prevailing view on the subject of customer experience has its roots back in marketing history with such notions as 'unique selling points' and 'demonstrable product superiority' (Mitchell 2003). In this sense, the Internet can deliver only limited parts of the customer experience due to its inherent limitation; it cannot offer the customer a chance to touch and feel the actual product (Wyner 2000). In another context, the term 'customer experience' has been frequently used to refer to online service quality issues. For instance, positive experiences have been associated with encountering friendly and helpful, rather than remote and bureaucratic call center representatives (Mitchell 2003; Petre, Minocha, and Roberts 2006).

Embracing everything from product presentation to service delivery issues, another very different concept, termed 'staged experiences' has become a cornerstone of recent advances in retailing and marketing. This is the business paradigm suggested by Pine and Gilmore (1999) in their book *The Experience Economy* where the firms sell the experience itself and use products and services as supportive 'props' for this experience. Pine and Gilmore (1999) point out that the Internet comprises an ideal platform for staging experiences, elucidating that staging experiences is not about entertaining customers; it is about engaging them. Concurring with Pine and Gilmore (1999), Schmitt (1999) argues that the omnipresence of information technology represented by the Internet has contributed to a paradigm shift from traditional "features-and-benefits" marketing toward "experiential" marketing. Rubinstein and Griffiths (2001, p. 401) echo Schmitt's contention when they write, "(on) the Net you have to orchestrate everything you do to deliver a highly differentiated and consistent positive experience."

However, while experiential marketing practices become ubiquitous on the Internet, there have been few attempts to systematically define what exactly constitutes an

online customer experience. What do e-marketers need to incorporate in their product or service offering in order for that offering to qualify as an experience? More importantly, what are the ingredients of an online customer experience that are most likely to provide product/service differentiation and competitive advantage? Questions such as these are primary interests of not only current e-marketers but academic researchers who pursue empirical research in this area.

Technological advancements, such as broadband Internet access and in-home sensory simulation devices, are broadening and will continue to broaden the types of experiences that e-marketers can deliver (Guiry, Mägi, and Lutz 2006; Rosa and Malter 2003). At the present time, the experience economy paradigm may enhance projections of how e-marketers will exploit such second-generation e-commerce applications. In turn, it may deepen our understanding of how consumers will respond to sensory-rich electronic environments.

In this paper, we first review the experience realms conceptualized by Pine and Gilmore (1999) and attempt to apply their experiential framework into e-marketing. In so doing, we integrate the lessons from online consumer behavior literature and experiential marketing practices on the Internet to generate beneficial ideas that can help e-marketers enrich their customer experiences. Finally, we conclude the discussion by stating that not all goods and services should be marketed as experiences in order to be successful on the Internet.

## Pine and Gilmore's Experiential Framework

Pine and Gilmore (1999) introduce a provocative paradigm that explicates economic progress as a succession of stages from commodities to goods to services to experiences. In this progression of economic value, the nature of the offering and its key attributes advances from fungible and natural (commodities) to tangible and standardized (goods) to intangible and customized (services) to memorable and personal (experiences) (Holbrook 2000). In a nutshell, Pine and Gilmore (1999) argue that marketers who refuse to acknowledge this experience economy phenomenon will be doomed to suffer from inevitable commoditization and ultimately fall victim to ruinous price competition.

E-commerce markets have become a highly competitive and ever-changing environment where firms must adapt quickly as a means of survival and competence. With the prevalence of multi-channel retailing, both intra-firm and inter-firm competitions are now a brutal reality and are always on the increase (Duffy 2004). A key to survival is the generation of a strategy to stay innovative and synchronous with the pace of shifts in consumer demands and expectations. According to Pine and Gilmore (1998; 1999; 2000), online experiences represent an existing but previously unarticulated genre of economic value and new sources of differentiation that can save an e-commerce firm from price- or profit-eroding perils of commoditization. Considering an over-supply of look-alike goods and services in online markets, Pine and Gilmore (1999) encourage

e-marketers to redefine themselves as a source of memories, rather than goods, as "experience stagers" rather than service providers.

For e-marketers, it is imperative to understand the building blocks of successful online customer experiences and in what way they create value for firms and customers. As illustrated in Figure 1, Pine and Gilmore (1999, p. 30) provide a preliminary model to conceptualize 'customer experience' across two axes. The conceptual essence of this model is that an experience is not an amorphous construct; it is a practical concept defined by the customer participation (passive vs. active) and the environmental relationship (absorption vs. immersion) [1]. Connecting these two axes defines the four dimensions of an experience: entertaining (passively absorbed), educational (actively absorbed), esthetic (passively immersed) and escapist (actively immersed). In the following section, each of the four experiential dimensions will be reviewed and applied to the context of e-marketing.

Figure 1. The Four Realms of an Experience (Pine and Gilmore 1999, p. 30)
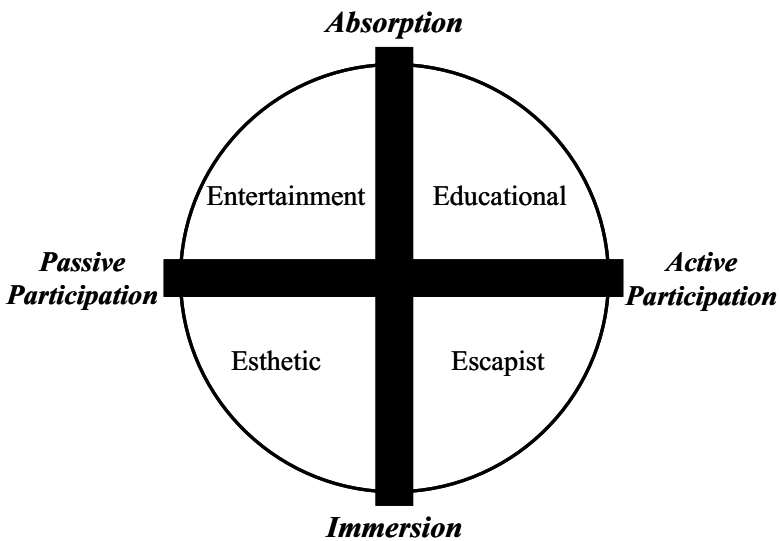
The Four Dimensions of an Online Customer Experience

Entertainment

Although the term 'entertainment' is used in everyday language, it may not mean, strictly speaking, the same thing as what is defined by Pine and Gilmore (1999). Entertainment is defined by Pine and Gilmore (1999) as the passive aspect of an experience – the elements of the experience are simply absorbed through senses. In other words, when people are entertained, they are inactively undergoing the experience that interests them and gives them some amount of pleasure or release (e.g., viewing a performance, listening to music, reading for pleasure).

Despite the common belief that entertainment on the Internet must be highly interactive and participatory (Karat et al. 2002), some Internet users remain in the role of pure observers or audience, simply seeking fun and enjoyable performances to view or listen to. This group of users represents so-called "streamies," who listen to and watch Internet-based (i.e., streamed) audio and video broadcasts (Rose and Lenski 2005). Arbitron/Edison Media Research estimates that the U.S. Internet broadcast audience is 30 million viewers weekly, accounting for approximately 13% of all Americans (Rose and Lenski 2005). This number will continue to grow as more and more users want and like "less clicking, more watching" experiences on the Internet (Karat et al. 2002).

Consistent with this general trend, the use of streaming media, once almost exclusively found in news, entertainment portal, and business-to-business sites (Johnson 2000), has become a new tactic employed by e-marketers. Just as a professional speaker weaves his speech with humor to hold the attention of the audience and to make them pay attention to his focal idea, e-marketers use streaming media entertainment to get their customers "to stay." For example, Barnes and Noble's site (www.barnesandnoble.com) operates BNTV and B&N Radio, which enables book shoppers to review a book of poetry or listen to a daily interview series with authors at home. Travelocity's site (www.travelocity.com) offers 6,000 hours of short clips with voiceovers of travel destinations and 360-degree pans inside cruise ships. Victoria's Secret (www.victoriasecret.com) broadcasts its exclusive fashion shows on the Internet and TV simultaneously to drive more customer traffic. Ralph Lauren's Polo website (www.polo.com) also uses fashion show video clips as well as celebrity interviews and original essays from Time magazine in order to enhance its entertainment components. As such, e-marketing is gradually adding a new degree of entertainment through watchable TV-like experiences.

However, entertainment is still an exception rather than the rule for e-marketing. Most e-commerce sites focus more on how to provide online shopping carts as quickly as possible. Their streaming media content exists only in zoom-in and rotate options to show products better. Given that customer satisfaction comes not only from purchasing products or services but also from hedonic pleasure or playfulness (Babin, Darden, and Griffin 1994; Kim 2001), it may not be enough for an e-commerce firm to provide

conventional enticements such as broad merchandise selection, low prices, and just-in-time deliveries to attract today's online shoppers. Currently, broadband has a significant potential to offer improved quality and diversity of online entertainment based on its powerful attributes (e.g., greater speed, always on, and the capacity for LANs) (Firth and Mellor 2005). Research suggests that e-commerce firms that respond to an emerging technology more quickly than their rivals will be able to garner first-mover advantage (Lee and Grewal 2004). Half of all U.S. households are projected to have broadband connections between 2007 and 2009 (Rose and Lenski 2005) and as the availability of broadband connections expands, e-marketers that adopt and assimilate streaming media entertainment more effectively than their competitors will be able to shape consumer preferences, which lead to high switching costs (Carpenter and Nakamoto 1989; Grewal, Cline, and Davies 2003).

The Educational

As in entertainment experiences, the customer in the educational dimension is still more outside the experience than immersed in the action. Unlike entertainment, however, the educational dimension of an experience involves an active participation in the event from which the customer acquires or increases skills and/or knowledge. To truly gain knowledge or skills, the customer's mind (for intellectual education) or body (for physical training) must be actively engaged in educational events (Pine and Gilmore 1999).

It has been acknowledged that the Internet is a direct and indirect tool that educates consumers to be smart shoppers. The two-way online communication between customers and firms not only facilitates building relational markets, but also enhance customers' ability to learn how to reduce search costs while increasing shopping efficiency (Benjamin and Wigand 1995; Liu et al. 2001). A number of e-commerce firms have developed an instant self-service learning setting to meet their customers' strong desire for smart shopping. Through Dell's web site (www.dell.com), a customer can build a customized product by choosing the features and performance levels of a personal computer and make price comparisons among alternatives. Circuit City's 'click and learn' (www.circuitcity.com) helps TV shoppers figure out what style, brand, and size will best suit their needs. Interestingly, auctions that allow customers to specify a price they are willing to pay are becoming part of many customers' learning experience. Internet auction house eBay (www.ebay.com) offers a wide variety of educational tools that enable members to buy and sell on the site quickly, safely, and conveniently. Their services include tips on safe trading and the Developers Program for members who would like to develop their own technology solutions.

Another important aspect of the educational dimension involves Internet users' universal concerns over the security of monetary transactions and potential misuse of personal information (Ranganathan and Ganapathy 2002). Many e-commerce sites display specific information about security policies, customer rights and responsibilities, and privacy protection programs. Further, they provide explicit statements of their organizational identities, including company history, philosophy, and community in-

volvement, in order to enhance customer confidence or trust, which is a critical factor in building long-term relationships (Kotha, Rajgopal, and Venkatachalam 2004). As Ind and Riondino (2001) noted, education breeds intimacy and trust, while lack of education on the Internet breeds fear and contempt.

Acquiring helpful information can be costly in offline settings and equally frustrating in online settings. Also, using Internet technology is still a new experience to many potential customers. In an effort to reduce this problem or limitation, e-commerce firms usually offer a section on frequently asked questions (FAQs) that provide answers to common consumer concerns such as shipping, service, payment, and return policies. A "help desk" section, sometimes called customer service or customer support, also deals with customer learning-related queries. It is reported that roughly one half of online users want live instructional support from e-commerce firms (Jovin and Lach 1999), probably because they cannot get immediate and accurate answers via e-mails or phones. To resolve this problem, some innovative firms, including 1-800-Flowers (1-800-flowers.com), Stew Leonard's (www.stewleonards.com), and Delia's (www.delias.com), offer live interaction with a tutorial staff. Some of these sites feature real-time chat sessions; others feature voice-over-web capabilities. In the near future, the increased availability of a "call camera" will enable customers to see a tutorial agent on their computer monitors.

The Internet has freed customers from their traditionally passive role as receivers of marketing communications, giving them much greater control over the information search and knowledge acquisition process. As a result, customers have become active participants in both information exchanges and learning activities (Ind and Riondino 2001). Apart from firm-driven education, customers often educate other customers through digital word-of-mouth (e.g., blogs, message boards, online forms, reputation scoring). These consumer-generated media provide customers with the ability to share their experiences, opinions, and knowledge with others on specific topics (Kalyanam and Mclntyre 2002). For instance, a registered user of Amazon (www.amazon.com) can write and disseminate a review of a book or a product testimonial. Customer reviews at wine.com (www.wine.com) provide tasting notes so that visitors can have the virtual experience of drinking particular wines.

Word-of-mouth has been the most difficult market phenomenon to track, measure, and analyze although it has long been considered the most powerful influencer of consumer perceptions, awareness, and purchasing behavior. Interestingly, consumer-generated media have given birth to a new breed of market research (Bruno 2006). Currently, a growing number of marketers are using Web-crawling technologies to analyze blogs, more specifically, to hear what is being said online about new products, brands, and advertising campaigns. Blog-watching research is evaluated as being cheaper, faster, and less biased than other forms of consumer research such as focus groups and surveys (Bulkeley 2005).

The Esthetic

Pine and Gilmore (1999) emphasize that the esthetic dimension should involve a more proximal or intense experience of sensory stimuli than does the entertainment dimension in order to facilitate customers' psychological immersion in the experience. In terms of customer participation, the esthetic dimension involves 'passive participation.' Although customers immerse themselves in an event or environment, they have little or no influence on it. Accordingly, the customers leave the environment untouched in the end (e.g., visiting an art gallery) (Pine and Gilmore 1999).

In offline settings, retail atmosphere elements (e.g., signs, color, music, scent, lighting, interior design) affect retail patronage behavior (Turley and Milliman 2000). In particular, esthetically pleasing store environments have been known to affect hedonic shopping values and customer repeat spending behavior (Babin and Attaway 2000). Likewise, online esthetic factors such as attractive color combinations play an important role in generating positive feelings that affect browsing, purchase intentions, and shopping time (Hall and Hanna 2004). Undoubtedly, a critical consideration for e-marketing is designing a web site in which customers feel free "to be" (Pine and Gilmore 1999). Childers et al. (2001) coined the term "webmospherics" to represent the virtual environment counterpart to the physical surroundings associated with the retail atmosphere. Included in the "webmospherics" are (1) structural design attributes (e.g., frames, pop-up windows, search engine configuration, hypertext links) (2) media dimensions (e.g., graphics, text, audio, color, streaming video) and (3) site layout dimensions (e.g., organization and grouping of merchandise). Each "webmospheric" dimension represents an important set of design choices that, when combined, comprise an online shopping environment that can either enhance or detract from the customer's esthetic immersion (Pine and Gilmore 1999).

Although e-marketers want to adorn their electronic doorways with very esthetic stimuli to encourage browsing and receptivity to impulse shopping (Menon and Kahn 2002), they must recognize that the quality of service as perceived by customers involves much more than having a state-of-the-art website. Although a web site is esthetically appealing, service failures may occur due to: (1) confusing navigation, (2) use of features that work only for customers with high-speed Internet access, (3) pop-up windows that appear at inopportune moments, (4) animations or images that cause computers to crash, and (5) ineffective search mechanisms that cause customer frustration (Petre et al 2006). Thus, e-marketers must closely collaborate with web designers and IT personnel in order to ensure the balance between web esthetics and service quality (Seybold 2001).

Theoretically, esthetic immersion on the Internet is conceptualized by the extent to which cyberspace can create telepresence (Steur 1992). When customers are on the Internet, they perceive two distinct spaces simultaneously: the virtual space that is presented through the computer and the home space where they are physically located. In the context of online shopping, telepresence describes the extent to which customers feel their presence in the virtual shopping environment. When customers feel an in-

tense telepresence, they are transported to a virtual storefront, where they can browse and shop as in a real store.

In order to activate a customer's sense of telepresence, the range of sensory information and the quality needs to simulate a real experience. Thus, one of the important technological issues in e-marketing is to provide web sites with a virtual reality (VR) interface that allows the customer to experience a 3D representation of a store that supports natural actions such as walking, looking around, and picking up products from shelves (Chittaro and Ranon 2000). Although almost all e-commerce sites currently use traditional 2D interfaces based on menus and links, a growing number of sites are deploying VR interfaces to attract customers. For example, Herman Miller (www.hermanmiller.com), a furniture retailer, provides a free downloadable virtual reality application that lets customers browse furniture in 3D room layouts. A VR interface, if properly designed, can bring numerous benefits: (1) it is more similar to the real-world shopping experience than traditional online shopping, (2) it supports the customer's natural shopping actions, and (3) it can satisfy customers' emotional needs by providing more immersive and arousing experiences (Chittaro and Ranon 2000).

To date, web designers have focused on such elements as colors, text messages, images, logos, and sounds, capturing only the visual and aural senses. Currently, the capability to relay smells through electronic networks hold the promise that smells can be deployed to make the e-commerce environment approach the ambience of traditional offline stores (Menon and Kahn 2002). In the near future, it may be possible to integrate haptic stimuli into the online shopping environment as the applications of virtual reality technologies advance and expand.

In designing an esthetic online experience, variation in the sensory intensity of the experience may be necessary to prevent customers from feeling either bored or burned out. By tracking consumers' online browsing activities prior to entering a virtual store, e-markers will be able to dynamically react to the emotional state of each consumer. If consumers indicate that they are experiencing too much sensory stimulation, they can be exposed to less arousing web pages. On the other hand, if consumers indicate that they are feeling pleased with what they have witnessed, they can then be exposed to more arousing links and experiences (Menon and Kahn 2002).

The Escapist

Escapist experiences can teach just as well as educational experiences can, or amuse just as well as entertainment; however, it involves a much higher immersion than the other dimensions. When people are involved in an escapist experience, they are totally immersed in it and nothing else matters while engaged in the experience. Further, they eventually become a part of the experience by actively participating in the immersive environment. Rather than playing the passive role of audience, watching others act, they become actors who can affect the actual performance. If the customers' active participation is minimized, an escapist experience becomes the esthetic dimension (Pine and Gilmore 1999).

The Internet is an inherently escapist medium that can fulfill people's desire for a "third place" set apart from home and work. It provides a welcome respite from reality, an escape from the everyday routine and the unsatisfying life circumstances. Examples of online environments that are essentially escapist include Massively Multiplayer Online Role-Playing Games (MMORPG) and virtual communities formed for primarily social purposes such as Internet Relay Chat (IRC).

MMORPG are the latest Internet-only gaming experience (Griffiths, Davis, and Chappell 2003). While players are experiencing a virtual world through their own 'player character' in these games, the lines between reality and fiction become blurred. The players literally become a part of the game themselves. This compelling experience during play triggers 'flow' (Choi and Kim 2004; Griffiths et al. 2003), an intrinsically motivated optimal state (Csikszentmihalyi 1990). On the Internet, flow is defined as "the state occurring during network navigation which is: (1) characterized by a seamless sequences of responses facilitated by machine interactivity; (2) intrinsically enjoyable; (3) accompanied by a loss of self-consciousness; and (4) self-reinforcing" (Hoffman and Novak 1996, p.23). Creating 'flow' may have numerous positive consequences including a strong word-of-mouth which is a key driver of customer traffic to e-commerce sites (Coupey 2001). Also, flow experiences can mitigate price sensitivity, and positively influence subsequent attitudes and behaviors (Novak, Hoffman, and Yung 2000).

With the rapid growth of the Internet gaming industry, e-marketers have turned to games as venues for disseminating advertising and promotional messages (Wan and Youn 2004). Embracing the idea of "advergaming" (Williamson 2004), they have incorporated interactive games into their web sites. One good example is Ford's online game for the Ford Escape, which features a lunar racetrack that allows visitors to challenge friends, via e-mail, to a "virtual race" (Hopper 2002). In 2002, the launch of Nike's Secret Tournament featuring a global virtual football match was phenomenal. More than a half million football lovers flocked to the site to train their own 'dream team' online and engage in a match (Lee 2003). Online game-related tactics help increase the overall quality of customer experience as well as brand awareness and customer loyalty (Choi and Kim 2004; Wan and Youn 2004).

More than anything else, virtual communities formed primarily for social purposes such as Internet relay chat (IRC) are at the heart of online escapist experiences. IRC is a multi-user, multi-channel chatting network that allows people over the Internet to talk to one another in real time without physical or visual contact (Peris et al. 2002). Because online chat rooms are based predominantly on text communication, most cues used in the traditional face-to-face community settings such as social status identifications are filtered out (Bagozzi and Dholakia 2002). This 'filtering out' environment is often described as a virtual pub or tavern that boosts freedom for social interaction between strangers (Bagozzi and Dholakia 2002). Some may argue that lack of real presence in online chats results in weaker relationship ties in terms of intensity and depth (Parks and Roberts 1998). However, research (Katz and Aspden 1997; Peris et al. 2002) shows that chat relationships are as real as face-to-face relationships and are not only deep and compelling but also rich and pleasant.

Chat rooms or other types of virtual communities for socially-oriented people are not just playgrounds where people come to play, but a place where e-commerce firms can expand their businesses by interacting with customers and giving them the human element that they crave. Research suggests that virtual communities can improve customer relationships (Hagel and Armstrong 1997), draw attention to their web sites (Preece 2001), and enhance opportunities for other business models (Timmers 1998). eBay and Amazon owe their phenomenal success to the creation of compelling community culture (Williams and Cothrel 2004). Likewise, Marthastewart.com is regarded as one of the most customer-enlightened web sites largely due to its effective virtual community operation. It offers regular chat sessions with stylish living experts including Martha Stewart, and its members are encouraged to share constructive "how-to" ideas one another through eight different bulletin boards (e.g., cooking, gardening, crafts) (Heim 2001).

Of the many ideas that have emerged in the business world by way of the Internet, few have proved more compelling than the virtual community (Williams and Cothrel 2004). Before long, the ability to create and manage virtual communities will become a distinguishing feature of nearly every successful e-marketing practice. However, it should be noted that the success of community is defined by the degree to which customers and firms rely on one another and on the integrity of the process by which reputations are built (Black 2001). If customers do not define the terms of membership commitment by themselves, a firm's attempt to build a virtual community would likely seem not only intangible and elusive but also manipulative and contrived.

Conclusions

When Pine and Gilmore wrote the book *The Experience Economy*, "experience" was a relatively novel concept in the e-marketing arena. Experience is now a word in every e-marketer's vocabulary. Increasingly, e-marketers will be expected to create highly differentiated customer experiences as a means to survive in the competitive marketplace. To ensure the success of experiential e-marketing initiatives, e-marketers need an understanding of what is involved in an experience and an outline that identifies the components of an effective online experience. Without these guidelines, too much is left to gut feeling or intuition, thereby making the strategic proposition incredibly speculative (Poulsson and Kale 2005). To this regard, the four dimensions of an online customer experience discussed in this paper may provide e-marketers with food for thought and promote a better understanding of the experience phenomenon on the Internet.

As new technologies continue to proliferate, e-commerce firms will be compelled to adopt and assimilate them to enrich their customer experiences. From a firm's standpoint, however, cost-benefit analysis is required. It is obvious that the adoption of the Internet as an experience platform involves greater technological investments than its adoption as a simple sales channel. E-commerce firms not oriented toward technology may benefit from partnering with technology-capable firms. By forming such

e-alliances, e-commerce firms could develop technical know-how and avoid trial-and-error situations that could cause negative financial ramifications. Examples of such e-alliances include Barnes & Noble with AOL to enhance online experiences and to keep abreast of changes in the virtual world, and Best Buy with Microsoft for similar purposes (Lee and Grewal 2004). Interestingly, research suggests that shareholders tend to value marketing decisions related to new technology and foresee future economic gains in the organizational adoption and assimilation of new technologies (Lee and Grewal 2004). In this regard, not only customers but shareholders may value the improvements in e-marketing that can be attributed to the adoption of advanced experiential technologies.

In conclusion, it should be pointed out that while incorporating the four dimensions of an online experience in a product/service offering does provide a competitive advantage, not all product/service offerings need to take the "experience route" to survive or prosper on the Internet (Poulsson and Kale 2005). For highly standardized goods/services, the Internet functions more as a sales channel than an experience platform (Hsieh, Chiu, and Chiang 2005). It is possible, for instance, to market search goods/services such as airline tickets through the static Internet marketing interface with short descriptions of key product attributes and basic decision aids (e.g., calendar). The consumption of such goods/services, after all, is not typically high in physiological or emotional involvement (Rosa and Malter 2003). For this type of goods/services, experiential offerings may be cumbersome, confusing, or a waste of the consumer's time and thus provide little added value.

For credence goods/services such as financial and legal services, customers are not confident in their ability to judge the quality of the offerings (Hsieh et al. 2005). Accordingly, trust is more important than experience to ensure customer patronage. However, experiential components may help customers assess a firm's credibility and benevolence (Doney and Cannon 1997). For example, the emotional attachment that a customer may develop for the community sponsored by the firm enables inferences of the business's trustworthiness (Papadopoulou et al. 2001). In turn, these inferences promote the customers' commitment to the firm (Morgan and Hunt 1994).

Notes

1. Adam and Shaw (2001) criticized that Pine and Gilmore's (1999) model is a mere artifact and lacks conceptual robustness. They conducted empirical research in an online context to examine the two axes of an experience as conceptualized by Pine and Gilmore (1999). Their analysis revealed that the two axes are not completely independent with ominous implications about their validity. However, Christodoulides and Chernatony (2004) argued that the adoption of single-item measures for capturing the two axes of an experience (as opposed to multi-item measures), raises concerns about the generalization of Adam and Shaw's (2001) findings.

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Opportunities of International E-Services: A Conceptual Model

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Abstract

Internationally, the role of e-services in the effective and efficient functioning of firms is expanding and evolving. This evolution is significantly impacting customer and market behaviors. As a result, most firms have started developing and enhancing the e-services functionality to effectively deliver products and services. E-services can be used to automate, informate, and transform customer relationships and marketplaces. This paper highlights the scope of e-services in changing marketplaces and discusses e-services in an international context, utilizing a framework that will allow researchers and managers to understand the impact of country-level effects on e-services strategies. The paper suggests that, due to penetration of e-services, some firms will have the ability to transform markets. Directions for future research and managerial implications are also highlighted.

Keywords: E-Services, Transformation, Marketing, International, Customer, Marketplace

Introduction

E-services use information technology as a platform that enables firms to adapt to the needs of customers, reduces transaction costs, and allows customers to move from time- and location-based behaviors toward non-temporal and non-locational behaviors (Watson et al. 2002; Sheth and Sharma 2005). E-services can create a fundamental shift in business and consumer behaviors as leading firms utilize e-services functionality in order to more effectively serve their customers.

E-services have traditionally been regarded in two domains, and this paper examines the opportunities of international e-services for both areas. The first domain is that of utilizing technology to reduce human interaction. In this domain, e-services entail humans interacting with computers rather than humans interacting with humans. Examples are such functions as information provisioning, order entry, and automated email systems (e.g., order acknowledgement). The second domain is the actual delivery of the service through communication technology, without human intervention from the service provider. An example is airline ticketing through e-tickets. The opportunities of e-services are extensive, as suggested by the range of papers in this special issue.

In order to understand the opportunities and issues faced by e-services, the paper first defines e-services and utilizes a traditional model from information systems in order to better understand the scope of e-services. Three types of services outcomes emerge – automate, informate, and transform. In the context of e-services, automate refers to automating business processes; informate refers to providing data and information to consumers to empower better decisions; and, transform refers to fundamentally altering and redefining the traditional business processes and relationships.

The choice of appropriate e-service strategy in international markets is a difficult decision. There are recommendations that common e-service strategies be used due to the commonalities across international markets (c.f., Levitt 1983; Ghoshal 1987; Walters 1986; Wind 1986; Yip 1989; Samiee and Roth 1992). However, a country's infrastructure for e-services and marketing institutions leads to the suggestion of targeted strategic development of e-services strategies in different countries (c.f., Quelch and Hoff 1986; Douglas and Wind 1987; Sheth and Sharma 2005). Differentiated e-service strategies are the focus of the paper.

The emphasis in this paper is on identifying e-services opportunities and issues in international markets that are based on country development. The paper builds on previous work (e.g., Sheth, Sisodia, and Sharma 2000; Sheth and Sharma 2004), and borrows extensively from research by Sheth and Sharma (2005). Following the introduction, the paper provides an overview of the role and scope of e-services. A framework developed by Sheth and Sharma (2005) is utilized for classifying countries based on the "country's infrastructure development" and "country's marketing institutional development." Based on this classification, a framework that examines the type of e-services strategies that will be successful in different international contexts is developed. The final section highlights the implications of these findings on marketing thought and practice.

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E-Services: Scope and Role

The domain of e-services is large and not been explicitly delineated. As stated earlier, e-services have traditionally been discussed in the context of two distinct domains. The first domain is utilizing information technology to automate processes that reduce human intervention (e.g., Singh 2002). Examples are information provisioning, comparison shopping, order entry, and emails (Singh 2002). The second and more interesting domain is the actual delivery of the service through information technology (e.g., Javalgi et al. 2004; Schultze and Orlikowski 2004). In some cases there is no human intervention and firms use technology to fulfill the service. The context in these cases needs to be services that can be digitally delivered. Examples are airline ticketing through e-tickets.

This paper examines both domains and uses a classification scheme that allows the inclusion of both domains. Research has suggested that information technology roles can be defined through the three constructs of automate, informate and transform. Schein (1992) suggests these constructs in the domain of strategic IT vision, Armstrong and Sambamurthy (1999) in the domain of a firm's business activities and competitive strategies, and Chatterjee, Richardson, and Zmud (2001) in the context of the role of a CIO. Building on these concepts, Chatterjee, Richardson, and Zmud (2001) suggest that automate refers to replacing human labor by automating business processes, informate refers to providing data/information to empower management and employees, and transform refers to fundamentally altering traditional ways of doing business by redefining business processes and relationships.

The three constructs can be translated to reflect the domain of e-services (Table 1). Automate suggests that activities that once required human intervention are moved to automatic processes through information technology. There is no shift in the fundamental relationship between firms and customers. One of the major forms of automation in e-services is product and service specification, and information provided to customers. Almost all firms have Internet sites that provide product/service specifications and information to customers. These sites typically provide more detailed information than salespeople could provide.

Table 1: Domain of E-Services

(Adapted from Schein 1992, Armstrong and Sambamurthy 1999 and Chatterjee, Richardson, and Zmud 2001).

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

Informate, in the context of e-services, suggests that firms provide customers with higher levels of information on services and interaction. For example, when the form of information is very complex (in terms of presentation to customers), information

technology provides firms an easy method to display information. Such a condition is seen in Internet travel services sites which can provide all the information that a customer may need. Sites such as www.gepolymerland.com allow B2B customers to download plastics product information or plastics applications specific to their industry, or even to design their own plastic specifications. In the same context, there are third-party sites and customer forums that provide additional product and service information to customers (e.g., www.mysimon.com). In addition, firms provide opportunities for comparison shopping, customer evaluations, and even buying (e.g., Amazon.com).

Transform, in the context of e-services, is the use of information technology to change the structure of customer relationships, market, and competition. For example, information technology has moved airline ticketing from travel agents to online booking sites. Similarly, the use of EDI has allowed firms such as Wal-Mart to dominate their markets.

Advantages of E-Services in International Operations

E-services provide distinct advantages in international markets and we first discuss the advantages for a firm, followed by the perceived advantages for a customer. The discussion in the previous section suggests that the advantages of e-services for firms in international markets are reducing costs, enhancing reach, increasing competitive advantage, and even transforming markets. One of the reasons is that the cost of an e-services platform is typically more expensive to set up, but has lower operating costs than other marketing platforms such as face-to-face salespeople or middlemen/ distributors. The advantage of setting up an e-services platform is that it allows firms to reach customers who may not be accessible due to temporal and locational limitations of existing distribution channels (Sheth and Sharma 2005). Finally, e-services can enhance customer relationships. E-service platforms reduce inputting errors, and in some cases are preferred over traditional interactions. The reason for the preference is that customers can make decisions from any location, at any time, and take as long or as short a time as needed to make decisions.

E-services platforms provide four areas of advantage for customers (Sheth and Sharma 2005). First, the customer can obtain unlimited information from firms. This allows customers to see as much information as they need to make decisions. The amount of and access to information in e-services platforms are greater than any other form of contact because information technologies allow firms to increase the amount of information that can be provided to customers. Additionally, and more importantly, the customer can seek information in a form that can be more easily processed and understood. Second, outcomes can be customized by individual customers; i.e., customers can design products and services that meet their specific requirements. For example, flight selection, check-in, and seat assignment can be completed on the Internet. Third, e-services platforms can allow transactions between customers and firms that would typically require human contact, as in the case of successful firms such as Dell and

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Amazon.com. This form of contact (non-human intervention) is preferred by segments of customers. Finally, e-services can change the market in such a manner that may cause e-services to be the preferred platform of interaction, leading to higher customer loyalty. For example, on-line banking is used in this context. As customers start using the online banking system, payee and account information is kept on the bank's e-service platform. This makes customer switching more difficult, and thereby enhances loyalty.

Country Effects on E-Services

The Framework

This paper's examination of the effect of country on e-services utilizes the classification suggested by Sheth and Sharma (2005), who categorized countries based on two dimensions – country's infrastructure development and country's marketing institutional development. They note that previous research has highlighted the effect of these dimensions on marketing practices (Sharma and Dominguez 1992; Malhotra and Ulgado 1994; Johnson and Arunthanes 1995; Iyer 1997).

Country's infrastructure development refers to roads, telecommunication, legislative bodies, and open and free judicial systems (Sheth and Sharma 2005). There are two reasons for inclusion of this dimension in the Sheth and Sharma (2005) analysis. As a result of e-services dependency on information technology, telecommunication density, broadband access, and data processing devices (including PCs and mobile phones) address the issues of availability and access to the tools of e-services (Watson et al. 2002). Second, weak legal and legislative infrastructures increase transaction governance costs (Sharma and Dominguez 1992; Johnson and Arunthanes 1995; Iyer 1997). E-services platform can reduce transactional costs only in areas where legal institutions support and enforce digital transactions.

Marketing institutional development is associated with availability of competitive, efficient, and effective marketing institutions that include efficient and effective distribution and communication (media) channels (Iyer 1997; Sheth and Sharma 2005). Marketing institutional development typically manifests itself through a large number of efficient and effective channel members, as well as a strong logistics industry, that supports marketing oriented distribution (Sharma and Dominguez 1992). Marketing institutional developments is not always correlated with economic development, as domestic rules and regulations can decrease channel effectiveness (Sheth and Sharma 2005). For example, Japan is a developed economy but has low levels of channel effectiveness, as distribution channels in Japan are long and the distribution cost is high (Goldman 1992; Sharma and Dominguez 1992). To summarize, marketing institutional development is associated with competitive marketing offerings; i.e., competitive, efficient, and effective marketing institutions are available to marketers in countries with highly developed marketing institutions (Iyer 1997; Sheth and Sharma 2005).

Classification of Countries

Based on the two dimensions discussed in the previous section, Sheth and Sharma (2005) divide countries based on this two-by-two matrix (Figure 1). Four cells reflect country classification based on the infrastructure development and marketing institutional development.

Figure 1: Classification of Countries

		Developed Infrastructure – Restrictive Marketing (Japan, Germany)	Developed Infrastructure – Competitive Marketing (US, Hong Kong)
Country's Infrastructure Development	High		
	Low	Developing Infrastructure – Restrictive Marketing (Vietnam, Indonesia)	Developing Infrastructure – Competitive Marketing (Mexico, Brazil)
		Low	High

Country's Marketing
Institutional Development

Sheth and Sharma (2005) suggest that developed infrastructure and developed marketing institutions are available in advanced countries such as the US and Hong Kong (Sharma and Dominguez 1992). These countries have developed infrastructure and have rules and regulations that allow the development of competitive marketing institutions. For example, in Hong Kong laws that have allowed it to be an open marketplace with few restrictions on imports or exports have created an environment of enhanced competition. Firms in such countries have access to efficient and effective distribution and communication channels to market their products to customers (Sheth and Sharma 2005).

Some countries demonstrate developed infrastructure but restricted marketing development (Sheth and Sharma 2005). Typical examples are countries such as Japan and Germany. These countries have rules and regulations that protect legacy institutions such as small retailers. This leads to a lack of marketing institutional development, i.e., distribution channels are neither efficient nor effective (Sharma and Dominguez 1992). An example of channel restrictions is Germany, which has stringent time restrictions on store hours. Another example of restriction is limiting the size of stores (e.g., Japan) (Goldman 1992). Similarly, regulations such as advertising restrictions, minimum margins, and resale price maintenance also reduce the efficiency and effectiveness of marketing institutions (Sheth and Sharma, 2005).

Some developing countries have low levels of infrastructure development but have developed marketing institutions (such as retailers and media), as discussed by Sheth and Sharma's (2005) examples of Mexico and Brazil, which have distribution institutions

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such as Wal-Mart and Carrefour. In addition to efficient distribution channels, both Mexico and Brazil have highly developed print and television media. In these countries, if physical distribution is not available, firms use alternative distribution systems that are efficient and effective. For example, Avon uses over 400,000 direct salespeople in Brazil, some of whom sell in the interiors of the Amazon. An important issue in such conditions is the reality that not all consumers have access to e-services platforms.

The last category of country classification includes countries with both low infrastructure development and low marketing institutional development. This classification includes developing nations that have not developed efficient and effective marketing institutions due to geography (e.g., Indonesia) or legal restrictions (e.g., Vietnam) (Sheth and Sharma 2005). This developmental pattern is also seen in ex-Communist countries (Ennew et al. 1993). Customers in these countries have limited access to e-services systems, and the cost of marketing institutions is high for both companies and customers.

Country Classification, Opportunities, and Threats

Using the country classification and the framework suggested by Sheth and Sharma (2005), introduction and profitability of e-services can be effectively discussed.

Introduction and Emphasis of E-Services

The evolution of e-services will first be seen in countries with developed infrastructure and competitive marketing institutions. The primary reason for early adoption is that these countries have readily accessible information technology infrastructure, and customers have already invested resources to enable them to access these infrastructures. In the initial stages, the focus will be on reducing costs and increasing access.

E-services will evolve in a different manner in countries that demonstrate developed infrastructure but restricted marketing development. The primary focus will be on increasing reach and bypassing traditional customer access infrastructures. For example, most European airline telephone support ceases at the end of office hours due to restrictions on work schedules. E-services allow firms to bypass traditional information distribution structures and allow customers to access the firm 24/7. In the context of e-services, it is no surprise that countries that have under-developed marketing institutions such as Japan and South Korea are among the largest adopters of e-services tools such as mobile phones that enable marketing transactions.

E-services will be adopted later in countries that have low levels of infrastructure development but have developed marketing institutions. The traditional cost advantage is not apparent and existing marketing institutions do provide services that customers need. E-services will evolve to provide services (e.g., information) that traditional distribution structure does not provide. As an example, Lojas Americanas, a Brazilian department store chain, provides information on its entire inventory by allowing custom-

ers access to its web site and virtual store at http://www.americanas.com.br from kiosks inside the store (Sheth and Sharma 2005). The web site contains products that the store may not stock or that may need to be customized. Additionally, if the customer has problems interacting with the web site, customer service personnel are available to help (Sheth and Sharma 2005).

Few e-services are seen in countries where there is both low infrastructure development and low marketing institutional development. The cost and reach advantage does not overcome the lack of access to e-services platforms and the lack of savings.

Profitability

As discussed, in countries with developed infrastructure and competitive marketing institutions the focus of e-services will be on reducing marketing costs. Because all firms in a market already have access to efficient and effective communication channels and these firms will also attempt to reduce costs by enhancing e-services strategies, the cost savings will not be large. Therefore, medium levels of profitability are expected in these situations.

In countries that demonstrate developed infrastructure but restricted marketing development, e-services are expected to emphasize automation. Therefore, higher levels of profitability are expected due to lower levels of competition at the marketing institution level and high costs of existing infrastructure. E-services will allow firms to bypass traditional distribution structures. This may be the reason why Amazon.com's profits in Europe are growing at a faster pace than in the US, as existing booksellers in Europe are inefficient and have high costs.

Countries that have low levels of infrastructure development but have developed marketing institutions will need to provide e-services that provide product and service information to their customers. The cost of developing e-services infrastructure will be high, and therefore the expectations of profitability in the short term are low.

Finally, in countries that have both low infrastructure development and low marketing institutional development, the cost of e-services infrastructure and institutional development will be high and demand will be low, leading to negligible profits in the short term.

Types of E-Services that Will Succeed in Different Countries

In this section, analysis suggests that successful e-services strategies in international markets will depend on existing infrastructure and marketing institutions. These expectations are presented in Figure 2.

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Figure 2: Successful E-Marketing Strategies

Countries with high infrastructure development and high marketing institutional development are expected to have high levels of e-services penetration. With easy access to e-services institutions, both firms and customers will gravitate toward e-services for its efficiency and effectiveness. This is true of the US market, which has high penetration levels of e-services strategies. After the initial stages where the focus is on reducing marketing costs and increasing reach, firms will need to develop other e-service strategies. This, the first stage of development will mainly deal with "automate." The second stage of development will be to informate. At this stage, firms will provide information to allow customers to make better decisions. In the initial stages, third-party sites like Amazon.com and Orbitz.com will grow. The primary reason is that customers can obtain in-depth and comparative information from visiting a single site. It is at this stage that firms like Shopping.com and Mysimon.com prosper. However, these strategies are also easily copied. For example, a firm like American Airlines sells its own as well as competing airline tickets on its website. The informate stage is also expected to be a transitory phase. The final and the only successful strategy would be to transform the marketplace through the utilization of information technology. An example of this business model is Salesforce.com, which maintains databases on the web that can be accessed by its clients, as opposed to the traditional method in which firms like Seibel sell the software that needs to be maintained by the firm. The e-services platform is less expensive and provides better access than in-house platforms. As evidence of market transformation, the advent of online travel booking sites has caused a decline in the number of travel agents in the US. Firms such as Overstock.com that primarily deal with liquidated merchandise have prospered by changing the paradigms of overstock shopping. At the same time, catalog-based retailers such as Service Merchandise have declined and on-line catalog firms such as Buy.com have prospered. E-services strategies that can provide products and services in a digitized format can also transform markets. Digitized information reduces the need to physically deliver products and services for the marketing firm and reduces the need for existing distribution channels. As an example, e-services strategies that provide digitized product and service sites for music (e.g., iTunes), software (e.g., Norton) and information (e.g.,

Wall Street Journal) are increasingly changing the nature of markets.

Countries with high infrastructure development and low marketing institutional development are expected to have medium levels of e-services penetration. The reason is that although the infrastructure support for e-services is present, the distribution and media channels do not efficiently provide the products needed by firms and consumers to adopt e-services innovations (Sheth and Sharma 2005). This seems to be the case for countries such as Japan and Germany. The focus of e-services will be on automation to reduce costs (bypass high-cost labor) and to increase reach (24/7 availability). The emphasis on automation will take two paths. First, third-party firms that provide products and services to customers through e-services will emerge. These firms will be equivalent to physical retail institutions, but with dramatically lower cost structures. Such third-party retailers will be more successful in these countries because of the high cost of existing marketing and distribution institutions. Examples of such third-party retailers are Amamzon.com and Buy.com. Second, firms will develop e-services strategies that will allow them to bypass existing channels of high-cost distribution channels. This type of successful marketing strategy has been followed by firms such as British Airways, Dell, and IBM. It is expected that the e-services strategy that will succeed will be one of automation that reduces the impact of high-cost distribution structures.

Countries with low infrastructure development and high marketing institutional development are expected to have low levels of e-services penetration due to the lack of infrastructure support (Sheth and Sharma 2005). As mentioned, this is exemplified in countries such as Mexico and Brazil. Due to low labor costs, these countries will not achieve the benefits of automation. Firms in these countries will need to informate to be successful, and will look for openings in the market space that display lack of information. An example is the real estate market in countries such as India. There is no central registry of properties for sale and each agent handles his or her own listings. A customer must travel to multiple agents in order to access listings. In response, newspaper firms are now developing a central listing of properties for sale that is culled from both their advertisements and the advertisements in competing publications. This is an example of firms using e-services to informate customers. The second type of e-services strategy that firms use is extending e-services to customers in order to enhance reach. A useful example is that of Lojas Americanas, the Brazilian department store chain that provides access to its web site and virtual store from kiosks inside the store.

Finally, countries with low infrastructure development and low marketing institutional development are expected to have negligible levels of e-services penetration, due to non-support from key institutions (Sheth and Sharma 2005). This phenomenon is observed in countries such as Vietnam, Indonesia, and CIS nations. In these countries, firms have little incentive to develop e-services. Airlines and corporate hubs are being observed in these countries.

Managerial Implications and Directions for Future Research

This paper examines a critical and interesting area of research – e-services penetration and success strategies in different country contexts. An existing framework is used to first classify countries based on their infrastructure development and marketing institutional development. The evolution of e-services strategies in these countries, with exemplars of the more successful strategies that will emerge, was discussed. This paper has implications for both managers and future research.

Managerial Implications

The first and primary managerial implication is that countries are not at the same stage of infrastructure development and marketing institutional development, and therefore a standardized e-services global strategy should not be used. The paper also suggests that existing firms need to be cognizant of the emerging competition from firms practicing e-services strategies. Firms need to be early adopters of e-services strategies or they will face competition from entrenched e-services providers.

Firms need to develop unique e-services strategies based on the countries where they operate. In countries that have both high levels of infrastructure development and marketing institution development, the market penetration with e-services strategies will be high but the profitability will not be high. In this situation, the successful e-services strategies will be oriented toward transforming markets. Most firms will have to follow e-services strategies that transform markets, or face failure. For example, Blackman (2004) reports on two electronic retail stores in New York. J&R's Computers followed e-services strategies (strong online presence) that transformed electronic product markets, and flourished, whereas 47th Street Photo did not follow e-services strategies and was forced to close retail operations.

In countries with developed infrastructure and less developed marketing institutions, firms will utilize e-service strategies to increase the automation of services. These e-services strategies will be successful due to enhancement of reach and reduction in costs, and will also be highly profitable. Firms that do not follow e-services strategies will face a cost disadvantage. Retailers will be in danger of disintermediation.

In countries with less developed infrastructure and highly developed marketing institutions, firms will need to develop e-services strategies that informate. These e-services strategies will be expensive and returns will be low in the short term, but will improve in the long term. There may be advantages to creating early informate strategies that may not be easily duplicated.

In countries where both infrastructure and marketing institutions are not developed, firms will require large investments for implementing e-services strategies. The returns will be negligible in the short term, and returns are not guaranteed in the long term.

Directions for Future Research

The framework and proposition that have been presented here are based on the literature and case studies. There is a need to empirically examine the framework and to determine whether the dimensions adequately capture the complexity of international markets. The framework has also utilized broad categories of countries. As well, it will be important to develop metrics for better classification.

The framework also develops assumptions for penetration and profitability of e-services in distinct country markets. There is also a need for empirical demonstration of these expectations. The paper also suggests certain directions of movements in e-service markets and success factors that need to be better understood empirically.

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Customer Loyalty in Electronically Mediated Environments

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Abstract

For brands that are consumed in electronically mediated environments (EMEs), customer loyalty is a strategic imperative. We report results from a qualitative study where consumer descriptions of their brand experiences were used to develop key loyalty themes for six brands in three categories. Consumer loyalty can be characterized along seven consumption bases, though different brands and categories are positioned differently along these bases. Importantly, we posit a process model showing that loyalty "builds" over time as consumption proceeds through the stages of adoption, conversion, and (dis)adoption. A key factor in converting new adopters to be loyal is the extent of *efficiency* and *effectiveness* perceived along these loyalty bases. The process of customer loyalty emerges as complex and multi-faceted being punctuated by chance events.

Keywords: Customer Loyalty, E-Loyalty, Learning, Customer Satisfaction

Introduction

The financial well-being of firms is intricately linked to their ability to develop a base of loyal customers: not only is the cost of retaining an existing customer less than the cost of acquiring a new customer, but it is also the case that loyal customers cost less to maintain than newly acquired customers, are likely to purchase more, and decrease advertising costs via positive word of mouth. These benefits are even more pronounced for firms that cater to consumers in electronically-mediated environments (EME). Such firms typically have relatively high customer acquisition cost and slow revenue streams due to non-monetization of online consumer activities (Bulkeley and Carlton 2000). Thus, the importance of understanding customer loyalty in EMEs is a clear strategic imperative for firms.

Yet, very little is known about *how* customer loyalty occurs for brands that are primarily consumed in an EME. Extant approaches to customer loyalty are based on consumption of products and services in *physical* environments (e.g., Anderson and Sullivan 1993; Bolton 1998; Rust, Zahorik, and Keiningham 1995; Thorbjornsen et al. 2002). Though germane, such approaches may not fully inform loyalty for brands consumed in EMEs. Consumption patterns and motivations in the two environments can be very different (Novak, Hoffman, and Yung 2000). For instance, while waiting time in the checkout line may be relevant in a physical grocery store, security and privacy issues may be more relevant in an e-store. Such differences can not only have a differential impact on customer loyalty in EMEs, but also present unique opportunities and challenges − conceptual and strategic − that must be addressed to increase customer loyalty in EMEs. Building on this broad mandate, we ask three specific research questions to guide our research:

1. What consumption themes form the basis for customer loyalty in an EME?

2. What are the similarities and differences in consumption themes across different brands and categories?

3. Is there a process-model that describes how newly acquired customers become loyal to a brand?

We report results from a large-scale qualitative study designed to answer these questions. The study included in-depth interviews and focus-groups with consumers of brands primarily consumed in EMEs. Six brands representing three categories − portal sites (AOL, Yahoo!), commerce sites (Amazon, eBay) and email services (Mulberry, Lotus Notes) − were studied.

Despite similarities, consumption in EMEs differs from consumption in physical environments in ways that are subtle yet important (e.g., Hoffman and Novak 1996). First, many factors − store location, hours of operation, and waiting time in lines − that may be drivers of retention at physical stores become irrelevant in EMEs. Instead, new factors such as privacy concerns and security issues become germane in EMEs. Second, consumers are confronted with new demands and challenges in EMEs. For instance, to be able to shop in a virtual store, consumers must first have a basic level of computer literacy and understand the various icons used to navigate through and transact busi-

ness at a virtual store. Third, compared to physical environments, EMEs may foster qualitatively different types of consumer-brand or consumer-consumer interactions and relationships. Finally, in the absence of face-to-face interaction consumer relationship with a brand or service provider can be very different. Given these unique aspects to EMEs, an in-depth examination of customer retention in such an environment is warranted.

Research Setting

We conducted our research in the context of three categories that are widely consumed in an EME: portal sites, commerce sites, and email services. For each category, we chose two brands. This provided us with six brands: portal sites (AOL and Yahoo!), commerce sites (Amazon and eBay), and email-services (Mulberry and Lotus Notes). These categories and brands gave us a broad coverage of consumer experiences in EMEs ranging from content consumption to full-fledged marketing exchanges. Note that, excluded from this are brands typically associated with business-to-business exchanges, as that is not the domain of our research.

Table 1: Research Design

Research Phase	Goal	Method	Number of consumers
Phase 1	Develop an initial understanding of brand consumption in EME	Six in-depth interviews lasting 45-60 minutes	6
Phase 2	Elaborate on consumer consumption of brands in EMEs, with a focus on specific consumption instances	Six focus groups each lasting between 60-90 minutes	52
Phase 3	Identify key themes characterizing consumption of and loyalty toward brands in EMEs	Iterating between data and theory	--
Phase 4	Refining themes identified in Phase 3	Discussion with six consumers each session lasting 60-90 minutes	6
Phase 5	Surface and elaborate on a process model that describes how consumers who adopt a brand become loyal to it	In-depth interviews each lasting 1.5--2.5 hours with 24 consumers at different stages of consumption: adoption, conversion, and loyalty/dis-adoption	24

Table 1 provides an overview of the research approach used. We adopted a discovery-oriented approach. Rather than rely on either field research observations, or existing theory and literature, we iteratively synthesize literature and field-based insights to develop a comprehensive conceptual framework (e.g., Glaser and Strauss 1967). The research was done in five specific phases and involves a total of 52 consumers each providing data for at least 45 minutes and in some cases over 200 minutes. Phase one consisted of in-depth interviews, each lasting between 45 to 60 minutes, with six consumers to gain an understanding of their online consumption and to identify a broad set of areas that were germane to their likelihood of continued usage of brands. We encouraged consumers to expand and elaborate upon their consumption experiences, focusing

on specific events during consumption that had enhanced or impeded their relationship with the brand under consideration. Insights from these interviews were used to develop a focus group protocol for phase two.

In phase two, we conducted six focus groups with 52 consumers, each lasting between 60-90 minutes. Two focus groups for each of the three categories were conducted. For each category, consumers discussed the two exemplar brands and any other brands that they thought relevant to illustrate their experiences and points of view. Each consumer described specific instances that illustrated or refuted the broad set of areas identified in the first phase of the research. Importantly, participants added to, (dis)agreed with, and expanded on issues raised in the focus group discussion. Such a serendipitous approach provided many new insights and over the course of the focus groups a "thick" description of consumer-brand interactions in EMEs surfaced. In phase three, we iterated between data (focus group transcripts) and theory, to identify elements central to loyalty in EMEs. One key goal was to identify organizing themes that richly, yet parsimoniously, capture the data collected during the focus groups. Once the key themes had been identified, they became the classification categories for coding the focus group transcripts. Two coders coded each thought in the focus group transcript into these categories (see Tables 2a and 2b for examples). The initial inter-rater agreement was 85%, and all subsequent disagreements were resolved by discussion. The categories were then analyzed using correspondence analysis (Hoffman and Franke 1986) to visually depict the positioning of brands relative to the loyalty themes.

In stage four, we further refined insights developed and discussed them with six more consumers, one consumer of each of the six brands. These consumers were not a part of our initial interview sample or the focus groups. Each consumer had been using the brand for at least six months, and indicated that they would continue to use it. This round of interviewing was more proactive, where we asked consumers to comment on our framework and suggest refinements based on their individual experiences. We view this stage of research as a form of 'triangulation.' As suggested by Hirschman (1986), this step enables us to assess the level of *credibility* (i.e., did the authors interpret the responses of the consumers as they had intended), *transferability* (i.e., to what extent do these interpretations apply across the different contexts such as product categories and consumer situations), *confirmability* (i.e., the consumers in stage four "audit" the framework and confirm that it is not biased), and finally, *dependability* (i.e., to what extent are the phenomenon stabile across multiple human beings). In other words, comparison across different consumers and subjecting our reports and interpretation to their scrutiny addressed the four criteria held as key for a humanistic approach used here.

In stage five, we sought to develop the underpinnings of a process model to characterize the emergence of loyalty over time. We conducted an additional 24 in-depth interviews, each lasting from 1.5 to 2.5 hours. We conducted six interviews with recent adopters of a brand (those who had started using the brand within the last one month), six with consumers in the transition phase (had used the brand for 1-6 months), and six with loyal consumers (had used the brand for at least six months and would continue to use it). The six interviews at each stage represented the six brands. That is, at each

stage one customer for each of the six brands was included. Further, we conducted six additional interviews with switchers: consumers who had stopped using one of the brands considered in our study and switched to a different brand within the last three months. This design provided us with a total of 24 interviews, 18 with current users at different stages of adoption and loyalty, and 6 with switchers.

During the interview we encouraged respondents to narrate their consumption experiences and patterns focusing on critical incidents that may have encouraged them to become loyal to the brand or switch from it. Toward the end, we asked them to discuss anything that would make them continue using or disadopt the brand. This revealed how the importance of the loyalty themes varied over time, and helped us articulate the process framework.

Results

We discuss our results with respect to the research questions that guided this project. We extensively use specific quotes from customers to illustrate the insights offered by the analysis.

Q1: Key themes characterizing consumption in EMEs

We found seven specific themes characterizing consumption and loyalty in EMEs. Exemplar statements for each theme are shown in Table 2 with respect to AOL.

Table 2: Consumption Themes and Illustrative Quotes for AOL

Tangibles and Offline Factors
I kept getting kicked off all the time. It was really frustrating so I switched to CompuServe. **(-)**
The browser kept stalling so I called tech support. I had to wait 15 minutes, but when he came on he was great.
My dad got AOL because it is the most established, and everyone knows about it. I mean they won't go out of business. **(+)**
I like two things. Reliability, nothing ever has gone wrong, and accessibility, you can access it anywhere like a cell phone. **(+)**
It is always busy when I am trying to sign on. **(-)**
Economic Value
The free CD I got in the mail persuaded me to use it. It was free and then I got hooked. **(+)**
It is a cheaper form of communication. The flat rate is great. (+)
They give you like seven hundred hours free. To let you try it out, and there is no obligation. So that puts you at ease. **(+)**
As for my ISP, I really don't care who it is, just so I can check my email. I have no loyalty base, I will go with the cheapest one.
I used the free hours, but then never bothered to go back. It is out of my budget. **(+/-)**
My roommate keeps getting these offers, and we keep using them up. It is like free access. **(+/-)**

Content

They have keywords that help you find stuff. It is easier to remember keywords than a web address. **(+)**

It is great, because I can keep records of all my emails. **(+)**

"My AOL" has this block thing that keeps kids away from all the porn on the Internet. **(+)**

AOL has sites like AOL Canada so you can contact your friends in Canada. You can also find out about those countries. **(+)**

They have it set up so everyone in our family can find their own niche. Not like Compuserve, which was mainly business oriented. **(+)**

I hate all the junk mail I get, especially the pornographic mail. I don't like the offers sent in mail. **(-)**

My parents don't like it because they found my kid brother looking at some adult sites. **(-)**

I hated the advertisements after this and that. I hate those pop-up boxes. **(-)**

Process

It is so easy to use. It was self-explanatory to set up. You just click on menus and icons and it takes you where you need to go. **(+)**

Instant Messenger is great. I get to keep in touch with all my friends and it is just so cool. **(+)**

Emailing is so easy. You can attach documents without worrying about FTPing them. You can download items with just a click. **(+)**

I have a scanner that I never used, and I said well, I'll go to and I went on AOL and it showed me how to scan a document. **(+)**

I know all the AOL icons by now. If you want to go to your favorites, they have a little heart. **(+)**

Well I stopped using it because it was too slow. It would take forever to load web pages. **(-)**

Sometimes when you are trying to download things, it takes forever to download. **(-)**

When you are on instant messenger talking through AOL, you have to click send and that is really annoying. **(-)**

Customization

If I switch, it would be an inconvenience changing my email and all, so I will stay. **(+)**

My AOL is great because it lets me track my stocks, put my buddy list, and a personal calendar. **(+)**

You can just go to preferences, go to marketing then shut off advertisements. That's cool. **(+)**

I have my zip code typed in, so I get the local weather and news and everything. **(+)**

I created this buddy list, and I know instantly which of my friends are online. **(+)**

After I came to the University, I still kept my AOL account because my high school friends use it to email me. It would be such a pain to switch, so I use both my college and AOL account. **(+)**

I set in all the parental control stuff, so my kid brother got locked out of certain sites. **(+)**

Community

I really like the chat-rooms. I have met some of my best friends online and I am so glad to have AOL. **(+)**

I love the AOL community. You really get to know the person on the other end…you don't get a first impression in terms of just looks. **(+)**

There are a lot of perverts on AOL. **(-)**

I like AOL because all my friends have it, and it is the best way to keep in touch without spending a lot of money. **(+)**

It can be fun for kids. My little brother would stay online and chat with his friends all day. **(+)**

Well it is nice because I can keep in touch with my grandma. She is deaf, so a 5-minute call would take an hour with her. With AOL she understands everything in the first instance. So cool. **(+)**

They also have Internet call waiting. If you're online, a thing will come up on your screen saying you have another call. It's like caller ID, so if you want to take it, you can sign off and pick up the phone. **(+)**

Privacy/Security/Trust

If you have any kind of profile, random people will start to IM you saying things that are downright offensive. **(-)**

Anyone can get your screen name. My sister gets these stupid sexual IM's when she is on. **(-)**

Sometimes AOL can ruin your computer. My friend got a virus from AOL that ruined his hard drive. **(-)**

I check my stocks everyday, and the security is insane. If you try to open up certain pages, it goes weird. AOL will automatically stop you. Maybe they don't need so much security. **(+/-)**

I tried one of the chat rooms, but after that I got so much porn email. It is scary how they give your information to everyone. **(-)**

I use it to do my shopping plus pay my credit card and cell phone bill because I feel very secure with AOL. **(+)**

Parentheses indicate the likely impact of each component on customer usage and loyalty

Tangibles and Offline Factors: A tangible product and offline services associated with a brand featured prominently in consumer description of their consumption. As with physical environments, a tangible article associated with the brand was a key factor in consumption. For commerce sites (eBay and Amazon) the tangible products purchased became the conduit through which consumers established their connection with the brand (e.g., *I got a great a diamond for my girlfriend on eBay*). Such relationships between consumer and the brand were stronger for unique tangibles such as antiques and collectibles than for non-differentiated products like books or electronics. Even for non-commerce sites, a tangible product was instrumental in conveying brand image and identity to consumers (e.g., *My dad got AOL because it is the most established. He had seen it so many times on the CDs that we get*). In other words, the tangible product not only played a role in initiating the relationship between the consumer and the brand, but also in strengthening it.

In terms of offline factors, two themes emerged. First was the reliability − the ability to consistently access the brand and consume it uninterrupted (e.g., *I kept getting kicked off all the time. It was really frustrating so I switched to* CompuServe) − of brand access. Second, and more importantly, we found that many services provided in an "offline" environment were important elements of consumption. Positive service mentions were associated with events such as timely delivery and customer service. Negative service mentions were typically associated with service failures triggered by events such as incorrect delivery, billing problems, and site-access problems. However, as with physical brands, appropriate service recovery efforts enabled brands to turn service failures into loyalty drivers. Here is an AOL user's comment: *the browser kept stalling. So I had to call tech support. I had to wait, 15 minutes, but when he came on he was great and helped me with everything.* Interestingly, absent any negative experiences, consumers tended to stay within the realm of the EME having little or no need for interaction with the offline services.

Economic Value: As expected, economic value emerged as a strong theme. However, we were surprised at how multi-faceted economic value turned out to be in EMEs. First, consumers perceived economic value in consuming in EME itself, compared to consuming in physical environments. Specifically, compared to physical brands, they thought that EMEs provided them with superior ability to procure economic value. This in turn generated perceptions of enhanced self efficacy. In essence, consumers felt that were "better" consumers, saving money in online environments. For instance: *I have saved a lot of money buying stuff on eBay. Even with going to stores, I can use the Internet to find out the real prices. My uncle who just bought a car was able to get a better deal as he already knew what the dealer price was. He couldn't have done it without the Internet.* It is interesting to note that in most cases, the brand *itself* did not provide any economic value. Rather it was a *catalyst* enabling consumers to *find* economic value that would have been harder to find in a physical environment. In other words, the brand acted as a conduit to value presumably by broadening the extent of the marketplace through extended reach in terms of space and time (e.g., *eBay is great because it lets me find great bargains*).

Second, consumers associated economic value with their ability to accomplish their goals in EMEs at a lower cost − time, effort, and money − than physical environments. Examples include the ability to: communicate via email as opposed to phone which has a direct economic cost, save time and postage by being able to share content (e.g., family pictures) online, and save time and effort by searching for information online rather than visiting actual stores.

Unexpectedly, economic value also had deleterious consequences. This happened if consumers' expectations were negatively disconfirmed. For instance, here is a consumer of Yahoo! who saw the initial promise of value as a bait-and-switch tactic: *I signed up for one of those web-pages that gives you 100 megabytes of space thinking I could put my website there. It's the worst thing I did, because I now get 20-emails a day asking me to sign up for things*. If managed incorrectly, promises of economic value can potentially have a negative impact on loyalty. In the case of commerce sites, this frequently occurred when shipping costs exceeded expectations. Even if the increased costs did not offset any potential economic gains of online-shopping, consumers still harbored a negative attitude.

Content: EMEs are different than physical environments due to the vast amount of digitized content that can be aggregated, organized, sorted, and displayed in ways that are more convenient, meaningful, simple, and relevant to consumer goals. Aside from this flexibility, brand resident content created many other types of new experiences for consumers. These experiences include, but are not limited to: utilitarian experiences (e.g., get maps and driving directions at Yahoo!, verifying prices of antiques on eBay), hedonic experiences (e.g., movie previews on Yahoo!, music available on AOL, winning on eBay, online games such as fantasy football on Yahoo), and social experiences (e.g., looking at personals on Yahoo, searching for profiles of similar others on AOL).

While engaging in these experiences with brand-resident content, a feedback loop between usage and familiarity emerged. Prior empirical research shows that increased familiarity is associated with increased elaboration, richer categorization, easier accessibility of content leading to higher recall and recognition (Alba and Hutchinson 1987). Higher usage led to higher familiarity, and all these benefits of familiarity further reinforced higher usage. For instance: *my AOL address is my main address and I never get mail on my university account. My AOL address is the one I use all the time. I am so used to it and it's a pain to have to look at two or three different accounts.* Another user: *I am always chatting in the AOL chat rooms. It took me a while to get into it all, but now I am pretty good at it. I know all the rooms I like, I know the people in there, and I enjoy it.* Some consumers clearly saw the benefits of familiarity as a sunk cost that prevented them from switching to a different brand. An eBay user remarked: *I really won't switch from eBay. I am into antique furniture and I totally know how to search it…like the main stores. I even know the main guys who auction the stuff, and it is fun to know what things are worth. It's not worth it to give up all that and start over again. In any case, the other places just don't have all stuff.*

Unique to an EME experience was also the content that consumers *contributed* to the brand—forced or volitional. In physical environments, not only are there relatively

fewer opportunities to contribute content, but the cost of contributing content may also be higher compared to EMEs (Mittal and Sawhney 2001). *Forced contribution* is content that must be disclosed as a pre-condition to consume the brand, whereas *volitional contribution* occurs at the consumer's discretion. Almost always forced content contribution related to personal information raising concerns over privacy and security (e.g., *the most concern I have is with Internet shopping, and giving my credit card number out. That is why I still don't shop online*). In some instances it was even perceived as tedious and superfluous (e.g., *why do I have to give all this information to register to this site?*). However, once a relationship was established, such forced content contributions became loyalty drivers due to consumer concerns over security/ privacy (e.g., *I have put my credit card information in Amazon, so I don't like to shop at other sites*) and efficiency (e.g., *I just stick with Amazon. Even if the other sites are a little bit cheaper, it is just not worth my time to keep typing all the information in their registration sites*).

Volitional contributions included posts in personal columns, chat room conversations, book reviews at Amazon, movie reviews contributed to Yahoo, trader reviews at eBay and the like. Such contributions ranged from transitory to permanent. Examples of purely transitory volitional content contributions include chat room conversations, whereas permanent content contributions included ratings of trading partners on eBay or a book review written for Amazon. For many consumers making volitional contributions was associated with a heightened sense of self-efficacy. One consumer saw it as a right of passage, expressing happiness after posting her first review on eBay after buying jewelry.

Third, ability to manipulate content engendered strong perceptions of self efficacy as a brand user. Content manipulation capabilities included activities such as shaping, sharing, storing, deleting, filtering, and sorting content. These were manifest in activities such as creating a virtual address book (shaping and storing), filing and storing email addresses and photo albums (storing: *It is great, because I can keep records of all my emails*), and sharing content with others (e.g., *all my friends can go and see our trip pictures in my Yahoo briefcase*). Many of these activities were only possible because of the digitized nature of content, enabling consumers to do things previously not possible in physical environments. For instance: *most of my business is with emails and attachments. It's better that way since you get a nicer copy and if you are working on something, you can change it and highlight it.*

Fourth, many consumers mentioned issues related to content usability. Three specific dimensions of content usability emerged: relevance, specificity, and categorization. We define relevance as the extent to which a brand can provide content that enables consumers to fulfill their consumption goal efficiently. For instance: *I like Google. It is clean, and like no junk, accuracy, no dead links. It doesn't take forever for the next page to unload and there isn't all the excess stuff. And I love how they order the pages, and it is pretty cool*. A Yahoo user commented: *It's not that great. I guess once you get past the first set of Yahoo junk and get into the other stuff, you can usually get something decent, but this junk stuff is annoying*. Consumers also valued specificity in the content, as evident in this quote: *I've used AskJeeves.com and I find the results to*

be really vague and very broad. I just keep coming back to Yahoo because the results are specific to the topics I type. Categorization referred to the extent to which the content was categorized in a way that was intuitive and familiar to the consumer. As explained by a Yahoo user: *What makes it easy is the fact that it has a list of categories and under those categories are narrower topics which helps the user see arts and humanities…Say you are looking for photography, which is right underneath it, so if I can't find it in the big category, then I'll look under the other one and maybe find it quicker.* When the logic behind the categories was not apparent to the user, dissatisfaction followed. For instance: *I would like to automatically start with sports. But they're (Yahoo) so bad that you never get there. You know sports is under the topic of entertainment and recreation, but vegetarian is too, so it's very hard to…*"

The sheer volume of unwanted content and the various forms of intrusions it imposed also negatively affected consumption experiences: proliferation of unwanted content (junk mail: *I hate all the junk mail I get, especially the pornographic mail*), display of content at inconvenient moments (flash advertising: *I hated the advertisements after this and that. I hate those pop-up boxes*), and inability to manipulate content (ineffective filtering or sorting: *My parents don't like it because they found my kid brother looking at some adult sites*). Clearly, with respect to content, more is not always better.

Process: Processes entailed in the consumption experience seem to lead to two specific types of efficiencies: efficiency with which consumers could learn and internalize processes, and efficiency that such internalized processes generated in the consumption.

The efficiency with which consumers could learn various processes was mentioned in the context of virtually all brands. For instance: *I could never figure out how to attach a file. I had the lab people show me, no joke, like a dozen times and still it would never work right.* Similarly for another consumer: *Lotus Notes was so hard to figure out. At the beginning there were so many ways you could view your mail, and then to find out which works best for you.* Interestingly, the degree of overlap between the physical environment and EME facilitated learning of processes. Cues from the physical world, whether literal or abstract, enabled consumers to learn. For instance, an AOL user remarked: *My mom doesn't even understand stuff like "d-drive" or "icons" and she keeps calling me on how to use Windows. But she never has had any problems with AOL because it is all so intuitive.* Another customer said: *Like AOL's thing with favorites because favorite is like "Oh, what's your favorite site?" Bookmark is like, "What the hell is a bookmark?"*

A second type of efficiency was related to learning and internalizing processes generated *during* brand usage. Two types of efficiencies emerged—enabling efficiencies and automaticity efficiencies. *Enabling efficiencies* helped consumers perform functions more efficiently in the EME than they could have in the physical world. For instance: *I use Yahoo as a search engine. It's very easy to find what I am looking for. I've never not found what I am looking for, and I can do it so much faster than going to the library.* Similarly: *Amazon is much faster for shopping. I can search for books by title, by author, by genre, or by price. And if their price is better, I buy it from them.*

Importantly, consumers also frequently made brand comparisons: *We can use both Mulberry and Lotus Notes. But Lotus Notes is just so hard to use and set up, I just stopped using it. Now I only use Mulberry.* Second were *automaticity efficiencies* that were cultivated over time through repetition of processes. In consumer narratives, these were evident as habits or processes that they had come to take for granted in their consumption experience. For instance: *I have used Hotmail for three years. And then they made me switch to Lotus Notes. It took me almost two months to deprogram myself and get used to Lotus Notes. And it is still not as good as Hotmail.* Third, in EMEs confirmation processes emerged as being critical. For instance, many consumers of eBay liked the fact that their bid was confirmed immediately. Similarly: *I don't turn in assignments via email. There have been times when I have typed the wrong address and I was not notified till the next day. I wouldn't take that risk.*

Consumer narratives of negative experiences with respect to process generally had a temporal dimension (e.g., download too slow). In other cases, the complexity of processes also engendered negative reactions. A user of AOL said: *if you are using hotmail you have to click on what you want to delete and then click on the mailbox. In AOL all you have to do is click delete and it marks the message for deletion and it's gone. It's that easy.* Another user of Mulberry remarked: *I have to physically type everyone of the emails with @univ.edu…and the next one, and the next one. It is a pain.*

Customization: The ability to customize is an important aspect of brand consumption in EMEs. Our research revealed two specific dimensions of customization—personalization and permission.

Personalization occurs when customers voluntarily alter aspects of the brand to suit their individual preferences. Many consumers indicated personalizing the content and process, with most brands encouraging personalization as a means to foster loyalty. For instance: *everything I need is right there 'cause I have "my Yahoo" so it's just all my preferences come up and so it's easier.* Other instances of personalization related to factors such as software "training" (e.g., voice recognition software), interface management (Windows XP versus Windows 95), and software configuration (hot buttons and macros). Most consumers used the personalization feature to increase the efficiency of their consumption experience (e.g., *I don't have to keep typing my address in my email again. I just created a signature file in Lotus Notes and it puts my name, address, and info on every email*). Some consumers viewed the ability to personalize as a means of empowerment and expression (e.g., *I don't like using Lotus Notes because it won't let me set my preferences. I don't wanna use software that rules me*). Finally, some consumers used the personalization feature to manage role conflict by maintaining separate identities (e.g., *I have two different profiles on AOL. One for work, and one for fun. I don't want people at work to know about my personal life or the chat rooms I am visiting*). This aspect of personalization was particularly relevant for community brands (Yahoo and AOL).

Permission occurs when customers are given an opportunity by the brand to permit it to customize various aspects of the brand on their behalf. Contrary to personalization, permission is initiated by the brand. In EMEs, we found permission to be most preva-

lent with respect to content, many consumers expressing frustration when firms did *not* get their permission for providing unwanted content (e.g., *I hate all the junk mail I get, especially the pornographic mail. I don't like the offers sent in the mail*). Another consumer said: *I hated the advertisements after this and that. I hated those pop up boxes. I wish they would ask me beforehand.*

However, an interesting pattern was evident in the data: consumers' brand and/or category experience seems to moderate the relationship between customization and loyalty. Specifically, permission was more evident in the initial adoption and usage phase whereas personalization was more evident among consumers having significant brand/category experience. Further, novice users often lamented their lack of ability to grant permission. This was most salient for unwanted content. For instance, novice users of AOL expressed frustration with pop-up ads and junk mail that they received without permission. Experienced AOL users, on the other hand, knew how to turn them off. Similarly, for most junk mail, experienced users knew how to unsubscribe from lists, while novice consumers did not: *I have tried so many times to unsubscribe from the list, but I just can't do it. They tell me to type unsubscribe in the subject line, but it has not worked.*

Community: Because it eliminates space and time barriers, consumption in EMEs significantly expands the community of consumers for brands such as Yahoo! AOL and eBay. Regarding community, two specific themes − community maintenance and community expansion − surfaced in our data.

Community maintenance occurs in cases where a brand enables consumers to maintain a community that pre-existed − in the physical and/or EME − before brand usage. Aside from eliminating spatial distance, brands enabled consumers to maintain pre-existing communities by: (1) letting consumers store, organize, and access information on various community members (*I have everyone's email in Hotmail so I don't have to keep looking it up*), (2) facilitating multi-point interaction among them (*with just one click I can share my pictures with all my friends and family*), (2) decreasing communication costs (*I can send emails to my boyfriend so that I don't have to keep calling him*), (4) eliminating temporal disparities (*I post all the materials at night here, and my family can see it the next day*), and (5) fostering multi-modal communication (*my grandma is deaf, so it is much easier for her to read my emails, than for us to talk on phone*). However, activities in EMEs were seen as a complement, not a substitute for activities in physical environments. For instance: *I keep in touch with him [boyfriend] with emails throughout the week. But I have to still talk to him over the weekend. There are so many things you can't write in emails*. Similarly, many students reportedly used their email to keep their group members updated about their group project, till they had their weekly face-to-face meeting. Consumers seem to distinguish between factual and subjective information, preferring to transmit the former using email. The latter was seen as more suitable for telephone or face-to-face exchange. For instance: *Email does save a lot of time. But in some ways it is a lot less effective. I mean there is no substitute for going to talk to someone face to face and making sure you are both on the same page. So many times I only use email to document that stuff so that the other person can't deny it. But you really have to make them see your point*

in person. Paradoxically, we also found a trend whereby consumers used the EME to send information that was either extremely voluminous or information that was very sparse. The former is exemplified by members of a group sharing large electronic documents, a family sharing photographs, users of Amazon sharing book reviews, and the like. The latter is exemplified by statements such as: *I just send him a short email saying hi. Then we catch up over the weekend on phone.*

Community expansion refers to instances where a brand enables a consumer to enter new networks and forge ties with new people that the consumer was unaware of before using the brand. Clearly, positive network externalities associated with network size and diversity are critical to enable community expansion. Nevertheless, the altered nature of communication in EME fosters a very different community expansion experience than physical environments. First, in EMEs consumers indicated a decreased emphasis on physical cues, with cues related to conversation skills and the like becoming more prominent: *You really get to know the person on the other end…you don't get a first impression in terms of just looks.* Second, violating social norms of the physical world, several pieces of information were readily available in EMEs. This considerably shortened the initial exploration phase in developing a relationship, enabling consumers to make more informed choices faster. For instance, users of eBay could view the ratings of various buyers and sellers through its "4-star" system before entering into any transaction. Similarly, personal profiles on AOL enabled consumers to ask for or disclose information (e.g., age, weight, height, hobbies, interests) that may otherwise have be inappropriate or awkward to disclose or ask for in face-to-face conversations. Many consumers saw it as a very efficient way to screen out partners for future relationships. Third, because of the technological capabilities associated with matching and sorting features, consumers could not only cast a wider net, but also search more efficiently for members whom they could potentially include in their community. For instance: *I like gardening. So I quickly sorted out profiles of all those people in my area who are into gardening.*

To be sure, some aspects of community maintenance and expansion also had a deleterious impact on loyalty, especially community expansion efforts culminating in advances from unwanted others: *anyone can get your screen name. I know when my sister gets on the computer she gets like 15 different sexual instant messages. She had to change her screen name once already.* In the case of minors, exposure to undesirable communities posed a significant risk leading to heightened monitoring. Thus: *Like AOL, it has all these controls that I had set for my young brother to lock him out of stuff. But then I realized that he was getting all of this email from porn sites, and I flipped."*

Privacy/Security: Concerns over privacy and security on the Internet have emerged as key issues, primarily, because firms can gather information without the customer's immediate knowledge and use it to segment and target them in EMEs (Milne 2000). Regarding privacy and security, consumers mentioned two aspects of their consumption experience. First, they wanted to consume the brand in a secure environment that was free from unwanted content. Thus, attempts by the brand or brand-affiliates to provide content to consumers was seen as a breach of privacy/security. For instance,

here is a consumer who caught his younger brother receiving emails with pornographic content: *I asked him, "what are you doing?" Because first of all, I checked all the security settings, there is no way he should have got in. So how come he is getting all this email. So I told my brother to just delete all of that stuff. But that is one big thing I have against AOL.*

A second, more prominent concern related to the potential (mis)abuse of information that consumers provided to the brand as part of their consumption experience. This information included, but was not limited to personal facts, brand preferences, and financial information such as credit card number. For instance: That is why I don't shop online, and when I had to put my credit card number in for the Internet provider I was worried about that, because my sister had someone take her credit card number. However, brand equity, in many instances, mitigated such concerns. For instance: with eBay, it is so big and I have heard they have even prosecuted merchants who don't deliver. So I have been confident buying things from eBay.

With respect to security, an interesting paradox emerged in our data. While consumers wanted more security, they disliked it if security measures impeded consumption. For instance: Yahoo has a funny kind of service. I check my stocks everyday. And you know the security to get into them is insane. The only thing that works is Explorer, and even then if you try to open certain pages it goes on you or if you try opening up certain sites it won't open them at all. Thus, apart from the general level of security, security execution processes were also important.

Finally, an additional element of security was the extent to which the brand enabled consumers to limit consumption not only in terms of usage time but also content. For instance: that's another plus for AOL because it puts peace of mind for a parent, in the fact that you can put time limits for your child on AOL. After thirty minutes it shuts down automatically, and my parents don't have to keep checking on my brother. Another user: When we first had the computer, I set up the Yahoo account for my mom and my sister. And my sister is little, so my mom was concerned. So, I set up the whole account with blocks. Next time my sister got on to the computer, every time she went to a certain site, she had to give a password, and she didn't have it. So it was a real nice way to give my sister a swift little lesson.

Summary: Our analysis found seven themes characterizing consumption and loyalty in an EME. It is interesting to note that two themes − tangibles and offline factors, and economic value − seem to be most similar to consumption in physical environments. In the remaining themes there seems to be more differences than overlaps between EMEs and physical environments. Moving forward, understanding and incorporating these overlaps and differences, we believe, will be crucial to theory development.

While the seven themes are not new, their varied nuances are not only new, but also surprising in many ways. In particular, the complexity of each theme, and the insights afforded into loyalty contribute to our understanding of brand loyalty in EMEs. The thick description can enable managers to develop successful brand-consumer interactions leading to high loyalty. For instance, prior research has identified community as a key element of brand experience in EMEs (Srinivasan, Anderson, and Ponnavalu

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2002). However, the contribution of our research is in delineating two critical aspects of community − community maintenance and community expansion − and then, high-lighting specific ways in which both of these are critical to consumption and loyalty. This distinction can be quite valuable to brands that may want to position themselves in terms of one or the other, but not both. Even with respect to, say, community main-tenance, our research uncovers various positioning points along which a brand can dif-ferentiate: information access and manipulation, facilitating multi-point interaction, decreasing communication costs, eliminating temporal disparities, and multi-modal communication. An interesting point emerging from our analysis is that, activities oc-curring in an EME are complements rather than substitutes to consumption in physical environments.

Similar insights can be gleaned for other aspects of consumption, though they are af-forded through the fine level of granularity and specificity afforded by the thick de-scription of consumer-brand interactions in EMEs. This level of insight, we believe, is our key contribution in answering the first research question. We turn to the second question next.

Q2: Similarities and differences in consumption themes across brands and categories

We used correspondence analysis (Hoffman and Franke 1986) to understand the simi-larities and differences in consumption themes across the various categories and brands. Correspondence analysis is a multi-dimensional scaling technique that enables the analyst to find a low-dimensional graphical representation of the rows and columns of a contingency-table. The input in this case was a contingency table having six col-umns (6 brands) and 14 rows (positive/negative mentions for each of the 7 loyalty bases). The count data contingency table from the focus group data was constructed by counting the number of positive and negative thoughts in each category for each of the six brands. Examples of specific positively and negatively valenced thoughts for a sin-gle brand are shown in Table 2.

Correspondence analysis is quite useful for our purposes. First, its ability to simulta-neously consider multiple categorical variables enables us to jointly map the brands and consumption themes. Second, it enables us to uncover structural relationships among the variables. For instance, particular consumption themes may cluster with a specific brand on the map. Third, and finally, the only data requirement is a rectangu-lar data matrix with non-negative entries. However, as with any other multi-dimensional scaling technique care should be taken to interpret the resulting perceptual map. Specifically, the between-set distances cannot be strictly interpreted. That is, dis-tances between the brands and consumption themes should not be strictly interpreted, though their general proximity has meaning. For instance, if positive content and posi-tive community tend toward the lower left quadrant, and AOL is the only brand in that quadrant, we can conclude that AOL is more closely associated with these two con-sumption themes than other brands. However, the specific distance of AOL from the vectors corresponding to these themes cannot be strictly interpreted.

Figure 1: Correspondance Analysis: Retention Bases and Brands
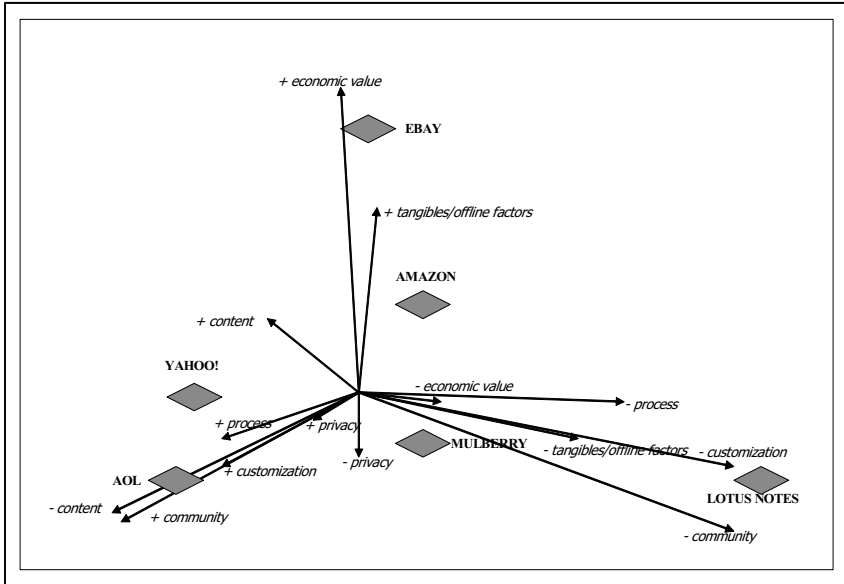
The count data was subjected to a correspondence analysis using PROC CORRESP in SAS software (SAS Institute Inc. 1999). The results are shown in Figure 1. The analysis suggests that the two dimensions adequately capture the variation in consumption themes across the brands. Dimension 1 captures 41.33% of the variance, while Dimension 2 captures 27.43% of the variance for a total of 68.76% of the variance. Dimension 1 can be interpreted as "traditional/new consumption themes" and is shown on the vertical axis. The top portion corresponds mainly to traditional themes (product/service and economic value) while the bottom portion corresponds mainly to newer themes such as community, customization and privacy. Dimension 2 (horizontal) can be interpreted as "positive/negative" themes with the left side being more positive and the right side being more negative. The map provides several interesting insights. First, the consumption themes seem to collapse in three clusters. In the lower-right quadrant we have negatively valenced themes related to process, customization, community, and product/service. The upper quadrant is primarily dominated by positive economic value and positive product/service. The lower-left quadrant consists mainly of negative content, positive community, positive customization, and positive process. Second, and more interestingly, the three categories of brands are associated

with different consumption themes. The commerce brands (Amazon and eBay) are positioned more closely to positive economic value and product/service. The email brands (Mulberry and Lotus Notes) are associated with several negative loyalty bases: community, customization, process, product/service and economic value. Finally, the community brands (AOL and Yahoo!) are most associated with positive community, customization, process and privacy. However, negative content is also of concern. Finally, positive content is more or less equidistant from the commerce and community brands, suggesting that consumers find all four brands to be associated with positive content.

Third, brands are positioned differentially within each category. In the commerce category, eBay is more associated with positive economic value while Amazon is more associated with positive product/service. In the email category, Lotus Notes is more negatively positioned than Mulberry especially in terms of customization and community. Results for the two community brands are even more instructive. AOL seems to capitalize on positive community and customization but it is associated with negative content. In comparison, Yahoo seems to be more strongly associated with positive content. Finally, the consumption themes most associated with physical environments—economic value and product/service − are most germane to commerce brands, eBay and Amazon. This is consistent with the notion that, *the commerce category has basically transplanted the value drivers of the physical into the virtual environment while other categories (email and community) have created entirely new sources of customer value in EMEs*. Further, the differential importance of consumption themes for different categories, and even brands within categories highlights the importance of exploring the complex phenomenon of customer consumption and loyalty in EMEs.

Q3. Process model for understanding how newly acquired customers become loyal to a brand

Answering the first research question allowed us to provide a thick description of the various consumption themes, and answering the second research question enabled us to show how different categories and brands capitalize are differentially associated with each consumption theme. However, answers to these two questions have a static flavor, and do not provide insights into the *process* by which new customers become loyal to a brand.
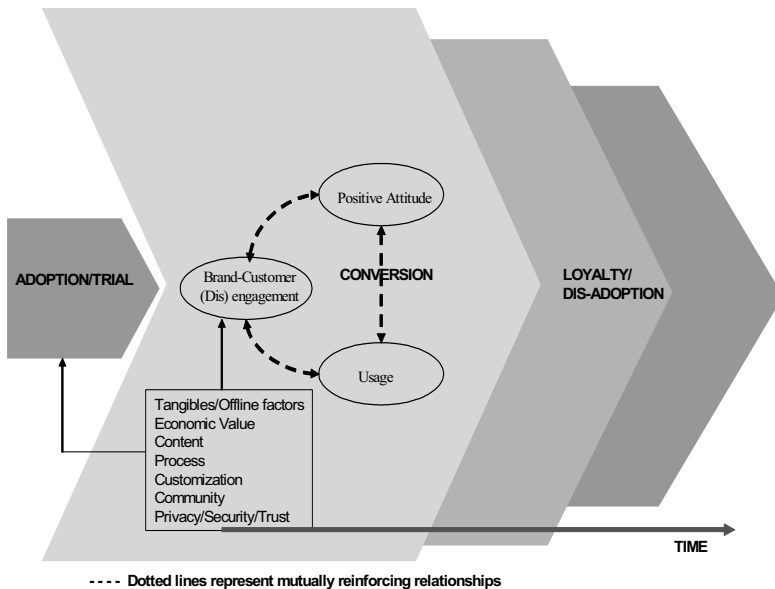
Delineating such a process model is important as it would distinguish *brand adoption* from *brand loyalty*. Especially in the study of consumer behavior, brand adoption has been the focus of most diffusion studies − but in most of these studies there is little discussion of what occurs after initial adoption (Gatignon and Robertson 1986). For the most part, they focus in on external conditions giving rise to adoption. In contrast, are studies examining related constructs such as behavioral intentions and brand commitment. These studies, however, only focus on consumers who have been with the brand for some time. In summary, while adoption studies only look at the purchase decision, loyalty studies look at consumers who have been with a particular brand for

some time. As such, studies that take a longitudinal, process-view of brand adoption and loyalty are lacking.

We view brand loyalty as a form of entrenchment − the metaphor being one of "digging in" − such that abandonment of the brand by the consumer is unlikely even in the face of pressures such as better value from competitive offerings. Against this metaphor, we ask: how does adoption translate into loyalty? By bringing to fore the *processes* and *mechanisms* by which these two stages of consumer consumption meld, we can answer the above question. This is all the more important in the context of brands consumed in EMEs. Frequently brands in EMEs have high adoption rates (consumers clicking to a website or initial trial of a software), but very low rate of loyalty.

To delineate the process framework, we conducted 24 interviews with customers at various stages of their relationship with a brand. The process model that emerged from these interviews is shown in Figure 2 and discussed below in terms of three stages: (1) adoption, (2) conversion, and (3) loyalty.

Figure 2: Customer Retention in Electronically Mediated Environments: Process Model

ADOPTION/TRIAL

Brand-Customer (Dis) engagement

Positive Attitude

CONVERSION

Usage

LOYALTY/ DIS-ADOPTION

Tangibles/Offline factors
Economic Value
Content
Process
Customization
Community
Privacy/Security/Trust

TIME

- - - - Dotted lines represent mutually reinforcing relationships

Table 3: Loyalty Themes during Adoption and Loyalty Phase of Process Model

Loyalty Basis	Adoption/Trial	Loyalty/Entrenchment
Tangibles & Offline Factors	*My dad had seen those AOL ads and he knew about AOL. But when we finally got the CD in the mail, he just decided to put it in the computer and that was that.* *I first saw the site advertised in a beanie baby magazine. So that's what brought me to the website (eBay). But it's when I had seen the selection of items they had and the things you could find, that's when I found other things and started using it.*	*They are the industry leader and almost everyone is trying to imitate them. So they have the best stuff right now and people are trying to do that.* *I will stick to eBay. I have tried uBid.com sometimes but they just don't have the selection that eBay has for what I collect so.* *I had problems with Microsoft Network. That's why I stopped using it.*
Economic Value	*After I joined the business school, I got my laptop with Lotus Notes loaded. I just used it because everyone was using it, and it came pre-loaded with all the addresses.* *Well, last year I started using Iwon.com because I thought I was going to win. I started using stuff other than Yahoo just because I wanted to win. To make money.*	*I probably with stick with Yahoo. Like I said, it is easy to us, it's free with is a great thing about it and so I am pretty loyal to Yahoo.* *I use Mulberry. I guess I'm content. I don't pay for it. So I can't really complain. It does what I need to do.*
Content	*I started using it when I had to write paper for my class. It was the first search engine that popped up, and it seemed to get the job done. I got a lot of stuff and I did not have to go to the library.*	*I think Yahoo is really on top of it, with updating the page and I realized that it has changed a lot since I first started using it. I think they are fine doing what they are doing. I like their categorization, I like the search engine, the mail is helpful and I basically will not leave Yahoo as long as they keep up how they are working it right now.*
Process	*It was self explanatory to set up. You just click on menus and icons and it takes you where you need to go.* *I like to use Hotmail instead of Yahoo, because I can block senders and it has a lot more features. It keeps a list of all your sent emails, and it makes it easy to keep track of stuff.*	*They have grown with technology and as things have expanded, they have as well. At the same time, they are still simple. Other sites that have tried to expand have become more complicated and they aren't as easy to use. So as long as Yahoo continues to grow but still stays simple I will stay with them.* *I stopped using Yahoo and switched to AltaVista. It's just faster to type in.*
Customization	*After I joined the business school, we got our laptops with Lotus Notes loaded. Since everyone was using it, and it came pre-loaded with all the addresses. So I just started using it.* *I wanted to use Outlook, but it was so hard to figure out. At the beginning, because there were so many different ways that you could view your email, then to find which works for you. I know I ended up screwing my email. So I just stuck with it.*	*I have Yahoo bookmarked. Basically, I have stopped going to AAA, because the maps and the information that comes up are very handy. Since it is bookmarked, my mom can also use it, seeing how she doesn't know much about computers.* *I'm comfortable using it. Like, everything I need is right there because I have "my Yahoo" so it's just like all my preferences come up and it's easier.*

Commu-nity	*After I joined the business school, we got our laptops with Lotus Notes loaded. Since every-one was using it, and it came pre-loaded with all the addresses. So I just started using it.*	*I thought about jumping on to another auction site once, but I was already on eBay and didn't move. They have so many users. I was pretty sure they would have anything I would want. I wouldn't have the same chances of finding it on other sites.*
	I assisted a friend of mine looking for a humi-dor and that's how I got hooked on to eBay.	
	Some of the people I'd worked with in a lab summers ago used it and I was kind of bored at work and started playing with it.	*Sure I am happy with Outlook. My work uses it, so if they chose to change I wouldn't quit my job over it. I'd switch. I'm not really too much of a loyal customer.*
Pri-vacy/Sec urity/ Trust	*I hesitated a lot, and I admit I was scared giv-ing out my credit card number like that. But Amazon is one of the biggest company, I mean, if you can't trust them. It is not a small, fly by night outfit.*	*Well, I feel differently about eBay as far as using a charge card. They also have a lot of protection things for the bidder, they have pri-vate auctions, private bidders, and lot of peo-ple will never know your identity. You do have to take chances, but with eBay the odds are not so horrible.*

Table 4: Efficiency and Effectiveness Gains from Increased Usage

Loyalty Basis	Efficiency	Effectiveness
Tangi-bles/Offli ne Fac-tors	---	Consumers are willing to use the brand for pur-chasing goods in more categories, subscribe to additional features/benefits offered by the brand (cross purchasing).
Economic Value	---	Consumers find new ways to save money using the same brand. Over time, brands may offer more savings to "loyal" customers.
Content	Consumers have enhanced recall and recogni-tion of content which saves time during con-sumption.	Consumers are willing to look at more types of content. Repeated usage of old content enables consumers to re-categorize it in newer and more goal directed categories enabling them to more effectively utilize the same content for different tasks.
Process	Due to repetition, consumers can engage in various tasks with greater speed and accuracy, even in the face of distractions.	Consumers are willing to do more tasks using the brand.
Customi-zation	Consumer became more familiar with the con-tent and processes entailed in usage and cus-tomize them to their taste. *Now I have created a stock portfolio on Yahoo that I use to track investments for my class.*	Consumers customize and personalize more aspects of the brand. Over time, they are more permissive of changes in the brand.
Commu-nity	Consumers strengthen ties with various mem-bers of their existing community. Consumers communicate with their friends and family more efficiently—faster and more eco-nomically. *It only takes me a couple of seconds to send an email to my mom. That makes her feel better that I am ok at the university.*	Consumers create new ties and friendships with other brand users. Consumers find new ways to strengthen old ties that were created even before brand usage began. *I have met so many new friends on AOL. I used to only use Yahoo to email my girlfriend. Now we also play chess and spades online.*

| Pri-vacy/Sec urity/ Trust | Customers find it efficient to not have to type in personal information over and over again to different brands (especially commerce brands). | Over time, consumers discover additional privacy features and trust the brand more. As trust builds, they are more willing to reveal information and take greater "risk" (e.g., increased spending). |

Table 5: Illustrative Paths from Adoption to Loyalty or Abandonment

Brand & con-sumer	Consumer Path
Lotus Notes for a female who works full time at a bank and did her MBA during the week-ends	<u>Adoption</u>: Started using it because it came pre-loaded on the laptop assigned by the school and because she was given training on it <u>Conversion</u>: It was easy to email everyone who was in her group and that was efficient for interacting with other students. However, accessing the software was not very easy from her work, and various aspects of the software were perceived as cumbersome. For instance, not being able to easily put a signature, or sort emails was not efficient. However, she was torn because all her colleagues at work and family used a different email (Hotmail). <u>Loyalty</u>: The consumer did not feel loyal to the brand. Aside from the efficiency of maintaining the community of fellow students, she found the brand much more cumbersome than hotmail. After finishing her MBA she disadopted Lotus Notes, and continued using Hotmail.
AOL for a full time, male undergraduate	<u>Adoption</u>: The student's father adopted AOL because he had heard about it a lot, and thought of it as a credible brand. When he got a CD offer in the mail, he (the father) started using it. When the son went to college to a different state, he also took the AOL user ID with him. <u>Conversion</u>: Initially, the student only used it for keeping in touch with the family writing and receiving emails on a daily basis. However, from his friends, he discovered other features such as instant messaging which he taught his mother to use. He also, started using it with other friends on campus, who also showed him how to personalize various aspects of the software using buddy lists, creating a stock portfolio for a finance class, playing fantasy football, and even doing searches for various class assignments. He found the email facility to be very efficient including the ease of attaching documents, saving emails, and addresses. <u>Loyalty</u>: The consumers feels very loyal to AOL. Not only is the brand perceived as helping him achieve his goal to keep in touch with his family efficiently (cheap and time-flexibility), but also helps him be a better student, and maintain a social life. Social ties would also prevent him from switching since most of his friends are on his buddy list and he would keep AOL unless they all switch to something else.
EBay for a 31 year old male (professional status unspeci-fied)	<u>Adoption</u>: Was first exposed to it when an artist friend asked him to upload his art on eBay for sale. Had never bought anything on eBay. <u>Conversion</u>: When helping his friend on various occasions, he found out about buying electronics on eBay as well. Since then he bought a palmPilot and various other objects on eBay at prices much lower than regular stores. Regularly uses eBay to find out prices of various things. <u>Loyalty</u>: He feels very loyal to eBay. Not only does he perceives it as providing excellent economic value, but also feels that eBay has really helped the career of his artist friend. He tried some other competitive sites such as Ubid.com, but does not find them as extensive. Presumably, the large community on eBay has benefits not only terms of product/service coverage, but also privacy/security as the online comments are a big factor in his choice of merchant on whose merchandise he bids.
Mulberry for a full time fe-male under-graduate student	<u>Adoption</u>: Was first forced to adopt it when an instructor mandated that all assignments be submitted as attachment, using only Mulberry. <u>Conversion</u>: Has found the usage process very hard. Even after going to the IT center, she was unable to figure out how to attach documents. The instructor also had difficulty receiving emails from many other students. She never bothered to learn new features of Mulberry nor did she use it any more than was absolutely needed. She still uses his Hotmail account a lot as that is the address that all her friends and family have and that is where she has saved their email addresses. She likes the fact that Mulberry is free, but sees no advantages in terms of process or community. <u>Loyalty</u>: She still has Mulberry, but uses it only when absolutely needed. After she is done with his class with this instructor, she will not use it any more.

Yahoo for male currently enrolled in an MBA program	<u>Adoption</u>: Started using Yahoo as a search engine (doesn't recall the exact specific of when he started using it) <u>Conversion</u>: After enrolling in an MBA program, he had to use it to keep a stock portfolio as part of a finance course, and liked it a lot. Eventually, started using it for email as well. After a while customized the interface using my Yahoo. <u>Loyalty</u>: He uses it a lot, and has a highly positive attitude toward Yahoo. Importantly, he feels loyal because it would be too much work to transfer all the information to another portal, even if the portal were better.

Adoption: This stage has been variously labeled in different literatures. It is known as customer acquisition in the satisfaction literature (Rust, Zeithaml, and Lemon 2000), trial in the product diffusion literature (Gatignon and Robertson 1986), and as exploration in the relationship management literature (Dwyer, Schurr, and Oh 1987). This stage represents the introduction between the consumer and the brand in a consumption setting, though excluded from this stage are pre-purchase and pre-consumption activities such as information search. As seen in Table 3, each of the seven consumption themes can be instrumental in brand adoption. Exemplar quotes showing how each can lead to brand adoption are given in the second column of Table 3. For instance, a consumer adopted Lotus Notes on being introduced to a new community where Lotus Notes was the standard: *After I joined the business school we got our laptops with Lotus Notes loaded on them. Then we were given a training session on it. Since everyone was using it, and the Lotus Notes address book came pre-loaded with all the addresses, I started using it.* Brand adoption emerges as a complex phenomenon with a multitude of forces other than a brand's advertising strategy being instrumental in adoption.

Interestingly, preceding adoption, consumers had varying levels of awareness of the brand. In many cases they simply stumbled upon the brand and started using it because of curiosity. In other cases, a triggering event led consumers to cross the chasm between awareness and initial adoption/usage, though these triggers seemed mostly to emanate from a social context surrounding the consumer. We found these triggers to be quite consistent with institutionalization theory (Zeitz, Mittal and McCauly 1999). The literature on institutionalization of organizational practices identifies three types of forces leading to adoption: normative/regulative, mimetic, or coercive.

- Normative/regulatory forces lead to adoption when mutual understanding or learning between two parties leads to adoption by one party. An example is this consumer who was helping a friend: *I had never used eBay. Then my friend asked me to help her sell her artwork through eBay, and I really liked the concept. Now I go to eBay quite often, even if I don't buy much stuff there.*

- Coercive adoption occurs when a party having more power forces the other to adopt a practice. This was evident in a professor mandating students to use Mulberry to submit their assignments to her.

- Mimetic or imitative forces lead to adoption when as one actor adopts and uses a given practice, this fact will be known to others who will be motivated to adopt it. This, at some level, is the key mechanism leading to network externalities and it was most evident in community brands. For instance: *I started using*

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> *AOL because my boyfriend had it. He gave me this CD with 1000 free hours,*
> *and since then we have used it to keep in touch*.

Thus, contrary to the lay theories portraying consumption in EMEs as a solitary activity, social influences were quite influential—at least in the brand adoption phase.

Conversion phase: It is during this phase that consumers who adopt a brand either feel engaged or disengaged with it, the former setting a path toward loyalty, and the latter leading to eventual disadoption of the brand. During the conversion stage each of the consumption themes seemed to be relevant though there was no clear temporal pattern in terms of their relative importance in the conversion phase. Collectively, and over time, they seem to either engage or disengage a consumer. The engagement and disengagement happened via a self-reinforcing feedback loop between usage of and attitude change toward the brand. A positive loop was created when consumers felt engaged, and continued using the brand. This led to higher satisfaction, which in turn, led to higher usage. A negative loop was created when consumers felt disengaged, leading to lower usage, which in turn fostered lower satisfaction leading to even lower usage, and eventual brand abandonment.

To be sure, the conversion phase was marked by many learning attempts, though the attempts were conditional on the perceived benefit derived from initial interactions with the brand (Mittal and Sawhney 2001). After the initial usage experience, consumer attitude toward the brand was also a key determinant of their willingness to keep using it. For instance:

> *When I first started using AOL, much of it was pretty self explanatory. I really liked*
> *how easy it was to do keyword searches and to get in the cha rooms, oh...and the*
> *email. But it took me a while to figure out how to create a buddy list. It wasn't so*
> *bad. What kept bugging me were those pop-up ads. Only after many months did I*
> *find out from another buddy that I could turn it off.*

Usage and attitude change were related to the extent to which consumers experienced gains in efficiency and effectiveness. *Efficiency* is defined as the extent to which consumers can perform specific tasks with fewer resources − cognitive, temporal, or financial. *Effectiveness* is defined as the extent to which consumers can do more tasks and activities using the brand, than during a prior usage period. As seen in Table 4, efficiency and effectiveness varied with respect to each of the loyalty bases. Increases in efficiency and effectiveness were facilitated by the fact that higher usage also led to higher likelihood that a consumer would discover additional features of the brand and deploy them. Concurrently, higher usage also created utilization efficiencies due to the benefits of familiarity (Alba and Hutchinson 1987). All of this engendered more positive attitudes toward the brand in particular and the consumption experience in general, and a virtuous cycle of positive conversion toward loyalty is thus ensured. Note that, the beginning of a vicious cycle of disadoption due to lower usage and negative attitude, eventually leading to dis-adoption is just as likely.

In addition to satisfaction, we also found increased efficiency and effectiveness to be related to perceptions of *self efficacy*: consumers' assessment of their own ability to consume the brand. Higher self efficacy perceptions seem to motivate consumers to

use the brand more effectively, i.e., for more uses. For instance: *After a while my mom became pretty comfortable using AOL. At first she only used to check email, but now she uses it for bunch of other things like checking information on osteoporosis and stuff.*

As mentioned before, all seven consumption themes played a role in the conversion phase though no clear temporal pattern was evident in the relative importance of each theme. What was evident was that over time, progression toward loyalty is conditional on high levels of synergies among the various consumption themes. In other words, conversion proceeds along more than one consumption theme and the themes often operate in tandem. Consumers indicated cross-effects though depending on the consumers' consumption goals some loyalty bases were more prominent than others. For instance, one consumer started using Amazon only to buy books, but then after a while started buying CDs as well. As the cross-buying increased, this consumer also indicated using Amazon's reviews to find about books and for simple information search on electronics such as PalmPilot.

Conversion also emerged as a highly non-linear process punctuated by external events. For instance, a Yahoo user had been using it for several months only as a search engine. However, upon enrolling in a Finance course, he started using a stock portfolio as part of a class assignment. Only then did he start exploring other aspects of Yahoo and started using it to get the news and even personalized it for his needs. Thus, in this case the Finance course became the instrument for driving higher and broader usage and eventually loyalty. Similarly, for a Mulberry user, the fact that even the IT help desk could not show her how to attach files convinced her it was a "bad" software, and she decided never to use it after. Finally, consider the professional who was introduced to eBay when he had to help a friend put his artwork online for sale.

Loyalty phase: We view loyalty just as institutional theorists view entrenchment (Zeitz, Mittal, and McCauly 1999), the key metaphor being one of a certain level of "digging in." From a cognitive perspective, loyalty occurs not only when consumers continually use the brand and have positive attitude toward it (Dick and Basu 1994), but also when they are likely to continue using even in the face of external pressures to stop using it. These external pressures may vary in intensity and range from competitive offerings to network externalities.

In our data, consumer loyalty was evidenced across all the consumption themes, though some themes were more important than others for a consumer. More importantly, the conversion from adoption to loyalty was quite varied from customer to customer. As illustrated in Table 5, a variety of processes and bases were instrumental in converting new adopters of a brand to being loyal customers. Further, more than one base was instrumental for each customer, though typically the conversion process started with a single base. Negative disconfirmation of expectations on that single base was enough to discourage consumers from "exploring" the brand altogether (e.g., the consumer who could not attach documents in Mulberry). Thus, as far as the number of bases involved in conversion is concerned, we found a asymmetry between the virtu-

ous cycle of loyalty and the vicious cycle of disadoption − the former involving more than one base, and the latter typically a single base.

Consistent with the framework put forth by Dick and Basu (1994), both attitudinal and behavioral changes evidenced loyalty. That is, positive attitude and high usage were expressed by the loyal consumers. However, over and beyond the attitude-behavior framework, we found support for the institutionalists' notion of digging in: continual intent to keep using the brand in the future despite external pressures to stop using it. This continual motivation for future usage, again emerged from the loyalty bases, and took various forms. For instance, consumers saw efficiencies from familiarity of process and content as sunk costs. Loyalty in some cases was motivated from a desire not to forego these sunk costs. Similarly, some consumers wanted to be loyal to preserve their social ties (*all my friends are on AOL so I will keep using it as long as they use it too*). In other cases, consumers simply were loyal due to inertia: *I will keep using Yahoo, until something better comes along. I don't see no reason to switch.*

In summary, adoption, conversion and loyalty emerge as highly interrelated stages punctuated by chance events, social forces, and interplay between the physical and virtual environment.

Discussion

Using a discovery-oriented, qualitative approach we sought to answer three specific research questions about consumption and loyalty in EMEs. We believe that the thick description surfacing from the qualitative data has provided a rich description of customer loyalty in EMEs. We uncovered seven specific consumption themes (question 1) and found that the specific brands and categories are differentially positioned across these bases (question 2). Moreover, we articulated a process model describing how new adopters of a brand become loyal to it (question 3). In doing this we make the following contributions to the literature.

Thick description of consumption in EMEs: Is identification of the seven consumption themes a contribution? To us, identification of these themes is not a contribution as many of them have been previously articulated. Rather, the contribution of this paper has been the surprisingly large number of "specific" insights into each theme. For instance, while previous research has identified "community" as a key benefit of netbrands, our research has elaborated on its morphology by suggesting that this benefit can either be *community maintenance* or *community expansion*, and that both these can have a positive or negative effect on loyalty. For brand positioning this can have important implications. A brand positioned as a community expansion brand may want to increase the size and diversity of its users, while a brand positioned as a community maintenance brand may want to align usage processes to facilitate and enhance communication and content sharing. For instance, our data suggests that while Yahoo is positioned mostly as a community maintaining brand, AOL is positioned as both a community expansion and community maintaining brand with a relatively larger focus on activities such as chat rooms and user profiles. Similarly, consider brand resident

content, a key value driver of many online-brands. However, previous researchers have only focused on brand-resident content, and not explicitly examined the role of content contributions − forced and volitional − in determining loyalty. Specifically, the role of heightened self-efficacy perceptions resulting from volitional content contributions has not been previously articulated in the context of loyalty.

The relative importance of the various consumption themes at different stages in consumption deserves attention. Prior accounts of customer loyalty are rooted in the customer satisfaction paradigm which places heavy emphasis on disconfirmation processes based on product and/or service performance (Oliver 1997). Such a perspective has been recently criticized by Fournier and Mick (1999) as it does not take into account other mechanisms, thereby limiting the scope of our understanding of loyalty drivers. We find ourselves in agreement. Aside from disconfirmation processes, emotions such as anxiety and frustration arising from concerns related to privacy and security, or protection from unwanted advances were important. Similarly, learning processes − especially those related to content and process − were key loyalty mechanisms though the mediating process seems to be efficiency and effectiveness gains rather than disconfirmation. Except for a few exploratory studies (c.f., Mittal and Sawhney 2001) these learning processes and their outcomes have not been addressed in understanding customer loyalty. Because of the newness of brands and consumption processes in EMEs, we believe that these are likely to be crucial drivers. Social interactions and their influence on brand adoption and loyalty was a prominent theme, especially for community brands. To document the different types of relationships that consumers develop using brands as liaisons is a key issue for future research.

Chance events as punctuating events: Prior accounts of customer loyalty have assumed that the path from adoption to loyalty is a smooth, gradual trajectory. In the case of consumption in EMEs, chance events abound. While brands do not have control over such events, they can position themselves appropriately to capitalize upon opportunities created by such events. For instance, the opportunity to convert a Mulberry user to being loyal was lost when the user could not figure out how to attach documents, an event highly relevant to her consumption goals. By accumulating thick, process-based descriptions of consumer consumption of their brand, a firm can then identify those clusters of events that are most germane to their brand and that present the best opportunities to foster loyalty. Researchers may wish to develop a typology of such chance events relating them to specific emotions like regret and anger.

Process model of customer loyalty: A key contribution of our research is in articulating the process model explaining how consumers who recently adopt a brand become loyal users of the brand. Our analysis suggests that eventual loyalty is a result of a cumulative and often nonlinear chronology of consumer-brand interaction, such that taking a cross-sectional view of customer loyalty or consumption in an EME is likely to be misleading. More importantly the relative importance of each consumption theme over time follows an unpredictable pattern. These characteristics of the "loyalty process" have several research implications.

First, restricting theorizing and measurement to immediate post-purchase settings (i.e., adopters only) or only to long-term owners (e.g., loyal consumers only) incorrectly and prematurely de-prioritizes the conversion phase through which the consumer-brand relationship necessary evolves. From a research perspective, we must necessarily give a higher priority to longitudinal and *in situ* data collection procedures so that the many paths leading from adoption to eventual loyalty can be understood. Conceptually, this highlights the need for taking a more integrated view of the brand adoption and customer loyalty. Unfortunately, these two literatures have evolved separately. Traditionally, the first one has been the focus of innovation diffusion literature while the second one has been the domain of customer satisfaction literature. Echoing the call made by Fournier and Mick (1999), our results show that integrative studies that chart the course from adoption to loyalty are sorely needed.

Integrative role of offline and online environments: Many researchers have viewed virtual environments as substitutes for physical environments. Our research indicates that they are better viewed as complements. Throughout we found that consumers use their experiences in offline and online environments synergistically. For instance, with respect to process and content, the ease with which consumers could transfer learning in the physical environment to the virtual environment was a key determinant of continued usage of the brand. Similarly, consumers frequently used email to supplement their community maintenance efforts in the physical environment. Several firms work with a mindset that the electronically-mediated environment is a substitute to the physical environment. While that may be the case for some customers, brands, or categories, the more viable perspective for understanding consumption and loyalty in EMEs is to further explore and celebrate the mutual support between the physical and virtual world.

It is also worth noting that consumption in physical and virtual environments is at once similar and different, though the differences are subtler than expected. How such subtle differences foster or impede feedback between the physical and EME needs to be understood. The importance of a click-and-mortar model in servicing consumer needs is now well established, though previously many thought that etailing would fully replace physical stores in most realms. What role do the seven loyalty bases play in reinforcing the need for both a physical and virtual presence? Informed inquires into this issue should be equally valuable from a strategic and research perspective.

Links to the Technology Acceptance Model: Within the field of IT, the technology acceptance model has been widely applied to understand people's acceptance and usage of information technology (Davis 1986). Relying on the theory of reasoned action (Fishbein and Ajzen 1975), this model posits that perceived ease of use and perceived usefulness are key antecedents of intent to use, which in turn drives actual usage. Thus, the technology-acceptance-model applies the attitude-intention-behavior framework to understand eventual usage of information technology. In more recent studies researchers have identified antecedents of key attitudes such as perceived ease of use. For instance, Venkatesh (2000) found that perceptions such as self efficacy, computer anxiety and usability are antecedents of perceived ease of use.

In trying to relate our findings to the technology acceptance model, we find them to be emanating from the same conceptual basis (interplay of attitude and behavior), but with several differences. The latter we believe provide a basis for advancing research related to the technology acceptance model in at least two ways. First, the technology acceptance model, at least as it is empirically tested, takes a linear and static view of technology acceptance and usage. A worthy extension of the model would be to investigate the re-inforcing nature of attitudes and usage behaviors, especially during the conversion phase. This would require a longitudinal research design, or at the very least cross-sectional research with consumers having different duration of brand interaction. A recent example of such a study is reported by Venkatesh (2000), though in the context of IT users in a firm. He found that over time perceived ease of use has a smaller influence on behavioral intent to use. Interestingly, among the antecedents of perceived ease of use, self efficacy and perceived enjoyment increased in importance over time. We take this as evidence of significant temporal variability in the relationships that constitute the technology acceptance model. Secondly, researchers have not adequately examined the moderated nature of the links in the technology acceptance model. For instance, the impact of perceived ease of use on usage may be moderated by a variety of factors such as product complexity, consumer expertise, and the level of technical support. Again, these factors are likely to be related to the product, person, and situation. In general, our research supports the notion that the technology acceptance model and its empirical testing needs to be broadened. Specifically, the model should incorporate feedback loops among attitudes and usage behaviors, and consider the various contingencies emanating from the nature of technology (product), person, and usage situation. Empirically, this implies that data should be longitudinal rather than cross-sectional, the relationships examined should be bi-directional rather than uni-directional, and moderating factors should be explicitly tested.

Concluding Remarks

To put the findings and conclusions in perspective it is critical to fully acknowledge the limitations of this study. Though the amount of data collected through interviews and focus groups exceeds most other phenomenological studies, we nevertheless relied on self-reported data, rather than field-based observation. An ethnographic approach would have provided the opportunity for more, if not different insights into the dynamics of consumption in EMEs and consequent loyalty. Further, the evocative and immersive nature of the interviews may have motivated respondents to focus on critical incidents and imbue them with more salience than the actual consumption experience. Despite these limitations, this study has enhanced our understanding of customer consumption and loyalty toward brands in EMEs. Importantly, it has articulated important avenues for conducting future research. While we discuss some of them, many other remain. In other words, this discovery-oriented research raises more issues than it answers. We view this as constructive in the context of the limited extant knowledge about consumer consumption and loyalty in EMEs. This research should only be seen as the beginning. As the importance of consumption in EMEs grows, firms as well as

researchers need to carefully examine consumption patterns and address issues related to customer loyalty. Such an understanding can provide the foundation for long-term growth for many firms representing the new economy in particular and the old economy in general. Eventually, we hope that our work will provide the necessary impetus for conducting research in this area.

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Efficient Product Choice through Ontology-based Recommender Systems

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Abstract

In this paper, we examine the issue of customer satisfaction through efficient recommender systems that are based on the semantic web. First, we present an overview of the field of recommender systems, describe the current generation of recommendation methods that are usually classified into two main categories, namely: content-based and collaborative recommendation approaches, and we point out various limitations of current recommendation methods. We then present the basic elements of a prototype recommender system for customer relations management that is based on ontologies and show how the semantic web can provide the underlying engine of recommender systems that are considerably better than previously proposed systems.

Keywords: Customer Satisfaction, Customer Choice, Recommender Systems, Ontologies, Semantic Web, Knowledge Representation

Introduction

In today's buying world, customers want to feel good about the level of service they receive from an organization and, also, to feel that the organization cares about them and about their needs.

Organizations and companies need to recognize the above and to act upon these observations both in terms of their long-range corporate planning and also in terms of their day-to-day interaction with their customers. They have to make a major commitment to gain customer loyalty not by merely announcing how important customer loyalty is to them, but by taking active and focused practical steps to win it (Khalifa and Shen 2005). Faced with competitive market pressures, organizations further expand the use of business intelligence across the enterprise. Semantic web technologies provide a new opportunity to make services more efficient and to attract a larger loyal customer base to a company (Doukidis and Pramataris2005).

Many companies advertise or point out other similar products trying to expand the use of business intelligence as mentioned above but this is being achieved with data base systems. This technology is different from the semantic knowledge base which is proposed in this paper that keeps in step with the objectives of the semantic web. The semantic relations between products give us the opportunity to interrelate these products in a way that textual techniques can not. Products may have semantic relations between them and ontologies are the tools that are able to sense them.

In this paper, we first present the basic principles and problems concerning customer satisfaction and the expansion of product choice through recommender systems.

We describe the main categories of recommender systems, the various limitations of current recommendation methods and discuss possible extensions that can improve recommendation capabilities. We also examine how the new information and communications technologies can add considerable progress to this process.

The new model of the semantic web and the building of ontologies through a mathematical model are presented in order to develop an efficient recommender system, in an effort to introduce a framework of semantic ontologies in the customer relation management sector (CRM). The benefits that such an approach brings to a company are outlined and discussed.

The remainder of the article is organized as follows. The next two sections present the main concepts about Recommender Systems and the proposed Semantic Approach, while, the following section - Partitioning the Product Space, introduces a model for semantic approach used for recommendations. An example is presented in the section that follows. The last section concludes the paper with conclusions and new research challenges.

Recommender Systems

Customers are increasingly demanding and certainly more knowledgeable than before, while they require more personal attention. It is obvious that customer loyalty and retention can be improved through the enhancement of customer satisfaction (Reichheld 1996). As it is much cheaper to retain an existing customer than to acquire a new one, companies have to put more emphasis on increasing customer satisfaction, the value of which is often underestimated. Over a relative short period of time, a loyal customer purchases more, costs less to sell to and refers business to others. Loyal customers and loyal employees affect an organization's success, an observation which even though it can be difficult to quantify, it has been observed in several environments, in the sense that loyal customers help the business by increasing market share (Liu and Khalifa 2002).

Another underestimated factor is the customer choice behavior which is crucial especially in e-commerce (Chakrabarty 2004). A key difference between online and offline shopping is the ability of online consumers to obtain more information about both price and non-price attributes. Attribute-information that is not available at the time of decision making will have smaller impact on the overall evaluation.

According to Degeratu, Rangaswamy, and Wu (2001), if there are attributes that many consumers won't typically search in the offline stores because of high search costs, but information about them is available in the online store, then we should expect price importance to go down online. If there are no such search attributes, price importance may actually increase because price search is somewhat less effortful online than offline. So the volume and the quality of the available information affect the customer's absorption over price and that is something that concerns companies in the name of profit. As customers ignore price importance, companies can determine their profit by figuring their prices.

On the other hand, the mass of content available on the World-Wide Web raises important questions over its effective use (Middleton et al. 2002). The recent years have seen the explosive growth of information. The number of books, movies, news, advertisements and, in particular, on-line information is staggering. The volume of information is considerably more than any person can possibly filter through in order to find the pieces that he/she is looking for (Herlocker et al. 2004). Today several systems offer interfaces that suggest specific items to their users, thus providing users with a ranked list of recommended items. Recommender systems have been widely adopted as an efficient way to copy with the problem of information overload experienced not only by customers but by knowledge workers as well (Wei, Moreau, and Jennings 2005). The goal of a Recommender System is to introduce users to items that might be of interest to them and to convince users to sample those items (Swearingen and Sinha 2001).

Recommender systems are usually classified into the following categories, based on how recommendations are made (Adomavicius and Tuzhilin 2005):

- ▪ Content-based recommendations: The user will be recommended items similar to the ones the user preferred in the past;

- ▪ Collaborative recommendations: The user will be recommended items that people with similar tastes and preferences liked in the past.

In content-based recommendation methods, an item s is proposed as suitable for user c based on items s_i that are "similar" to item s (The "s_i" have been chosen before or have been rated highly by the user). For example, in a movie recommendation application, in order to recommend movies to user c, the content-based recommender system tries to understand the similarities among the movies user c has rated highly in the past. Then, only the movies that have a high degree of similarity to the user's preferences will be recommended (Reichheld 1996).

Unlike content-based recommendation methods, collaborative recommender systems (or collaborative filtering systems) try to predict items for a particular user based on items previously rated by other users. More formally, the choice of item s for user c is recommended based on items s_i that have been rated highly by those users c_j who are "similar" to user c. For example, in a movie recommendation application, in order to recommend movies to user c, the collaborative recommender system finds other users that have similar tastes in movies (rate the same movies similarly). Then, only the movies that are most liked by those users are recommended. An example of a collaborative recommender system is the book recommendation system of Amazon.com (Schafer, Konstan, and Riedl 1999).

The above types of recommender systems have several limitations that restrict their utility and make users resistant to trust their recommendations and ultimately not to use them. Some of these limitations are the following:

Comprehensive Understanding of Users and Items

Most of the recommendation methods produce ratings that are based on a limited understanding of users and items. They are based on user and item profiles and do not take full advantage of the available information in the user's transactional history and other available data. For example, classical collaborative filtering methods do not use user and item profiles at all for recommendation purposes but they rely exclusively on the ratings information to make recommendations.

Multidimensionality of Recommendations

The current set of recommender systems operates with two levels of information, information collected from users and information collected from the items users have rated previously. This means that they make their recommendations based only on the user and item information and they do not take into consideration additional relevant information that may be crucial in some applications. The value of a certain product to a user may depend significantly on other factors, such as on time (season or the day of the week), or on the persons with whom the product will be consumed (Cayzer and Aickelin 2005). For example, when recommending a vacation package the system should also consider the time of the year the user plans to travel as well as other contextual information such as the size of the group, etc.

Lack of sufficient data

In any recommender system, the number of available ratings is usually very small compared to the number of ratings that are needed for a trustable recommendation (Adomavicius and Tuzhilin 2005). However, the success of a collaborative recommender system depends on the availability of a critical mass of users. For example, for a user whose tastes are unusual compared to the rest of the population there will not be any other users to whom this user is particularly similar, leading to poor recommendations.

In this paper, we will propose to infuse in the recommendation issues the concept of semantics, which can offer a logical layer in order to deal with the above limitations.

A Semantic Approach for Recommendations

As discussed in the previous, most of the existing recommendation methods have several limitations. In the proposed system in this paper, we want to take full advantage of all the information that exists for a company's products and also for the product's interrelations as this can be estimated from transactional histories and other available data. This approach differs from classical collaborative filtering methods which do not use item profiles at all for recommendation purposes but rely exclusively on the ratings information to make recommendations. We would like to make recommendations taking into consideration this additional relevant information between items that is certainly useful be in most applications, instead of relying only on the two levels of information, i.e., the items and users.

In order to develop our solution we must discover the relations between items. We then use these relations to construct a semantic grid between items. Our target is to offer to customers recommendations for products depending on the relations between them. If a certain customer wants item *A* then we propose also items *B*, *C* and *D* because these four items have been tied together with one or more relations. This approach doesn't depend on the availability of a critical mass of users.

The reason for a product to be proposed together with another depends on the number of semantic relations between these products. The existence of many relations means that these products do not need ratings information to be discovered. Ratings information which come from customers past preference have the risk that time or other human factors may have influenced the customer's attitude or the customer's desires at present. On the other hand, collaborative recommendations which use ratings information that come from people with similar tastes and preferences in the past, have the additional danger to dissatisfy customers with unusual (not traditional) habits.

The proposed system is based on a root product that has been identified by the customer. This root helps us avoid situations in which the value of a certain product to a user may depend significantly on other factors beyond past choices or ratings, such as on time. Thus, the multidimensionality of recommendations can be managed. The recommendation doesn't depend on one factor (past ratings) but on many relations be-

tween factors. For example, the recommendation for a customer of an e-tourist office to go for vacations in South Asia during the monsoon season may come in conflict with some other relations. The dropping of a number of relations that link the products together also reduces the possibility for recommending that particular destination. Other recommendation systems will recommend the above destination if the customer has been there before or has interests in the past that focus on South Asia or if other people with similar interests have made the mistake of seeking to travel there in this season.

Prototype SCM Ontologies

In order to be able to make these relations we use the notion of ontologies. A prototype example has been developed in a knowledge base dealing with products and suppliers (fig. 1).

The example is based on a semantic search capability which can help to considerably reduce the time customers spend in searching for information.

Figure 1: View of an Ontology Dealing with Products and Suppliers
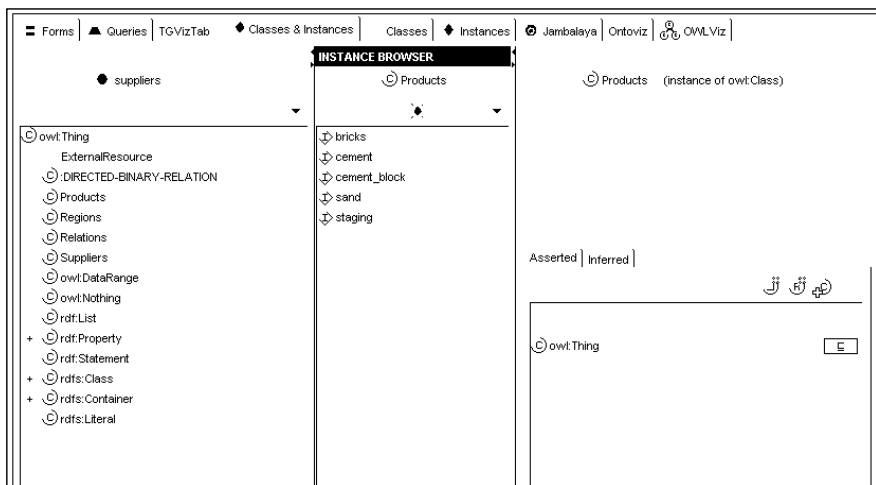
The basic tenet of this approach is our effort to achieve customer satisfaction. If the customer can find what he/she wants and more importantly what he/she hasn't thought of previously, then we have succeeded a point of customer request fulfillment which can lead to a complete customer satisfaction. All the information stored in the knowledge base can be represented in a standard format, in a widely used language like the Web Ontology Language (OWL) that has been developed by the Word Wide Web Consortium (W3C 2004).

The above approach can help a company achieve a delightful customer service, which can lead to a chainlike improvement to all interrelated activities across the value and supply chains.

The Semantic Web and Ontologies

It is a fact that information content is presented mostly in natural language. Finding the right piece of information in the Web is often very difficult. Searches are inaccurate, often generating matches to many thousands of often non related pages (Luke, Spector, and Rager 1996). In the near future, we will have significantly new functionalities as machines become much better able to process and understand the data that they merely display at present. In order to provide meaning for data, the knowledge must be represented in a specific way. The Semantic Web is not a separate Web but an extension of the current one, in which information is given a well-defined meaning, thus better enabling computers and people to work in cooperation (Berners-Lee, Hendler, and Lassila 2001).

One of the oldest knowledge representation formalisms is the Ontology, "a formal explicit specification of a shared conceptualization" (Gruber 1993). Ontologies can be used to provide a solid specification of term names and term meanings. The need for shareable and reusable knowledge bases fits well with the notion of ontology. Problem-solving processes, domain-independent applications and software agents use ontologies and knowledge bases built from ontologies as data.

One important Semantic Web application area is e-commerce. Here, ontologies can be used to illustrate services so that agents can advertise and discover services according to a semantic specification of functionality.

An important goal of the semantic web is to make electronic commerce interactions more flexible and automated. To achieve this, the standardization of ontologies, message content and message protocols will be necessary. With semantic web, it will be easy to understand a whole range of tools and applications that are difficult to handle in the construction of the current web. Examples include knowledge-repositories, search agents, information parsers, etc. (Horrocks and Li 2004). Moreover, the developers of end user applications will not need to worry about how to interpret the information found on the Web, as ontologies will be used to provide vocabulary with explicitly defined and machine understandable meaning.

Ontologies together with a set of individual instances of classes constitute a knowledge base. Classes are the focus of most ontologies. Classes describe concepts in the domain. For instance, a class of products represents all products. Specific products are instances of this class. A class can have subclasses that represent concepts that are more specific particular than the super class. Slots describe properties of classes and instances. Developing an ontology entails:

- defining classes in the ontology;
- organizing the classes in a taxonomic (subclass–super class) hierarchy;

- defining slots and allowed values for these slots;
- putting in the values of slots for instances.

A View of Ontologies

The proposed system is a system that achieves customer order fulfillment in an efficient way. In order to gather knowledge for the knowledge base we can use either customer in order to cluster products on specific criteria, or the suppliers of products themselves, for presentational and advertising purposes. The constructed knowledge base can then be used to cluster products depending on the relations between them. We used the Protégé-2000 tool (Noy and McGuinness 2003) to construct the knowledge base. This is an ontology editor which can be used to define classes and class hierarchies, slots and slot-value restrictions, relationships between classes and properties of these relationships. In figure 2, we can see an example of defining classes in ontology. The classes "Products" and "Suppliers" have been defined through OWL. This well-defined global standard from W3C gives companies the opportunity to interact internally between departments or with suppliers and customers, despite hardware and software differentiations.

Figure 2: An Example of Defining Classes with OWL

```xml
<?xml version="1.0"?>

<rdf:RDF

    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"

    xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"

    xmlns:owl="http://www.w3.org/2002/07/owl#"

    xmlns="http://www.owl-ontologies.com/unnamed.owl#"

  xml:base="http://www.owl-ontologies.com/unnamed.owl">

 <owl:Ontology rdf:about=""/>

 <owl:Class rdf:ID="Access_Storage">

  <rdfs:subClassOf>

    <owl:Class rdf:ID="Products"/>

  </rdfs:subClassOf>

  <rdfs:comment rdf:datatype="http://www.w3.org/2001/XMLSchema#string"

  >Access Equipment and Storage </rdfs:comment>

 </owl:Class>
```

Partitioning the Product Space

In order to apply relations between items, we have to relate each other, to make "companions" of them. This can be achieved using the mathematical notions of equivalence relations which have the ability to partition the space. When a number of items satisfy an equivalence relation, they form a subset of items which are named an equivalence class. For example, let X be a non-empty set and ~ an equivalence relation on X. The equivalence classes of ~ form a partition (a disjoint collection of non-empty subsets whose union is the whole set) of X (see the Appendix). The result will be a partitioned space divided into sets (classes) of items. These items in each class are interrelated with equivalence relations between them.

Correlations Trough Equivalence Classes

In this section, we will show how to apply the above concepts. We present the basic principles that allow the discovery of relations between products.

At first we declare some basic relations between products which will play the basic role in our approach. Some of these relations can be the followings: *"correlate_with"*, *"improves_on"*, *"shares_issues_with"*, *"uses/applies"*, *"addresses"*, *"example_of"*, *"is_analogous_to"*, *"is_similar_to"*, *"needed_with, "sustitute_of"*, *"is_about"*, and *"employ"*.

We will show that, for example, the relation *"correlate_with"* is an equivalence relation and in the same way this can be shown for the others basic relations.

Using concepts from set theory (see the Appendix), we will use the partition theorem in the context of a set of elements with semantics. These semantics are going to be introduced through basic relations between elements. Let us consider a set of products and goods offerings by a company, which we can think of as vertices on a blackboard. If a product is strongly related to another one, then we say that is connected through *"correlate_with"* and an edge is introduced between these vertices. Thus, a graph connecting the correlated products is produced. These correlations can be used as a clustering method.

We can define an equivalence relation on the set of products as follows. Let v and w be two products. Then $v \sim w$ if and only if there is a sequence, $a_1 \dots a_n$, of products connecting v to w ($a_1 = v$ and $a_n = w$), where $[a_i, a_{i+1}]$ is an edge of the graph, i.e. a relation starting from a_1 can lead to a relation between a_1 and a_n. Here n is an arbitrary positive integer and i an integer greater than or equal to 1 and less than or equal to n – 1. Hence, this equivalence relation is a precise way to say that all the products that are connected to all others by a sequence of edges lie in the same equivalence class.

In order to assert that the relation *"correlate_with"* is an equivalence relation, we must check that it satisfies the three properties: reflexive, symmetric, transitive.

   1. Let n = 1, then $a_v \sim a_v$; hence, the equivalence relation is reflexive.

2. If $a_v \sim a_w$, then there is a sequence of products, $a_1 \dots a_n$, that connect v to w. Hence the sequence, $a_n \dots a_1$, connects a_w to a_v. Thus $a_w \sim a_v$ and the relation is symmetric.

3. If $a_v \sim a_w$ and $a_w \sim a_z$, then there are two corresponding sequences of products that connect a_v to a_w and a_w to a_z respectively: $a_1 \dots a_n$ and $b_1 \dots b_m$. The sequence $a_1 \dots a_n, b_1 \dots b_m$ connects a_v to a_z. Hence, $a_v \sim a_z$ and the relation is transitive too.

Therefore, *~correlate_with* is an equivalence relation.

Consequently, the products that are connected to each other by a sequence of edges as designed by *~correlate_with* partition the set of products through equivalence classes. The products in each equivalence class are connected by edges only to fellow elements in that equivalence class (Radcliffe 1991).

Semantic Interrelation between Products

From the above we have seen that there can be equivalence relations between products. In order to extract results from the above interlinking of items, we need to find the relations between items which exist in several classes of different equivalence relations.

For example, let us have the general search space (fig. 3) that contains elements. We define three equivalence relations over S ($\sim_a$, $\sim_b$, $\sim_c$). Each of them partitions the search space into disjoint equivalence classes, within which all the elements are equivalent under the given equivalence relation. We can observe that there exist pairs of elements, which confirm more than one equivalence relation $\{(P_1, P_2), (P_1, P_4)\}$. These pairs can enforce a more comprehensive interrelation. The pair (P_1, P_2) is being included in the three above equivalence relations, but the pair (P_4, P_5) confirms only one $(P_4 \sim_c P_5)$. This can lead us to the conclusion that elements P_1, P_2 have strong relations which can help us to compose a rich semantic behavior between them.

In order to achieve the discovery of the above interrelations between items that exist in several classes of different equivalence relations, we used the notion of Intersection of equivalence relations (see Appendix). Through this intersection, we can reach semantic similarities between products in order to cluster and introduce them to consumers in an efficient way, thus managing to enhance their satisfaction.

As we will see in the following, the capabilities of ontology languages, (like the Web Ontology Language (OWL 2004)) allow us to use logical and mathematical operations. Through them, we will able to enforce symmetric and transitive properties. We will then construct a grid, i.e., a semantic net between nodes (products).

First, we will make entries of some basic products of general use, according to the size and the way of increase of volumes of products that will be entered. We will thus achieve an automatic semantic grid because if products a, b, c are connected semantically with relations, we have to connect product d (which has to be connected with the

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above) only with one of a, b, or c. The connection with the others will be forced by the inference capabilities using the symmetric and transitive properties.

Figure 3: Equivalence Relations over Search Space
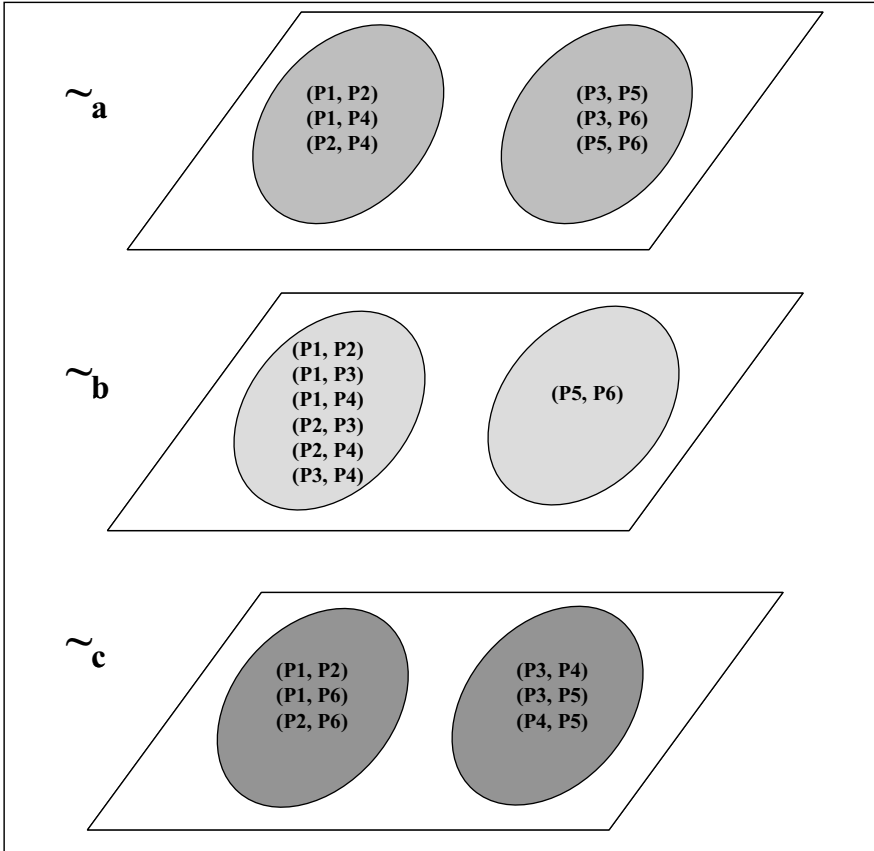
Suppose that we have the following products in our ontology:

$p_1, p_2, p_3, p_4, p_5, p_6,$ ε S

and that we have determined the following equivalence relations from Ψ, which is the set of equivalence relations over S:

$r_1,$ → *NEEDED_WITH*

$r_2,$ → *SUBSTITUTE_OF*   ε Ψ

r_3 → *IMPROVES_ON*

Then, we can have the following equivalence classes, which partition the search space S.

$\{p_1, p_2, p_3\}$, $\{p_4, p_5\}$ $\qquad\qquad$ caused by r_1

$\{p_2, p_3, p_4\}$, $\{p_5, p_6\}$ $\qquad$ caused by r_2

$\{p_2, p_3\}$, $\{p_5, p_6\}$, $\{p_1, p_4\}$ caused by r_3

The superset of all equivalence classes (see the Appendix) induced by a set of equivalence relations Ψ will be written as $\Xi(\Psi)$.

$\Xi(\Psi) = (\{ p_1, p_2, p_3\}, \{ p_4, p_5 \}, \{ p_2, p_3, p_4\}, \{ p_5, p_6 \}, \{ p_2, p_3\}, \{ p_5, p_6\}, \{ p_1, p_4\})$

An operator (see the Appendix) X can determine a relation which can be conveniently described by a function:

$$X:\ S\ x\ S\ x\ K_x\ \rightarrow\ S$$

$(\{ p_1, p_2, p_3\}, \{ p_4, p_5 \})\ X\ (\{ p_2, p_3, p_4\}, \{ p_5, p_6 \})\ X\ (\{ p_2, p_3\}, \{ p_5, p_6\}, \{ p_1, p_4\})\ X\ (\cap^S)\ \rightarrow\ \{ p_2, p_3\}$

The above means that:

(1) $(r_1 \cap r_2 \cap r_3)\ (p_2, p_3) = r_1\ (p_2, p_3) \wedge r_2\ (p_2, p_3) \wedge r_3\ (p_2, p_3) = 1,$

because

(2) $\left.\begin{array}{l} r_1(p_2, p_3) = 1 \\ r_2(p_2, p_3) = 1 \\ r_3(p_2, p_3) = 1 \end{array}\right\} \Rightarrow r_1(p_2, p_3) = r_2(p_2, p_3) = r_3(p_2, p_3) = 1,$

which is true.

The above intersection between the three equivalence relations, which have been used in our example, leads us to the conclusion that the products p_2, p_3 are tied between, in a semantic way. The conclusion is that these two products are the only ones from the set which they are correlated with "*needed_with*", "*substitute_of*", and" *improves on*" (Gangmin et al. 2002).

An EXAMPLE: Customer Satisfaction through a Recommender System

Our model uses the interlinking between products through several relations. We use semantic dependencies among products in order to achieve knowledge modeling and to implement a semantic network between products.

The exact relationships that can hold between two products are the important key points (Shum, Motta, and Domingue 2000). We have already noticed that specific relations within the set of products like "*improves_on*", "*needed_with*", "*substitute_of*", "*is_about*", "*uses/applies*", "*employ*", "*example_of*", "*is_analogous_to*", "*is_similar_to*", "*shares_issues_with*", can determine equivalence relations. Each

time two products are connected with such a relation, they belong to the corresponding equivalence class.

When a customer searches for a product in a specific company's website, he/she hopes to find the one that satisfies his/her needs, at the right price, and with good delivering and shipping procedures. This has to be done in an acceptable time frame. Apart from the above, it would be very efficient for the customer and for the company, if there can be suggestions for other products similar or relevant to the one that the customer asked for originally. This would be very efficient not only for the user who might be interested in learning about these other products, without considerable additional time and effort, but for the company as well, since this is a way to achieve customer satisfaction.

In figure 4, we see an example of an interaction with a company, (E-Shops 2006) that deals with tools and hardware products (In order to construct the example we took information and directions from various e-shops dealing with these issues). Customers of such an e-shop/ company can range from new, often inexperienced, craftsmen who don't have any specific idea about the products that will be needed for their work, to professional mechanics who want specific products, have a general plan of their work and appreciate suggestions for useful new products.

A system which can categorize and promote products is important for them as well as for the company in order to catch the specific customer's needs and to develop a profitable relation with them. A customer who wants to buy a landscaping tool might not have thought of buying things that "*needed_with*" or "*improves_on*" or "*uses/applies*" or is a "*substitute_with*" this landscaping tool. We have to give the customer the chance to fulfill all his/her needs through the products the company offers.

First, we will make entries of some basic products of general use, according to the size and the way of increase of volumes of products that will be entered. We will thus achieve an automatic semantic grid because if products a, b, c are connected semantically with relations, we have to connect product d (which has to be connected with the above) only with one of a, b, or c. The connection with the others will be forced by the inference capabilities using the symmetric and transitive properties.

Figure 4: An Example of an Interaction with a Company that Deals with Tools and Hardware Products
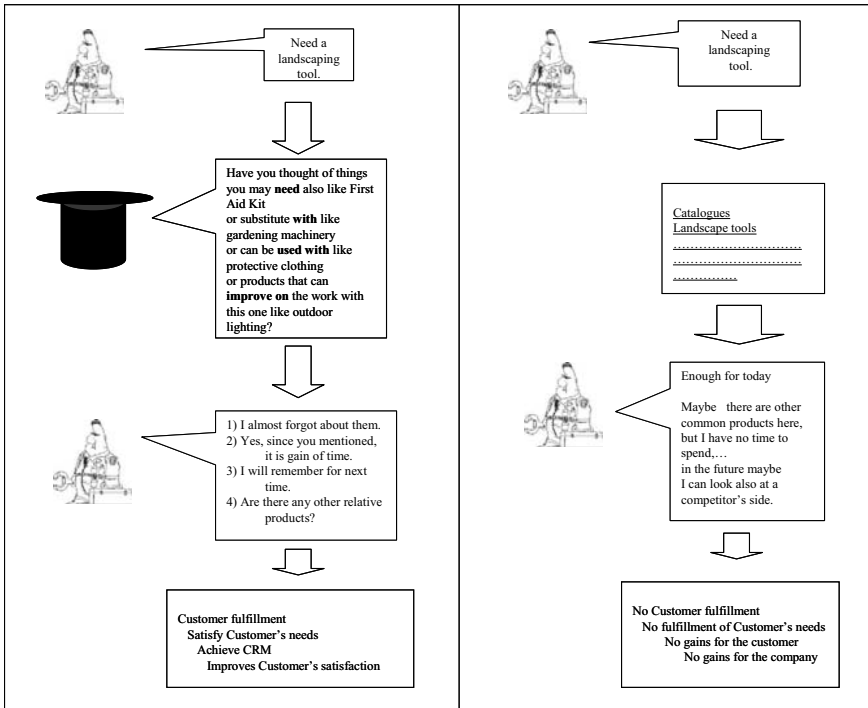
A landscape hand tool can (fig. 5) be "*substitute_with*" gardening machinery, can be "*used_with*" protective clothing and also an outdoor lighting can "*improves_on*" the work with it. In addition a first-aid kit is also "*needed_with,*" in case of an accident. The customer may already have or may not have, may buy, or may not buy these products, but it is certain that he will feel that the company thinks of him and tries to build a productive relation. All these recommendations lead to the overall customer satisfaction.

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**Figure 5: An Example of an Ontology Model in a Company with Tools and Hardware Products**
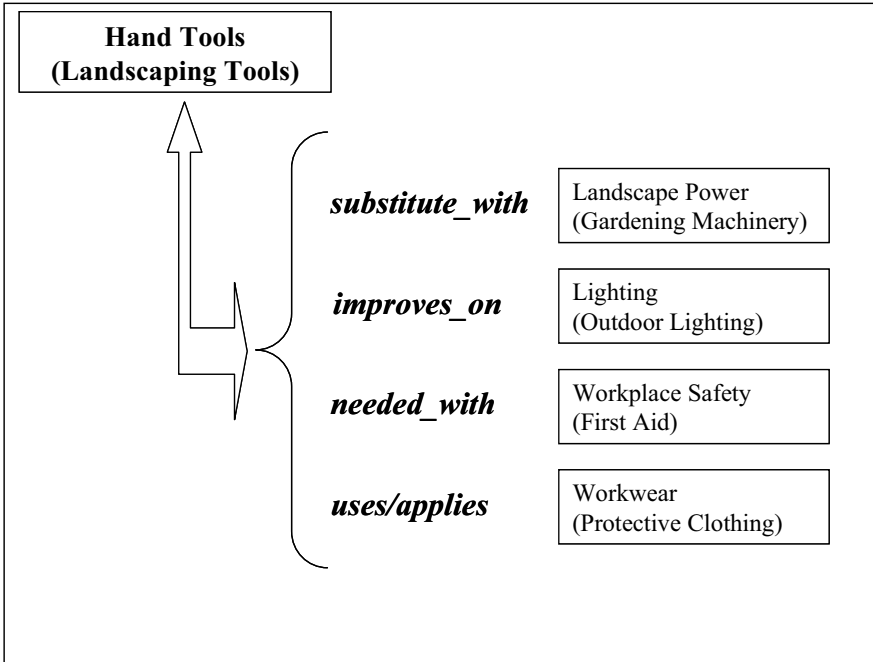
In another example (fig. 6), we make use of paintbrushes to use paints; we may also use a special cleaning product to deal with a possible mess. In addition, the painting may be improved by the use of a roof ladder. A concrete mixer shares issues with paints because it is useful for mixing them in order to create several tints; we also may employ shelving in order to store all the paints.

On the other hand, if there are products that are correlated with product "*paints*" with more than one relation (like in the above examples), the consequence will be that these products will be shown to the customer first. The products with the smaller number of relations with the "root" product will be shown later to the customer, because, as we have already discussed, more relations between products mean more similarities among them and a greater need to introduce them to consumers, so as to enhance their satisfaction. The intersection between the relations helps us find the *products* which have been correlated with each other and the *number* of relations among them. In the example of figure 7 the product "paints" is related with "paintbrushes" through three main relations like "*needed_with*", *"shares_issues_with"* and *"uses/applies"*.

Figure 6: **An Example of an Ontology Model in a Company Dealing with Paints and Similar Products**
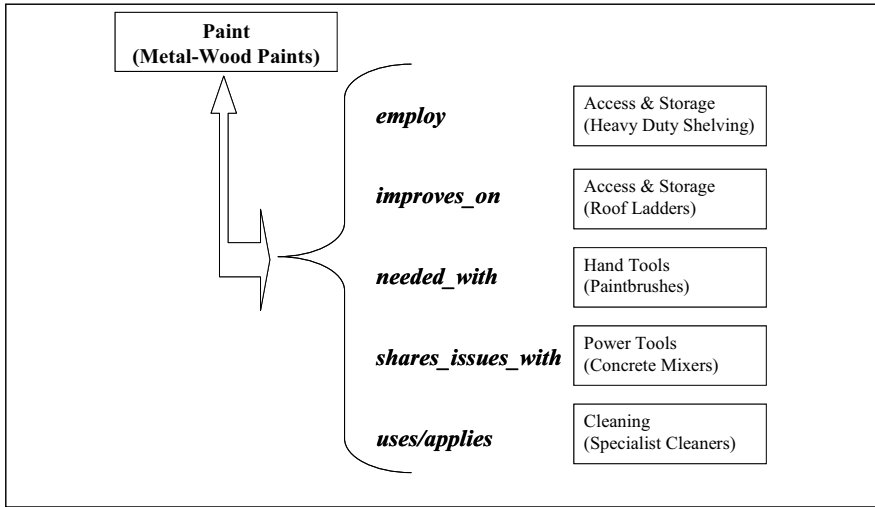
Figure 7: **An Example of an Ontology Model where Two Products are Correlated with Each Other through Three Relations**
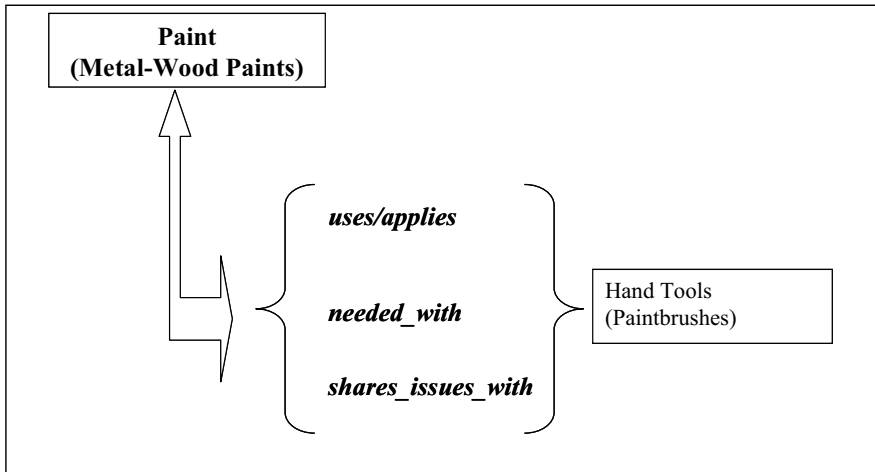
As we have already discussed the above model relies on the semantic interrelation among products. In order to achieve this, we implemented an ontology dealing with

products. As we can be seen in figures 8 and 9 the product metal-wood paints is tightened together with the products "heavy duty shelving", "roof ladders", "paintbrushes", "concrete mixers" and "special cleaners" through the basic relations "*employ", "improves_on", "needed_with", "shares_issues_with"* and *"uses/applies".* Thus, all these products can be proposed to a customer who, at first, asked for only metal-wood paint.

Figure 8: A Semantic Interlinking between Products through Relations with Protégé-2000
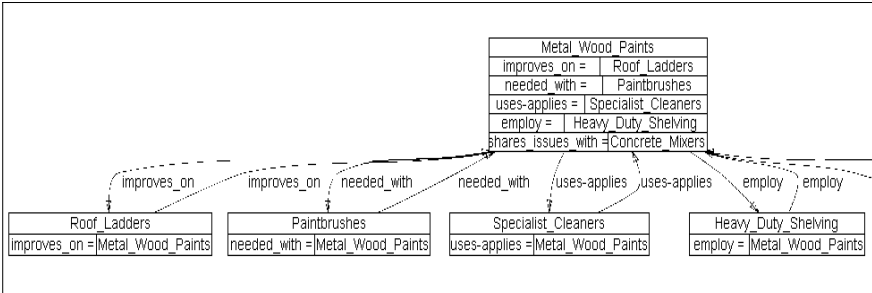
Figure 9: The Semantic Relations between Products with Metal Wood Paints
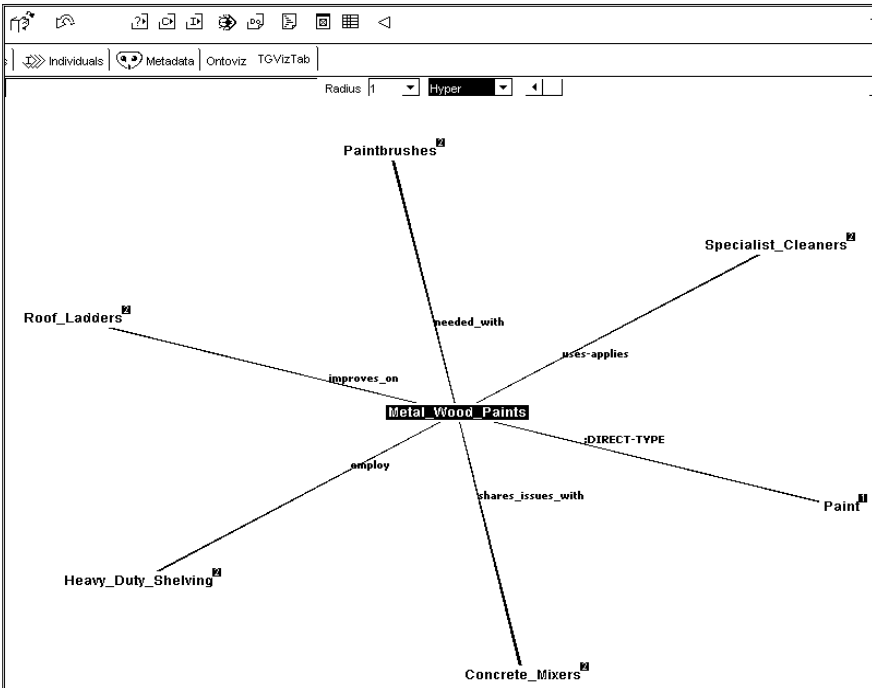
Products in a specific enterprise area have many semantic connections between them. This is natural since customers have relevant needs. These needs are interrelated and we have to emphasize this to the customer. Links between products can lead to customer satisfaction which is vital to a long-term business survival and profitability.

Conclusion

Companies need to explore multiple ways to satisfy their customers because customers are their leading asset. In addition, consumers need easy ways to search and find what they are looking for. As the amount of information continues to explode, the need for efficient data capture and delivery is becoming increasingly apparent. Without efficient recommender systems in place, customers will eventually spend more time searching for information than actually consuming it. There is a need for clear, recognizable and distinctive practices that impress customers. The effect of a practice like this is clear: It leads customers to enjoy the interaction with the organization and significantly increases the likelihood that a customer will become loyal and a potential recommender of the organization to others.

There is only one way of enabling computers to deal with information in a meaningful way and that is to describe it in a precise, machine-readable format. This can be achieved by using knowledge bases in a Semantic Web and by trying to develop more friendly and efficient recommender systems. Ontologies are one such tool used to maintain and provide access to specific knowledge repositories (Middleton et al. 2002). It is time for a move to a more sophisticated environment with semantic structures in order to fulfill customers' needs in a more personalized way and to ensure that companies can truly take advantage of the new and upcoming semantic web.

APPENDIX

Equivalence Relations and Classes

Let X be a set and let x, y, and z be elements of X. An equivalence relation, ~, on X is a relation on X such that satisfies the following:

Reflexive Property:	x is equivalent to x for all x in X; i.e. (x ~ x for all x in X).
Symmetric Property:	if x is equivalent to y, then y is equivalent to x; i.e. (if x ~ y, then y ~ x).
Transitive Property:	if x is equivalent to y and y is equivalent to z, then x is equivalent to z; i.e. (if x ~ y and y ~ z, then x ~ z).

Let X be a set. Let ~ be an equivalence relation on X. Let x be an element of X. The **equivalence class** of x is the subset of X that contains all elements of X that are equivalent to x under ~. We can say that, the equivalence class of x is the subset of X: {y: x ~ y and y is an element of X}.

Let X be a non-empty set and ~ an equivalence relation on X. The equivalence classes of ~ form a **partition** (a disjoint collection of non-empty subsets whose union is the whole set) of X."

Forma Analysis: Summary and Definitions

Equivalence Relations and Formae

Let S be a search space and let Ψ be a set of equivalence relations over S. Then the equivalence classes of all the equivalence relations in Ψ are referred to as formae. The set of all formae induced by a set of equivalence relations Ψ will be written as Ξ(Ψ) (Radcliffe 1991). A recombination operator X can be described by a function:

$$\mathbf{X:\ S\ x\ S\ x\ K_x \rightarrow S}$$

This one takes two parent solutions A and B from the search space S together with a control parameter k ε K_x, and produces a child in S. We will assign A, B as classes coming from the several equivalence relations in the searching space S and we will consider control parameter k ε K_x as the set operation, which will give us the desirable effect.

Intersection of equivalence relations

Given the equivalence relations r_1, r_2 ε E(S), (where E(S) is the set of all equivalence relations over search space S and B is the set of truth-values, with 0 corresponding to "false" and 1 to "true") we can define their intersection (Radcliffe 1994): $\mathbf{r_1 \cap r_2 : S\ x}$ $\mathbf{S \rightarrow B}$ by

(3) $$\mathbf{(r_1 \cap r_2)\ (x,\ y) = r_1\ (x,\ y) \wedge r_2\ (x,\ y)}$$

where ∧ denotes logical conjunction ("and") defined by $\quad a \wedge b = \begin{cases} 1, & if\, a = b = 1 \\ 0, & otherwise \end{cases}$

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The Role of Service Type, Familiarity, Contact and Internet Experience When Shopping Online for Services

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Abstract

This research investigates consumers' likelihood of purchasing services online. Four influences are considered: service type, contact with service provider prior to online purchase, familiarity with service provider, and experience with Internet purchasing. For two services, car insurance and travel, respondents indicated a need for a face-to-face contact with the service provider prior to online purchase and a preference for buying on the Internet services from a familiar provider. Respondents who have some general experience with online shopping appear more willing than 'novices' to purchase a service online. The paper contributes to the understanding of the influences on consumers' likelihood to purchase services online.

Keywords: Services typology, Internet shopping, Offline/online relationship, Brand familiarity, ANOVA

Introduction

Previous researchers have indicated that the intrinsic characteristics of the products are among the determinants of the volume of online sales achieved. For instance, Peterson, Balasubramanian, and Bronnenberg (1997) postulated that the Internet is best suited as a distribution channel when the core essence of the product is of an intangible and informative nature. Consistently, empirical research findings by Phillips et al. (1997), Fenech and O'Cass (2001) and Citrin et al. (2003) suggest that the Internet does not befit products that require a 'multisensory' or 'tactile' experience prior to purchase decision. The list of online 'best sellers', such as books, music, event and travel tickets, videos and DVDs (The Economist 2004), broadly supports this suggestion. The Internet does not alter significantly the core essence of purchasing standardized products such as airline tickets, videos and DVDs.

Broad generalizations may, however, be inappropriate to explain differences in the online sale levels of different goods and services (Brown, Pope, and Voges 2003). For instance, the high degree of intangibility usually associated with services does not, per se, make the Internet a suitable distribution channel for services. Indeed, Kolesar, and Galbraith (2000, p. 424) hold that: "*(t)he Internet is a poor service delivery medium, it lacks the capacity for direct personal interaction enjoyed by non-Internet based services.*" The characteristics of a specific service in terms, for instance, of the degree of contact with employees, customization, and personalization required (Bowen 1990) and the associated degree of consumers' risk and variability perceptions (Murray and Schlacter 1990) need to be taken into consideration, when looking at the purchase of services online (see also Rahman 2004). We need to go beyond broad generalizations and we need to improve our understanding of the drivers and barriers to shopping online for a wide range of goods and services.

This paper focuses on consumers' intentions to purchase online services with different characteristics, under a variety of conditions. Apart from few exceptions (Brown, Pope, and Voges 2003; Vijayasarathy 2003), little empirical research has attempted to directly compare consumer intentions to use the Internet for the purchase of different kinds of services. In contrast, a wealth of research has dealt either with the factors influencing the adoption of self-service technology in general (see for example Bobbitt and Dabholkar 2001; Dabholkar and Bagozzi 2002 and previous references there) or with the factors concerning the adoption of a single internet service such as online banking (Gerrard, Cunningham, and Devlin 2006; Liao et al. 1999; Liao and Cheung 2002; Mattila, Karjaluoto, and Pento 2003), music downloads (Walsh et al. 2003), or e-grocery (see Degeratu, Rangaswamy, and Wu 2000; Hansen, Jensen, and Solgaard 2004). Another stream of research has focused on the general characteristics and motivations of the online shopper (for instance Brengman et al. 2005; Swinyard and Smith 2003). Despite this extensive body of research, a number of gaps need to be filled, in order to arrive at a general theory of e-services.

The first gap relates to the explicit consideration of the specific service's characteristics and to the comparison with services of different kinds. In empirical research by

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Vijayasarathy (2003) only the degree of tangibility and cost outlay were considered. Also, Rahman's (2004) two-dimensional model for classifying which services can be sold and distributed over the Internet has not been empirically tested. Furthermore, Brown, Pope, and Voges (2003) were not able to make generalizations from their findings about which services (or goods) are more suited to Internet retailing than others.

A second gap exists in regards to whether, and the extent to which, the lack of 'human touch' in the sale and distribution of e-services affects consumers' willingness to purchase services online, as postulated, but not empirically investigated, by Kolesar and Galbraith (2004). As we discuss in the next sections, this is potentially a very important issue, since face-to-face interaction with service personnel not only is fundamental to the delivery of some services, but it is also generally considered a significant risk reliever (Murray and Schlacter 1990).

Finally, familiarity with the brand and general experience with Internet purchasing have been recognized as important facilitators of online shopping for tangible goods (e.g. Citrin et al. 2003; Goldsmith and Goldsmith 2002). While we would expect this to hold true also for familiar service providers, no previous literature has researched this in the context of services with different characteristics. We investigate such effects in this paper.

In summary, this study contributes to previous knowledge of consumers' online buying behavior for services by examining the following issues:

1. The relationship between services characteristics and consumer likelihood to purchase via the Internet;

2. The effect of offline familiarity with the service provider on consumers' likelihood of purchasing a service online;

3. The need for face-to-face contact with the service provider prior to the online purchase;

4. The impact of Internet purchase experience on consumers' likelihood to purchase a service on the Internet.

We investigate the above issues for two services (car insurance and a holiday package) which differ somewhat in their intrinsic characteristics. We find that each individual element (service type, familiarity with service provider; face-to-face contact and experience) has a direct impact on purchase likelihood, while there is little interaction between the factors.

The rest of the paper is structured as follows. After a review of the conceptual background for this research, leading to the development of hypotheses, we present our methods of research and report on results concerning the four areas mentioned above. Finally, the results are discussed and relevant managerial implications are suggested.

Conceptual Background and Research Hypotheses

Building on the model proposed by Cowles, Kiecker, and Little (2002), a recent re-view of the literature concerning online shopping identified product (encompassing goods and services typologies), consumer and retailer factors as three key influences on purchase behavior on the Internet (see Dall'Olmo Riley, Scarpi, and Manaresi 2005), as depicted in Figure 1 below.

Figure 1: The Interaction of Product, Consumer and Retailer Factors
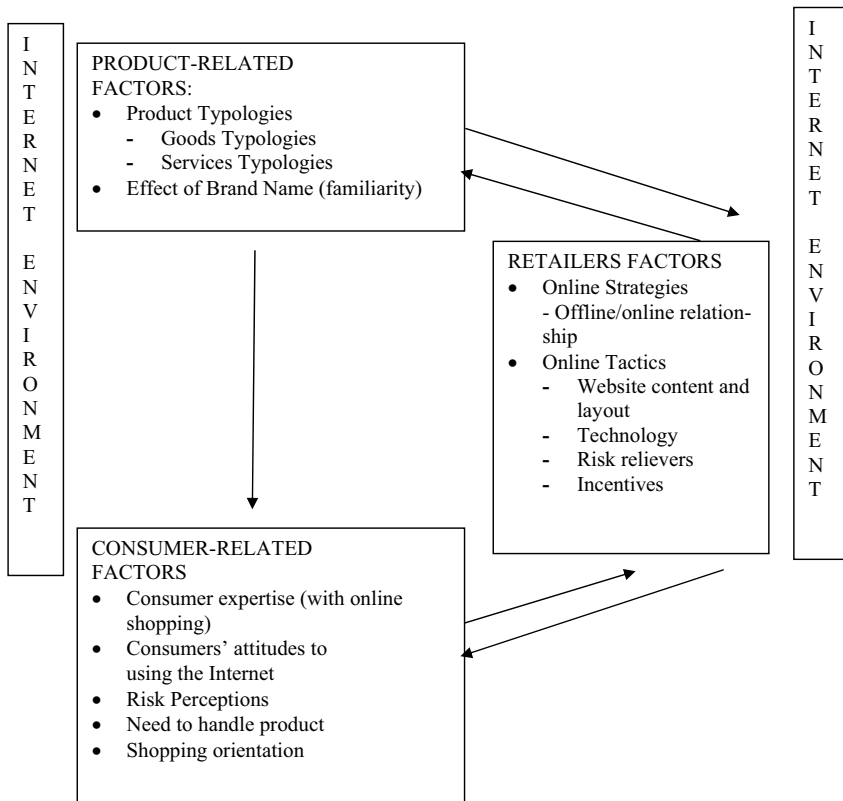
From the general framework in Figure 1, the following constructs, pertaining to the objectives of this paper, are discussed: services typologies, familiarity with the service provider, offline/online relationship (albeit from a consumer, rather than from a re-tailer's point of view), and previous experience with online shopping. Relevant hy-

potheses are formulated. Please note that throughout the paper the term product is used in a general sense, encompassing both goods and services.

Service typologies

According to Peterson, Balasubramanian, and Bronnenberg (1997), the Internet should best suit the sale of products whose core essence is of an intangible and informative nature. Empirical findings by Vijayasarathy (2003) also indicate that consumers would be more inclined to use the Internet to shop for intangible rather than tangible products.

While there is wide debate in the literature about the extent to which intangibility is an essential trait of services (see de Chernatony and Dall'Olmo Riley 1999 for a summary), other characteristics of services can be considered, when assessing the suitability of the Internet as a distribution channel. For example, in a general context, Bowen (1990) categorized services into three groups, on the basis of degree of contact with employees, customization, and personalization. Bowen's classification criteria can offer insights into the evaluation of the Internet as a sales and distribution channel for services. 'High contact, customized, personal services' such as legal and counseling services are likely to be very hard to deliver online, because customers perceive face-to-face contact with employees as a fundamental aspect of the service (see Kolesar and Galbraith 2000). On the other hand, for 'moderate contact, semi-customized, personal services' such as retail personal banking, the Internet is a frequently used medium, providing advantages such as time saving and the opportunity to access personal information at any time. Finally, 'moderate contact, standardized services' like the booking of airline tickets are well suited to online sale and delivery, since for this kind of services customers value convenience, price comparison and price saving the most (Starkov and Price 2003). More recently, Rahman (2004) postulated that classifying services on the basis of the extent to which the service act can be customized and at whom (or what) the act is directed should be useful to managers for planning and implementing suitable e-commerce solutions for services. While providing examples befitting the proposed classification scheme, Rahman's model remains empirically untested.

This is the first gap we want to address. Specifically, we want to empirically test the relationship between the characteristics of a service (the service 'type') and consumers' intentions to purchase the service online. On the basis of Bowen's (1990) classification of services and related considerations, we would expect consumers' intentions to purchase a service online to be higher for standardized, non-personal services offerings, such as car insurance, requiring moderate contact with the provider. Conversely, we expect consumers' intentions to purchase a service online to be lower for more customized, personal services, requiring moderate to high contact with the provider, such as a personalized travel package.

Hence, we postulate one general hypothesis and two sub-hypotheses:

H1: **There is a significant relationship between service type and intention to purchase via the Internet**

    H1(a): **The likelihood to purchase via the Internet is <u>greater</u> for standardized, non-personal services offerings**

    H1(b): **The likelihood to purchase via the Internet is <u>lower</u> for customized, personal services**

Familiarity with service provider

Most researchers agree that consumers are more likely to shop online for goods with well-known brands and are more likely to shop from well-known retailers, even if they carry lesser-known brands (Kau, Tang, and Ghose 2003; Lee and Tan 2003). In the words of Pricewaterhouse Coopers, "*80% of consumers who have shopped for clothing online over the past six months do so at sites operated by a traditional store or catalogue retailer, and one-third of online consumers say they shopped for clothing at sites operated by a manufacturer whose products they were already familiar with*" (Kau, Tang, and Ghose 2003, p. 141). Exploratory research by Davis, Buchanan-Oliver, and Brodie (2000, p. 185) also had concluded that: "*the retail service brand defines the experience of shopping online for consumers in terms of service attributes, symbolic meanings, and functional consequences of the service encounter*". Well established, traditional retailers will therefore have an advantage over start-ups in electronic retailing since they can capitalize on their reputation as risk reliever, reducing the risk aversion of some online consumers (Lee and Tan 2003).

The above research results are consistent in suggesting that the familiarity acquired with a retailer in a traditional shopping situation (offline) facilitates the purchase of tangible goods online from such retailer. As a consequence, we would expect the familiarity acquired with a service provider in a traditional purchase situation to have a strong influence, either as a risk reliever or because of inertia, when shopping online for services. Therefore we postulate the following, general hypothesis:

H2: **Greater familiarity with the service provider has a positive effect on the likelihood of buying the service over the Internet.**

Offline/online relationship

Tangible cues deriving either from the so-called 'physical evidence' element, or from face-to-face contact with service personnel are also important risk relievers for consumers prior to the purchase of services (Murray and Schlacter 1990). Therefore, the complete lack of physicality in buying straight from the Internet could make consumers feel uneasy and uncertain (Girard, Silverblatt, and Korgaonkar 2002), and heighten risk perceptions.

For some consumers, the need for human contact in a service delivery is a personal trait (see Dabholkar 1996; Dabholkar and Bagozzi 2002) and has a social meaning, for instance meeting employees and other customers. Consumers with a high need for in-

ter-personal contact will tend to avoid self-service technology such as the Internet (Dabholkar and Bagozzi 2002; Meuter et al. 2005).

For other consumers, interaction with a service employee prior to online purchase has a functional purpose, like building up a reference price or indeed building trust in the provider. For instance, consumers may first compare online different holiday packages and their prices, then visit a travel agency to discuss various aspects of the holiday and obtain an insider's view and recommendation from the travel agent. Finally, they might go back home and use a search engine to find the lowest price and buy online. As Sawhney remarks, "*in this way, consumers are 'deconstructing the purchasing process'* (…) *unbundling product information from the transaction itself*" (quoted in The Economist 2004, p. 4).

Aside from the need for inter-personal contact as a personality trait (which we do not measure in this research), from the services literature and from the evidence on the 'deconstruction' of the online purchasing process, it is logical to infer that services shoppers should be more likely to purchase a service online if they have had some positive contact with a service employee at some stage of their decision making process.

Accordingly, we postulate that:

H3:   Positive contact with a service employee to collect information before purchase decision has a positive effect on the likelihood of buying the service over the Internet.

While contact with a service employee prior to purchase can take place in a variety of ways (telephonically, face-to-face or online) and for a variety of reasons, please note that in H3, we consider the case of consumers visiting traditional ("brick-and-mortar") service firms to gain information prior to buying services online (see questionnaire).

Past Online Shopping Experience

Heavy users of the Internet evaluate it more favorably than light users (Van den Poel and Leunis 1999). Past experience with the Internet medium itself, both as an information gathering and as a shopping vehicle, is considered by many researchers as the key predictor of online buying (Bellman, Lohse, and Johnson 1999; Brown, Pope, and Voges 2003; Goldsmith and Bridges 2000). More experienced online buyers have more positive attitudes toward the Internet in general (Goldsmith and Goldsmith 2002) and feel less anxious toward it than novices (Fenech 2000). Previous experience of online shopping has a positive influence on the frequency and number of online purchases, no matter what the product is (Bart et al. 2005; Brown, Pope, and Voges 2003; Fenech 2000; Goldsmith and Goldsmith 2002; Van den Poel and Leunis 1999).

We expect this to hold true also for services: respondents who have some general experience of Internet shopping will be less reluctant than novices to purchase a service online, even if their previous Internet purchases has been of tangible goods. We postulate the following hypothesis:

H4: **Past general experience with online shopping has a positive effect on an individual's likelihood to purchase a service online.**

Research Method

Research Design

We wanted to test the effect of services characteristics, familiarity with the service provider, contact with the service employee prior to purchase and past Internet shopping experience on the likelihood to purchase a service online. To this end, the following research design was employed.

Choice of Services Rationale

We selected two services: purchasing a trip to a European Capital (flight and 6 nights) from an online travel agent and renewing car insurance online. Travel and insurance are amongst the services most frequently bought online (The Economist 2004), although fundamentally different in their underlying characteristics.

Car insurance is a typical 'subscription market', where consumers "'*subscribe' to a single provider for long periods of time or tend to allocate most or all of their category requirements to one provider (and have very few others). Thus, for each brand, a large proportion of its buyers are solely loyal*." (Sharp, Wright, and Goodhardt 2002, p. 9). Furthermore, car insurance is an example of a 'renewal subscription market' (Sharp, Wright, and Goodhardt 2002), since subscription is subject to renewal at regular, pre-determined, intervals and only one 'subscription' is the norm at any one given time. Renewing a car's insurance online should be easy and consumers should not perceive any added benefit from a face-to-face interaction with the provider, prior to online purchase. Furthermore, customers can also compare alternative quotes easily on the Internet, again lessening the need for personal contact with the provider. Indeed, internet sales of insurance have grown significantly in recent years (Mintel 2005a).

In the case of travel, purchasing a holiday package from a travel agency has no inherent buying frequency and indeed might occur infrequently. Moreover, the choice of a different travel agency for each new booking is unconstrained by any contract, although there is some evidence that loyalty to a travel service provider is higher when the service is chosen online than offline (Shankar, Smith, and Rangaswamy 2003).

There are also other differences between the two services.

Applying Bowen's (1990) taxonomy of services, car insurance is a relatively homogeneous, non-personal offering, requiring moderate contact with the provider. There is evidence that consumers find it difficult to differentiate between, and know little about, specific financial services offerings (including insurance), relying on the assumption that the best known companies have the best and reliable products (Mintel 2005a). There is also evidence of consumer inertia, low involvement and lack of interest when selecting a financial service product like insurance (de Chernatony and

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Dall'Olmo Riley 1999 and previous references there), although the opportunity to easily compare prices online should make it easier for consumers to switch provider.

In contrast, for many consumers, purchasing a holiday package can be a highly involving and complex decision (Cai, Feng, and Breiter 2004), with many alternatives in terms of destination, mode of travel, accommodation, etc. Furthermore, the mode and the motives of purchasing travel online may differ, depending on the complexity of the travel component. For instance, Beldona, Morrison, and O'Leary (2005) found that car rentals and flights are bought more on the basis of their transactional qualities, with low price and familiarity being the key drivers of online purchase. On the other hand, for tours, accommodation and events, detailed information and ease of use of the website were found to be very important aspects for consumers purchasing these travel products online. Beldona, Morrison, and O'Leary (2005) concluded that the need for greater information detail with products of high complexity can be associated with greater perceived risk and need for more control. While Beldona, Morrison, and O'Leary's (2005) study was unable to identify motivations specific to 'packages', market research statistics on travel bookings in the UK (Mintel 2005b) indicate that the majority of 'packages' consisting of flight and accommodation (like in our case) are still bought in person with a travel agent. This suggests that they are considered as travel products of higher complexity.

Measures

Familiarity with service provider

Previous (or current) usage of the service provider was employed as a measure of its familiarity. We asked respondents to indicate their willingness to purchase online from a service provider used in the past (in the case of travel) or currently used (in the case of insurance). For each service, we also asked respondents about their willingness to purchase online from a service provider never used before, hence 'unknown' to them.

Offline/online relationship

We wanted to test the impact on purchase intentions of the level of contact with the service provider prior to online purchase. Therefore, unlike previous studies, (Dabholkar 1996; Dabholkar and Bagozzi 2002), we did not measure individual respondents' felt need for contact with the service provider. Rather, two levels of contact with the service provider were tested: face-to-face contact with a service employee prior to online purchase versus online purchase without prior face-to-face contact.

Past online shopping experience

Finally, two levels of online shopping experience were utilized: having bought any good or service on the Internet during the past year; not having purchased any good or service online in the past year. On this criterion, respondents were classified as either having Internet Purchase Experience or as having No Internet Purchase Experience.

Purchase Likelihood

Respondents' purchase likelihood was measured throughout the questionnaire by means of a 5-points scale anchored from 'I would certainly buy' (1) to 'I would cer-

tainly NOT buy' (5), with a 'I might either buy or not buy' mid-point. This type of probability scale has been found to be accurate in more than 75% of the cases at the individual level (Whitlark, Geurts, and Swenson 1993). Please note that, throughout the analysis, a lower mean indicates a *higher* propensity to purchase the service online.

The research design employed in the study is summarized in Table 1 below.

Table 1: Research Design

Independent variables		Dependent Variable
H1 Service type	H1(a) Insurance H1(b) Travel	**Purchase Likelihood**
H2 Familiarity with service provider	Service provider used before Service provider NOT used before	
H3 Contact	Prior contact No prior contact	
H4 Experience	Internet Purchase Experience No Internet Purchase Experience	

Questionnaire design

For each service, two scenarios were constructed (see Appendix). In the first scenario, respondents were asked two questions. First they were asked to indicate the probability of purchasing on the Internet the service of a provider they had used before, after a face-to-face contact with the provider; then they were asked the probability of purchasing on the Internet the service of a brand they had used before, without prior contact with the service provider. In the second scenario, respondents were asked the same two questions for a service brand they had not used before. All participants responded to each scenario.

In order to overcome any possible bias relating to the financial resources of the respondents, we indicated on the questionnaire that online purchase would always result in a price saving of 10%. Previous research suggested that a price reduction is an important risk reliever on the Web (see Van den Poel and Leunis 1999). A 10% price saving level was chosen since this is the discount offered by most UK motor insurance providers for purchasing a policy online (Key Note 2004). Moreover, Brynjolfsson, and Smith (2000) found prices on the Internet to be generallly 9-16% lower than prices in conventional outlets. For travel, typical discounts offered by airlines for booking online range from £10 (easyjet) to £15 pounds (British Airways) per return ticket.

We offered an additional risk reliever for the purchase of travel, by instructing respondents to imagine that they had been given a sum of money as a gift to cover the cost of the holiday.

A final question asked respondents whether or not they had bought any product on the Internet during the last year.

Sampling and data collection

The sampling frame consisted of students enrolled in business and management courses at a leading UK Business School. Students are considered to be 'the shoppers of tomorrow' (Dennis, Harris, and Sandhu 2002, p. 283) and are widely used in consumer research in general and Internet research in particular (Dennis, Harris, and Sandhu 2002; Casañeda, Rodriguez, and Luque 2004; Cui, Roberts, and Lewis 2003; Goldsmith and Bridges 2000; Silvanto and Dibb 2004; Park and Stoel 2005). Burke (2002) found that young people under 25 are more interested in using new technologies to find out about new products, search for product information, and compare and evaluate alternatives. They are also the demographic group more interested in having fun while shopping. At the same time, Burke did not find this age group to differ significant from older shoppers in their interest in shopping online or in conventional stores. Finally, Burke's study revealed that consumers with higher education are more comfortable using non-store channels to find out new products, search for product information, purchase products and have the merchandise delivered.

The questionnaire was distributed to students attending a variety of classes on different degree programs. Care was taken to avoid overlap between students sitting on different classes. The questionnaires were distributed at the beginning of the class and were collected a few minutes later, as soon as they had been completed. 250 completed questionnaires were collected in total.

Respondents' age was between 19 and 25 years (mean=22, median=22); 57% were females, 43% males; 142 had purchased something on the Internet during the past year, while 108 had not purchased anything.

Data analysis

The hypotheses were tested in an analysis of variance (ANOVA) using repeated measures. Independent variables were service type, familiarity with service provider, prior contact with a service employee before online purchase, and prior purchase via the Internet (experience). The likelihood to purchase online formed the dependent variable. Checks on the normality assumption of the dependent variable were conducted, showing Skewness and Kurtosis sufficiently close to 0.

Results

Results of the univariate analysis to test the hypotheses pertaining to the main effects (H1 to H4) are presented in Table 2.

In H1 we suggested that there would be a significant relationship between service type and intention to purchase via the Internet. The results presented in Table 2 indicate a

significant main effect for service type on the likelihood to purchase online (F=89.006; p<.00). The general hypothesis H1 is therefore supported. However, examination of the respective mean values for car insurance and for travel show that respondents indicate a higher propensity to purchase travel online (2.44 mean purchase likelihood) than car insurance (2.88 mean purchase likelihood)[2]. This goes against our sub-hypotheses H1(a) and H1(b), since we expected respondents to indicate a higher propensity to purchase car insurance online (a standardized, non-personal service offering). Possibly, a part in this unexpected result was played by the additional risk reliever given to respondents for the purchase of travel, as respondents had to imagine they had been given a sum of money as a gift to cover the cost of the holiday. Furthermore, an in-depth look at travel booking statistics in the UK (Mintel 2005b) revealed that while the majority of flight and accommodation 'packages' is bought in person with a travel agent, the majority of independent bookings of travel and accommodation are undertaken online. Respondents may have replied thinking about purchasing independent travel rather than a 'package' holiday. This result confirms that while, on a broad level, inferences on the motivations for purchasing travel online can be based on the relative complexity of each travel product (see Beldona, Morrison, and O'Leary 2005), more work is needed on the effect of the 'complementarities' of different travel components, including travel 'packages'.

On the other hand, the result for insurance is broadly consistent with the current reality of motor insurance purchasing in the UK, whereby only 15% of policies is bought online, compared with 61% purchased on the phone and 11% by calling into a branch (Mintel 2005a). Possibly, phone contact with the service provider is considered by UK consumers to be as good as face-to-face contact in obtaining the relevant information. However, market research data also indicates that the propensity to purchase motor insurance online increases dramatically if the quote has been obtained online: three in five consumers who used the Internet to obtain the best quote purchase online (Mintel 2005a).

The second hypothesis postulated that there would be a positive relationship between familiarity with the service provider and the likelihood of buying the service over the Internet. The results presented in Table 2 show that familiarity with the service provider is significant in explaining variation in the intention to purchase on the Internet (F=159.728; p<.00). Overall, respondents were more likely to purchase online from a service provider they had used before (mean likelihood 2.35) than from an unfamiliar provider (mean likelihood 2.95). H2 is therefore supported.

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[2] The 5-point purchase likelihood scale was anchored from 1 (I would certainly buy) to 5 (I would certainly NOT buy).

Table 2: Univariate Results of Analysis of Variance

Main Effect	P	Mean Purchase Likelihood	
		Car insurance	Travel
Service type	0.000	2.88	2.44
		Provider used before	Provider NOT used before
Familiarity	0.000	2.35	2.95
		Prior contact	No prior contact
Contact	0.000	2.38	2.94
		Internet Purchase Experience	No Internet Purchase Experience
Experience	0.000	2.43	2.96

Note: 1 = I would certainly buy; 5 = I would certainly NOT buy

The third hypothesis stated that positive contact with the service provider to collect information prior to purchasing online would have a positive effect on consumers' intention to purchase that service online. The results presented in Table 2 support this hypothesis, with prior contact having a significant effect in explaining variations in respondents' purchase intention (F=142.212; p<.00). Comparison of the respective means shows that face-to-face contact with the service provider prior to online purchase strengthens the likelihood to purchase online (mean likelihood 2.38 as opposed to 2.94 for no prior contact).

Finally, in H4 we suggested that past general experience with online shopping would have a positive effect on an individual's likelihood to purchase a service online. The results in Table 2 show that past experience had a significant effect on purchase likelihood (F=120.677; p<.00). We therefore accepted H4. Respondents who had made at least one purchase via the Internet in the previous year were more likely to state their intention to purchase online (mean likelihood 2.43) than those who had not yet made any purchase (mean likelihood 2.96).

As a final point, while the results in Table 2 indicate that each variable has a strong effect on the likelihood to purchase online, no interaction effects were found to be significant, apart from a significant correlation between experience and contact (p<0.05). Previous researchers who had examined interaction effects between similar variables (see Brown, Pope, and Voges 2003; Park and Stoel 2005) had also failed to obtain significant interaction effects. For this reason, we felt from the very beginning that there is not yet sufficient theoretical strength for a sound discussion of interaction outcomes. Although interaction effects between the four variables under consideration could be plausible, nonetheless we believe it is *theory* which should drive their examination (although data *could* be crunched in SPSS). We believe there is a general lack of theory in the conceptualization of interaction effects among the considered factors. In particular, it would be very difficult to envisage theoretical support for a four-way interaction, nor would it be possible - at the present time - to find enough clear theoretical support

for a small number of two-way interaction effects, such as the found significant correlation between experience and contact, even though this result looks plausible.

While this lack of theory prevents us from discussing the empirical results of interaction effects, this is a possible direction for future research. The development of a robust theoretical framework for the analysis of interactions among the considered factors would enhance the possibility of a better understanding of the dynamics underlying consumers' adoption of the Internet for purchasing services.

Discussion

This paper contributes to the extant literature on Internet shopping by focusing on consumers' intentions to purchase services with different characteristics, under a variety of conditions.

First, the type of service (and related characteristics) was considered. We hypothesized that the type of service would have a significant influence on consumers' likelihood to purchase online. Results of a univariate analysis of variance indeed showed a significant 'main effect' of service type on purchase likelihood, supporting our first, general hypothesis. However, contrary to expectations relating to service typology, purchase likelihood was higher for travel than for car insurance. While there is evidence that the classification of services on the personalization/ standardization dimension is cross-culturally robust (Cunningham et al. 2004), different groups of consumers may perceive specific services differently because of their personal experience. For instance, Cunningham et al. (2004) explained differences in American and French consumers' perceptions of airline services on the basis of the greater use of (and familiarity with) air travel in the US than in France. Similarly, our young, international students respondents may have more experience overall (off- and online) with travel than with car insurance purchasing, resulting in a higher stated likelihood to purchase travel online. The higher likelihood to purchase travel than insurance on the Internet is also in line with the purchase patterns emerging from market research statistics for these two services in the UK (Mintel 2005a and 2005b).

Consistently with previous research on Internet shopping for tangible goods from familiar retailers (Kau, Tang, and Ghose 2003; Lee and Tan 2003) and with the general services marketing literature (de Chernatony and Dall'Olmo Riley 1999), familiarity with the service provider was found to be a significant factor in explaining variations in the respondents' intentions to purchase a service online. This supported our second hypothesis. The findings suggest that, when purchasing from the Internet, consumers feel the need of being reassured about the reliability and the quality of the service provider and, ultimately, of the service brand. Overall, familiar service brands always enjoy an extra strategic advantage over less known competitors.

An additional significant factor was the felt need to engage in a face-to-face encounter with the service provider, prior to purchasing online. Face-to-face contact with the service provider prior to committing to a purchase was found to increase respondents'

stated intention to buy on the Internet. This supported our third hypothesis. These findings provide a general indication that, when purchasing from the Internet, services buyers are still highly reliant on human interaction. The lack of any physical and human interaction when purchasing services online is out of consumers' embedded "natural" idea of shopping, which is matured through years of past experience. The heightened perceived risk and product variability perceptions that Murray and Schlacter (1990) found to be associated with offline services still persist on the Web.

Finally, consistently with our fourth hypothesis, general prior experience with Internet purchasing (no matter for which product or service) had a positive effect on the intention to purchase a service online. These findings indicate that the reluctance of some consumers to purchase online may relate to perceived barriers towards the Internet channel itself. Once consumers have tried purchasing online, they may be likely to do that again. The results may be interpreted in the light of what happened in the past in the uptake of a new technology, such as telephone ordering and catalogue shopping.

In conclusion, the effects of service type, familiarity with service provider, prior contact with the service provider and past experience with Internet shopping on the likelihood to purchase a service online all appear to be strong. Further research should try to develop clear, concise theoretical support for the analysis of interactions among these variables, thus allowing their empirical examination, at least with a small number of two-way analyses of variance. Our analysis suggests that such development would contribute to a better understanding of online-purchases for services, and could guide further empirical investigations.

Managerial Implications

Our findings suggest a number of practical managerial implications. As Citrin et al. (2003) suggested for tangible goods, online services managers should invest into building the reputation of their services brands to enable the reduction of consumers' perceived risk and increase purchase likelihood.

The results indicate that some of the reluctance to shop Online is overcome once consumers have some direct experience with this mode of shopping. The provision of incentives to stimulate first time online shopping therefore emerges as an important strategy. Managers should invest on providing incentives to encourage trial and to overcome possible barriers, for instance in the form of providing 'virtual experience' such as video streams of the holiday destination, or extensive online third-party reviews. As Klein (1998) suggests, these methods may enable the transformation of experience attributes into search attributes, reducing a consumer's perceived risk. Consistently with previous literature, mere price reduction (e.g. our 10% 'risk reliever') may not be a sufficient incentive (Fenech and O'Cass 2001).

Importantly, managers should consider that, even if the Internet may seem best suited to distribute services (Peterson, Balasubramanian, and Bronnenberg 1997), consumers highly appreciate some form of human contact, prior to purchase. Thus, it would be a

mistake for service providers to stop offering consumers the opportunity to engage face-to-face with the service provider, in favor of a purely web-based service provision. Our results confirm the importance of online/ offline integration of service provision, consistently with the findings by Bendoly et al. (2005).

Limitations and Directions for Future Research

Firstly, the number of services used in this study limits the degree to which our findings can be generalized: this analysis focused on two different service types, but future studies should examine a broader range of service categories. Furthermore, future research should consider travel products of different complexity, different types of contact with the service provider (such as face-to-face vs. telephone), and different kinds of familiarity (acquired from word of mouth, advertising, or direct experience).

Secondly, further research should consider other factors which may have affected our finding of a higher likelihood of purchasing a travel package than car insurance online. One such factor is brand loyalty, or the strength of the relationship between the service provider and the consumer, For instance, for a service like car insurance there may be a strong brand loyalty, or inertia, towards the service provider, plus switching costs such as 'no claim' bonuses acquired over time with a specific insurer. In contrast, for travel purchases, there is evidence suggesting that many UK consumers no longer have a personal relationship with a travel service provider and are not particularly brand loyal – they often purchase on the Internet and over the phone and simply want the best price (Mintel 2005b). Future research could therefore specifically consider the role of brand loyalty, for instance in terms of number of years with the service provider.

Another factor which future research could consider is the purchase history of the consumer. How the consumer made the original purchase decision (for example, because of word-of- mouth recommendation by a family member) could influence the nature of the relationship with the service provider. In addition, the extent of face-to-face contact with the service provider (all the times, sometimes, occasionally, rarely) could be considered for future studies. The degree of the emotional connection (or even liking) between the customer and the service provider, as well as the degree of consumer trust (Huff 2000) could also be added to a comprehensive structural equation model.

Furthermore, as already pointed out, more work is needed in understanding possible interactions between the variables contained in this study and in the development of relevant theory.

Finally, a further limitation relates to the sample used in the research. The young age of our respondents might have been a bias in terms of lack of experience with the two services under consideration, particularly car insurance, even though a large proportion of the students at the University where the research was conducted do own a car and drive to the Campus. Future research should test the findings for different age groups with differing level of expertise with the services, even though previous research by

Burke (2002) did not find younger consumers to differ significantly from older shoppers in their interest to shop online or in conventional retail stores.

Despite its limitations, we believe that our research helps to fill some important gaps in the understanding of online shopping behavior for services, provides additional empirical support to the relevant literature, and suggests useful directions for future research.

Appendix

Suppose that your car insurance policy is up for renewal. What is the probability that you would renew your car insurance policy on the Internet with your current insurance company?

1. After having been to the insurance broker, I would renew my car insurance on the Internet for a price saving of 10%

I would certainly do it	I would probably do it	I might either do it or not	I would probably NOT do it	I would certainly NOT do it
1	2	3	4	5

2. I wouldn't even go to the insurance broker, I would renew my car insurance straight away on the Internet for a price saving of 10%

I would certainly do it	I would probably do it	I might either do it or not	I would probably NOT do it	I would certainly NOT do it
1	2	3	4	5

Suppose that your car insurance policy is up for renewal. What is the probability that you would renew your car insurance policy on the Internet with an insurance company unknown to you?

3. After having been to the insurance broker, I would renew my car insurance on the Internet for a price saving of 10%

I would certainly do it	I would probably do it	I might either do it or not	I would probably NOT do it	I would certainly NOT do it
1	2	3	4	5

4. I wouldn't even go to the insurance broker, I would renew my car insurance straight away on the Internet for a price saving of 10%

I would certainly do it	I would probably do it	I might either do it or not	I would probably NOT do it	I would certainly NOT do it
1	2	3	4	5

Suppose you have been given as a gift by a family member a sum of money to spend for a trip to a European Capital (flight + six nights). What is the probability that you would purchase the trip on the Internet from a tour operator or travel agency chain you have used in the past?

5. After having been to the travel agent, I would buy the trip on the Internet for a price saving of 10%

I would certainly do it	I would probably do it	I might either do it or not	I would probably NOT do it	I would certainly NOT do it
1	2	3	4	5

6. I wouldn't even go to the travel agent, I would buy the trip straight away on the Internet for a price saving of 10%

I would certainly do it	I would probably do it	I might either do it or not	I would probably NOT do it	I would certainly NOT do it
1	2	3	4	5

Suppose you have been given as a gift by a family member a sum of money to spend for a trip to a European Capital (flight + six nights). What is the probability that you would purchase the trip on the Internet from a tour operator or travel agency chain unknown to you?

7. After having been to the travel agent, I would buy the trip on the Internet for a price saving of 10%

I would certainly do it	I would probably do it	I might either do it or not	I would probably NOT do it	I would certainly NOT do it
1	2	3	4	5

8. I wouldn't even go to the travel agent, I would buy the trip straight away on the Internet for a price saving of 10%

I would cer-tainly do it	I would proba-bly do it	I might either do it or not	I would proba-bly NOT do it	I would cer-tainly NOT do it
1	2	3	4	5

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E-Services and the New World of Retailing

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Abstract

The growth of on-line transactions has forced retailers to unify channels by offering e-services and lessening their reliance on brick and mortar outlets. *Jupiter Research* predicts that by 2008 Americans will spend close to $110 billion on online retail purchases. We extend and apply the existing literature on multi-channel and interactive marketing to explore the following questions: (i) How do consumers perceive and respond to different multi-channel attributes? (ii) What types of consumers and retailers and what product categories influence *specific* multi-channel integration efforts? (iii) Do *all* retailers benefit from extending multi-channel options to their entire product-line and services? We also outline a method for collecting data and testing our hypotheses.

Keywords: E-Services, Retailing, Multi-Channel, Channel-Integration

Introduction

For the major part of the last century, most important retailers have offered their customers simply two methods of shopping: in the store or from catalogs sent through the mail. With the advent of the Internet, retail companies that offered only one or two channels suddenly could avail themselves of e-services as a third option to respond to new opportunities and challenges (Jette 2005).

Over the past few years, retail marketers are increasingly struggling with issues related to consumers' usage of multiple channels such as the physical store, online shopping facilities, e-services, catalogues, etc. A number of studies have already underscored the importance of such multi-channel marketing practices. The Aberdeen Group, in a recent study, has found that 44.7% of retailers use three channels, while 50.5% of retailers use at least two channels in their multi-channel efforts. According to the *Wall Street Journal*, customers who use three different channels spend four times as much as customers using only one of the three channels. A separate study conducted by J.C. Penney finds that customers who use all three channels - store, catalog, and Web site - spend an average of $ 887 per year compared to $ 150, $ 195 and $ 201 spent by customers who use only the Web site, the physical store, or the catalog, respectively. Further, the study also reported that sales from J.C. Penney customers who used all three channels grew by 30% annually while sales from those using at least two of those channels grew by 46% annually. In other words, multi-channel shopping is now associated with significant growth. In addition, over 60% of retailers claim that their multi-channel customers were more profitable than customers who used only one channel. Finally, a study by McKinsey Consulting found that retail customers using multiple channels spent two to four times as much as customers using a single channel.

Therefore, it comes as little surprise that retailers are rushing towards providing multi-channel facilities including e-services to consumers. In this paper, we provide a conceptual framework that integrates multi-channel attributes to product categories and consumer characteristics. We also extend and apply the existing literature on multi-channel and e-marketing to explore consumers' perception and response to multi-channel opportunities. Our conceptual framework has implications for retailers in terms of the benefits they can reap as a consequence of multi-channel purchase behavior.

We can think of a typical consumer as having a choice-set **A** whose elements are possible options available for purchasing a product. For example, consider **A** to be simply a set with two elements, say {brick-and-mortar, catalog}. In this sense any combination of these two "goods" is a possible consumption vector within a consumer's choice-set. The arrival of e-services widens a typical consumer's choice-set. Consumers' decisions to consume different units of these goods then depends upon how they value one good, say e-service with respect to others, such as catalog or in-store shopping. If the cost-of-clicking is too high relative to in-store shopping, then consumers will switch and substitute from a given e-service to traditional shopping venues. Under these considerations, it is important to characterize consumers' perception and responses to different multi-channel opportunities. Obviously, since consumers' charac-

teristics towards risk and adventure are heterogeneous, it is important to differentiate between the types of consumers who are influenced by specific channel options or combinations.

The arrival of e-services also challenges retailers who now have to alter their operations and strategies, taking consumer responses into account. It is clear that not all retailers will benefit equally from offering all their products via e-services. Further, a mass exodus of retailers towards e-services will only backfire due to excessive competition, which among other hurdles, might lead to an increase in the cost-of-clicking for the consumers. Consequently, one of the aims of our paper is to identify the types of retailers who might benefit from moving some or all their product-lines into e-services.

In this paper, we provide a conceptual framework to address these concerns, and bring consumer behavior models in marketing, and recent literature on multi-channel communications to bear on this issue. Specifically, we provide a framework that identifies different consumer characteristics that increase the *likelihood* of using *specific* multi-channel attributes. Second, from the perspective of the consumers, we wish to determine the types of retailers who are *most likely* to benefit from multi-channel retailing extending traditional channels to e-services. We also want to identify the product category determinants for *both* parties that are most suited for e-services relative to in-store or brick-and-mortar shopping. Finally, we are also interested in the factors that *increase the likelihood* towards favoring a mix in the multi-channel options menu.

Our conceptual framework also allows one to design and collect survey data from a spectrum of consumers and use a limited dependent regression framework to model consumer decisions. Consumer decisions will take into account the use of a specific shopping channel, as a function of drivers and inhibitors and other demographic covariates.

The paper is divided into seven sections. In the next section, we present a discussion about Multi-channel Shopping and the findings of recent literature. We place our research within the literature and also indicate how we extend current research. Section 3 presents the conceptual framework of our model. Here we define and identify multi-channel purchase decisions and the inhibitors and drivers affecting consumer behavior. We build into our analysis some important features from the models of consumer behavior, and how they influence consumer decisions across two specific purchase channels. Key research questions and testable hypotheses are presented in Section 4. We motivate these with several vignettes taken from a variety of consumer experiences. Sections 5 and 6 present an empirical framework that can be adopted to test our model. The paper ends with a brief summary and conclusions in Section 7.

Review of Related Literature - A Quest for Multi-channel Shopping

Multi-channel retailers integrate order, inventory and customer management systems. The growth of on-line transactions has forced retailers to unify channel teams and

lessen their total reliance on brick and mortar. For instance, in 2004, according to *Jupiter Research*, Americans spent $65 billion on online retail purchases, which constituted 4% of the total retail sales. Further, by 2008, this total is estimated to rise to $110 billion (Brustein 2004). As a result, technology has transformed the purchase behavior and delivery expectations of all shoppers. Customers routinely use the Internet for product information and expect customer service options across all possible informational, interaction, and transaction channels. Thus, only those managers who understand and deliver to their sophisticated customers across a channel-variety are likely to be the winners (Aberdeen Group 2004).

It is obvious, therefore, for retailers to rush towards providing multi-channel facilities and services to consumers. Existing literature has investigated the issues surrounding traditional or in-store shopping and internet shopping. Research on in-store or mall-shopping, for example, has focused mainly on identifying the determinants of such in-store or mall shopping behavior - differing demographics (gender, age, ethnicity, etc.), mall characteristics (e.g., location, regional vs. big box, entertainment, etc.). Similarly, research on internet shopping has examined the role of technology and its effect on brick-and-mortar establishments (Soyeon, Eastlick, and Lotz 2000). Venkatesh and Brown (2001) hypothesize that download delays, search problems, and security issues are possible impediments/barriers that inhibit consumers from looking for e-services. Earlier studies by Kangis and Rankin (1996) and Katz and Aspen (1997) have found that the perceived benefits and inhibitors of e-services differ across product categories. Related to these findings we also have research conducted by Teo, Lim, and Lai (1999), Fenech and O'Cass (2001), and Jarvenpaa and Todd (1997) indicating that "perceived usefulness" as a benefit is generally more important than "perceived ease and enjoyment" in affecting Internet usage. Studies by Eastlick and Lotz (1999), Citrin et al. (2000), Swaminathan, Lepkowska-White, and Rao (1999) have presented empirical results tying "convenience" as an important driver that influences consumers to e-services engagement. In addition, Li, Kuo, and Russell (1999) found that internet usage and e-service seeking are directly related to the levels of education, convenience orientation, experience orientation, channel knowledge, perceived distribution utility, and perceived accessibility.

Recently several researchers have started to examine the behavior of shoppers in a multi-channel environment, taking into account consumer utility, channel quality and search costs (Youn-Kyung, Pookulangara, and Crutsinger 2002). For example Balasubramanian, Raghunathan, and Mahajan (henceforth BRM) (2005) present a framework that examines how consumers' utilities are affected by a variety of factors such as their economic goals, their quest for symbolic meaning within the shopping process, social interaction, experiential impact and their reliance on schemas and script for shopping. It is important to note that while BRM did not empirically implement their model, their framework provides many recommendations for researchers and marketing managers. In particular, our paper extends BRM's model and examines some of their research implications.

In related research, Kumar and Venkatesan (2005) identify customer-level characteristics and supplier factors that are associated with purchase behavior across multiple-

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channel within a high-tech manufacturer. Overall, they find that consumers' benefits are positively related to the number of communication channels. Cross-buying, frequency of web contacts, customer tenure, and purchase frequency are all positively related to multi-channel shopping.

It has been established that a firm's acquisition tactics affect behavior of customers in terms of retention potential and their length of relationships. Verhoef and Donkers (2005) examine the nature of acquisition channels and their effectiveness on customer loyalty and cross-buying, using probit models, within the financial services industry.

In this paper, we incorporate consumers' decisions across alternative shopping modes through different drivers and inhibitors. We also introduce BRM's implications for (a) consumers' goals that include their knowledge or the product and service (b) consumers' search-costs and values of self-affirmation (c) relation between search cost and symbolic meaning and (d) the role of the shopping patterns in constructing consumers' schema. Further, we also include Kumar and Venkatesan (2005) framework of "cost and benefits" of multi-channel shopping. Similar to Verhoef and Donkers (2005) we also specify a probit model as a vehicle for testing the hypotheses in our study. A natural extension of our research will be the effects on cross-buying and repeat purchase. Consequently, our research has implications for how channels affect purchase-calculations for a spectrum of customers, which in turn will affect their loyalty, cross-buying and purchase frequency.

In order to explicitly link shopping patterns to consumer shopping-decisions through the use of channels, we attempt to extend the above-mentioned studies, by investigating the determinants that increase the *likelihood* of using *specific channel-mixes* selected by different consumers, through a theoretical and empirical analysis of consumer behavior. We also relate our conceptual model to its potential empirical testability. Our econometric framework can be adopted for many types of data generated from a wide spectrum of consumers. Researchers can use our empirical framework to identify consumer shopping patterns and behavior as it relates to purchase-selection within a given channel-mix. In this sense, we integrate the framework of e-tailing and brick-and-mortar, in a context where a consumer has access to multiple channels. Specifically, our conceptual framework incorporates important alternative consumer decision-mechanisms, using *types of channel chosen* as a decision variable. The notions of transactions costs or search costs, and utility maximization will form the basis of our model. Finally, our empirical framework complements our theoretical analysis.

Our research will shed light on the comparative advantage of multi-channel communications enjoyed by some retailers. In particular, if *all* retailers benefit from extending multi-channel options to their entire product-line and services, then retailers must engage in active web management and derive the benefits of a well-managed web-delivery system. However, the benefits may also be netted out via free-riding and switching costs.[4] Therefore, we take into account, the advantages of consumer target-

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[4]   For related research on switching costs and risk aversion see Dholakia, Zhao, and Dholakia (2005). Also see Baal and Dach (2005) for evidence of consumers free-riding, as a part of minimizing switch-costs.

ing based on their perception and response to different multi-channel attributes. Our empirical framework will identify the different consumer characteristics that increase the *likelihood* of using *specific* multi-channel attributes. It will also help us to determine those retailers who are *most likely* to benefit from multi-channel retailing.

Conceptual Framework

Our research design incorporates both economic and demographic factors as determinants of consumer shopping behavior. We characterize the different inhibitors and drivers of channel selection (web versus mail for example) as the key factors for consumer purchase decisions. If the drivers of one type of channel say the web, are more dominant than another, then economic factors dictate a sentiment favoring the web. Further, these selection possibilities will vary across demographic groups.

Channel Selection and Integration

Before we turn to a description of the drivers and inhibitors of channel selection, it is important to understand the notions of "channel selection" and "channel integration" that we have used in this context.

"Channel selection" refers to a wide variety of activities from information gathering to ultimate ordering, undertaken by consumers in their purchase process. For instance, product selection, vendor selection, price comparisons and the final purchase are all different phases in the consumer's decision process. For example, it is possible for a consumer to obtain vendor information from a catalog, from a related website, through word-of-mouth, or via a direct visit to the vendor's location in an outlet mall. By the same token, once vendor information is obtained, the same consumer can purchase the product from any channel that is most convenient. Under this scenario, the consumer's channel selections for vendor information and the final purchases are different phases in the decision process, where each decision is driven by several considerations depending upon the type of product, vendor and price. In the next sub-section of this paper, we provide a framework that incorporates all selection possibilities for all possible decisions into a unifying mechanism related to relevant drivers and inhibitors. We discuss some of the factors that influence a typical consumer's channel selection, and in each case, we will identify the appropriate channel choice.

By "channel integration," we refer to consumers selecting more than one channel in their efforts leading to final purchase. We note that this is a significant departure from the existing notion that is almost always reserved for the retailers. However, without knowing the patterns of channel integration efforts on the part of the consumers, it is futile for retailers to embark on channel integration efforts. As in the previous example, it is possible for a consumer to obtain product information through the web, and later purchase the product from a local store. We note that such integrative efforts are also equally important, because under such circumstances, consumers weigh the relative advantages of one channel over another. For some products, consumers may ob-

tain product information, vendor information, purchase requirements from a variety of channels. However, for under other situations, as in experience goods, consumers may obtain all relevant information and purchase the product within a given channel. Once again, whether consumers channel-hop or not depends upon the relative advantages of each competing choice. In this paper, we consider a consumer's "channel integration" efforts to be separate and distinct from "channel selection". It is possible that consumers may prefer to integrate some channels even as they undergo "selection", say "online" for information and "mall" for the final purchase. We will not be concerned with the issues of timing of purchases or selection in this paper, but we recognize that these are important considerations under consumer modeling. Our goal in this paper is to stress that the knowledge of such consumer channel-integrative efforts is very crucial to the retailers. If, for instance, for a said product category, web and e-services do not carry a lot of weight in the consumer's scheme of channel selection, then the retailers of this product are better-off allocating their resources towards perhaps making their stores and outlets more consumer-friendly.

As Siegel (2004, p. 295) points out, "Consumers are fickle; their needs and wants can change in a flash. They often do not know what they want, or, sometimes, they do not know and are not truthful about it. Failing to try to understand them, however, can be a fatal marketing mistake". The relevance of consumer channel-integration to retailers is equally applicable. Thus, many retailers, taking consumers' decisions into account, may find it profitable to allocate their offerings via many channels depending upon product quality and product category. Retailers who provide complementary services in at least two channels are multi-channel retailers. Since retailers' decisions are based upon consumers' choices, it is important, to characterize the motivating factors behind consumers' decisions. The factors that influence the choice of channels and integrative efforts are developed in the next section.

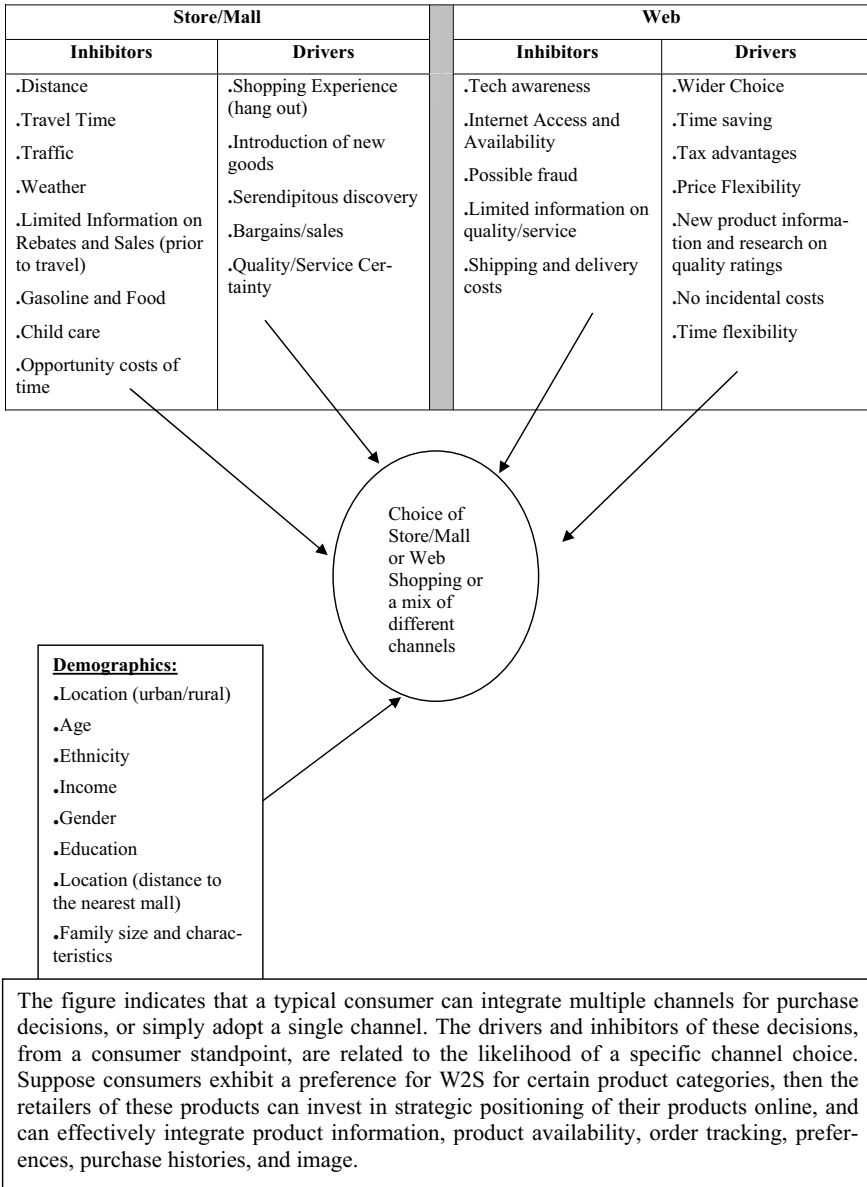## Drivers and Inhibitors of Consumers' Strategies

In the context of in-store or "mall shopping" the role of the internet as a "channel" has to be viewed as a separate phase that serves a distinct function for a consumer. We assume that a typical consumer uses the internet to obtain "general" information about the product, the stores, the vendors and the dispersion of prices. Further, we also assume that a typical consumer can purchase a said product from any of the competing e-tailers. In obtaining the information or in purchasing of the product, the consumer can directly use e-services, or travel to a physical location. In this context, the internet is a "channel" in a very general sense. E-services can be specifically organized; about one product, or about one store, or about one's in-store offerings. On the other hand, there is no reason why internet as a channel cannot cover more general shopping expeditions; about many products, stores and prices. In this section, we refer to internet as a channel in this more general sense, because internet is first viewed as increasing the level of competition among retailers, and we prefer to examine retailer-competition at the most general level.

We begin with the standard neoclassical assumption that consumer choice is based on individual rationality and that consumers make choices based on their objective functions and budget constraints. Following (Zeithaml 1988; McDougall and Levesque 2000; Parasuraman 1997) we define *perceived customer value* as a salient determinant of consumers' purchase intentions and purchase. Perceived customer value is defined as the results or benefits customers receive in relation to total costs (McDougall and Levesque 2000). This represents a customer's overall assessment of the utility of a product (or service) based on perceptions of what is received and what is given (Zeithaml 1988). We extend these consumer motivation models to e-commerce and e-services (Han and Han 2001; Anckar and D'Incau 2002; Anckar 2003).

We now extend the standard neoclassical assumption of consumer behavior to include non-monetary considerations that are so common within e-services. In this context, Anckar (2003) argues that the traditional view of the value equation as a tradeoff between benefits and costs*,* "is too simplistic in terms of building an understanding of the primary motivators and inhibitors to e-commerce adoption" (see Anckar 2003, p. 3). Thus, as in Jensen (2001), Sweeney and Soutar (2001) Eggert and Ulaga (2002) and Anckar (2003), we interpret the value concept as a trade-off between get-and-give components described not only in monetary terms, but also inclusive of much broader sacrifices addressing non-monetary commitments.

Accordingly, as in Anckar (2003), the basic framework of our paper is that rational consumers make their channel adoption/rejection decisions based on their *perceived channel's net value*, which is seen as the tradeoff between the overall *benefits* that are likely to accrue by using one channel (say electronic) in comparison to existing alternatives (say traditional channels), and the overall *barriers* encountered in using them. We present the conceptual development of our model in Figure 1.

Figure 1: Drivers and Inhibitors of Alternative Multi-channels: A Conceptual Model

Store/Mall		Web	
Inhibitors	**Drivers**	**Inhibitors**	**Drivers**
.Distance .Travel Time .Traffic .Weather .Limited Information on Rebates and Sales (prior to travel) .Gasoline and Food .Child care .Opportunity costs of time	.Shopping Experience (hang out) .Introduction of new goods .Serendipitous discovery .Bargains/sales .Quality/Service Certainty	.Tech awareness .Internet Access and Availability .Possible fraud .Limited information on quality/service .Shipping and delivery costs	.Wider Choice .Time saving .Tax advantages .Price Flexibility .New product information and research on quality ratings .No incidental costs .Time flexibility

Choice of Store/Mall or Web Shopping or a mix of different channels

Demographics:
.Location (urban/rural)
.Age
.Ethnicity
.Income
.Gender
.Education
.Location (distance to the nearest mall)
.Family size and characteristics

The figure indicates that a typical consumer can integrate multiple channels for purchase decisions, or simply adopt a single channel. The drivers and inhibitors of these decisions, from a consumer standpoint, are related to the likelihood of a specific channel choice. Suppose consumers exhibit a preference for W2S for certain product categories, then the retailers of these products can invest in strategic positioning of their products online, and can effectively integrate product information, product availability, order tracking, preferences, purchase histories, and image.

In Figure 1, for illustrative purposes, we have identified a consumer's selection criteria when faced with say 2 different types of purchase channels within a multi-channel opportunity set provided by a typical retailer. We characterize the drivers and inhibitors to the consumer under each channel and evaluate the relative merits of individual channels within a two-channel setting. Further, we also recognize the importance of demographic covariates, as potential influencers of consumer decision making. Following Anckar (2003) we present two tables listing the drivers and inhibitors that are most commonly followed in the literature and also those we suggest that can be included in any econometric specification.

Table 1: Drivers of E-Services vis-à-vis a Store/Mall

Drivers of e-services
Time Savings: Obviously the opportunity cost of time is an important factor in consumer's decision process, and e-services create an enormous advantage in terms of time-saving (Anckar 2003; Jarvenpaa and Todd 1997; Kangis and Rankin 1996; Wigand and Benjamin 1995; Krause 1998).
Time Flexibility: Related to Time Savings is the flexibility to order anything globally from locations within and outside of the consumer's residency. E-services for global gifts have proliferated in recent years.
Wider Choice: e-services enable consumers to reach out for newer, not-yet-experienced goods. Choice and variety enrich consumer's benefits by tapping into new vendor-product e-aisles (Anckar 2003; Wigand and Benjamin 1995; Hoffman, Novak, and Peralta 1995; Alba et al. 1997).
Tax Advantages: Products like cigarettes and liquor are obvious choices for seeking e-services because of the substantial tax advantages based on the location of the service and the local area tax rates. These considerations have resulted in a proliferation of such sites in recent years.
No Incidental Costs: e-services also reduce a lot of incidental costs associated with traditional shopping such as driving in traffic congestion, inclement weather, and waiting in queues. Anckar (2003) also includes other drivers including Online delivery, Test and trial online, Privacy and anonymity, Availability of personalized offerings.

Drivers of a traditional store/mall
Shopping Experience: Consumers like to "hang out" in the malls and simply check out a variety of activities including games, food, excitement and entertainment and also pursue some shopping adventure. The "mall shopping experience" is a substantial driver that has generated a sprawl in outlet malls in the suburbia in recent decade.
Introduction of New Goods: Obviously, consumers like to check out the new stores, designs and products encountered in their "hang out" experience. Most consumers find "hot deals" of new goods in store/malls, and this is great benefit to consumers.

Serendipitous Discovery: Many consumers like the store/mall-experience because it brings about serendipitous discoveries of newer items, older-as-yet-unpurchased goods, and quick find as in, "looked at it and knew it would be just perfect for you". These are dominant drivers for store/mall-shoppers.

Bargains/Sales: For many consumers the opportunity to directly access various bargains and sales at neighboring stores in a mall remains a distinct driver of this channel.

Quality/Service Certainty: Consumers also select the store/mall as a channel because of this feature. Goods are directly visible and the purchase is "feel-tangible". Returns and Exchanges are obvious features and consumers often prefer, "the well-tried out route".

Table 2: Inhibitors of E-Services vis-à-vis Store/Mall

Inhibitors of e-services
Tech Awareness: The lack of sufficient knowledge to operate and manipulate the web is still a major consideration for consumers. Many consumers are simply intimidated and are "blown away" by all the rapid technological innovations in the computer industry. Consequently, they shy away from e-services.
Internet Access and Availability: Consumers may face difficulty due to low bandwidth and may be stuck with outdated routers and low dial-up speed. Good quality connections are still not uniformly distributed across rural areas. These can also be strong inhibitors towards e-services.
Possible Fraud: Many consumers are very wary of internet fraud, and are not confident about the security measures posted in the sites. Consequently, they hesitate to provide their personal information such as their names, addresses and credit card numbers. Very often, consumers encounter news about fraudulent scams from the media, and are drawn away from pursuing e-services actively.
Limited Information on Quality/Service: However dynamic a web-site may be constructed, it is still not the "real thing" when it comes to giving consumers information about quality, feel and confidence that consumers are accustomed to. Finally, consumers are often inhibited by policies on "returns", "exchanges" and are often left with a nagging feeling about having missed something that was in, "small print".
Shipping, Delivery and other Sunk Costs: Consumers often hesitate to use e-services because of perceived time-delays in shipping and delivery. Besides, consumers often have to weigh in the costs of shipping and delivery along with the price of the product. Consumers find these are major inhibitors of e-services, along with sunk costs of computer purchase, internet fees and time spent in downloading and learning the necessary software. Anckar and Walden (2002) have also identified other inhibitors such as, "the lack of personal touch", "the lack of satisfaction from window shopping and the shopping experience. In addition, "information-overload from too many hits in google or other search engines" can also be considered as a major inhibitor as it directly affects consumers' time-management negatively.

Inhibitors of a traditional in-store or mall
Distance: Many consumers in rural areas often have to travel for more than hour to access an outlet mall. Clearly, inaccessibility to physical locations is a primary inhibitor for older and rural consumers. "Travel time" or the "opportunity cost of time" are equivalent concepts that capture this barrier that still remains a big inhibitor to many consumers.
Traffic: Many consumers are inhibited by massive crowds, traffic jams and delays, especially during holidays and other important seasons.
Weather: Tied to traffic and distance, the unpredictability of weather is a major barrier for many consumers not seeking out to physical locations.
Limited Information on Rebates and Sales (prior to travel): Consumers sometimes cannot find the "right deals" or miss a particular day when retailers "off-load inventory". This causes many consumers to leave with a bad shopping experience overall.
Gasoline and Food and Child Care: Many consumers have to consider "other expenses" such as gasoline, food, drinks beyond those incurred with the standard product. Child care expenses are also a heavy burden to bear for single moms looking for a, "hassle-free shopping spree".

Research Questions and Hypotheses

We now provide a few vignettes to illustrate how the drivers and inhibitors listed in the previous section play-out in the market. We use these vignettes to formulate our hypotheses. In future work this foundation may provide a basis for econometric testing. We begin this section with a few vignettes following BRM (2005), to illustrate our model and research hypotheses.

Vignette 1: *Isolde is looking for an interesting dress for an upcoming party at her office. She checks out the online stores of Banana Republic, Structure, and Express. She noticed a few interesting dresses that she liked. However, she was not sure of the fit or the texture of the cloth. So, in the evening she ventures out to the local mall and physically tries on the dresses that she had seen on the net at each one of these stores. She was not quite happy with any of the dresses that she had inspected earlier on the net. However, while walking through the mall, she chanced upon a new arrival at Anthropology the fit, feel and the look of which she absolutely adored and she bought it.*

Such behavior – browsing for information on one channel and purchasing through another – is an increasingly common phenomenon (BRM 2000, p. 17). There are numerous benefits of such behavior and one of them is such unexpected discovery and the general shopping experience. We now present a completely opposite occurrence with the next vignette.

Vignette 2: *Peter Weiss is looking for a good book to read during his mountaineering in the Everest. He has to stay in Nepal for a few days to obtain the necessary license,*

gear and a good team of quality sherpas. The trip is still a year away, but his friends have warned him that too much planning is never a handicap. He has recently developed a liking for mountaineering and so, he makes his way to the "Corporate International Mountaineering" section at the local bookstore, and runs into Anatoli Boukreev's best-selling book "<u>The Climb</u>*". He later orders it from half.com for half the price.*

From the two vignettes, we notice that the information-provision-channel and the purchase-channel are exactly opposite. The inhibitors and drivers for Peter Weiss and Isolde suggest that consumers often examine the relative costs of different channels in their decision process. Hence we propose:

Hypothesis 1: For a consumer, the *likelihood* of using channel A for information while purchasing the same product in channel B increases as the relative benefits from such a switch increase.

Hypothesis 2: For a consumer, the *likelihood* of selecting a particular information-seeking-channel, say A, and sticking to the same channel for the final purchase decreases as the cost of non-switching increases.

Vignette 3: *Romulus' wife presented him with a digital camera for his birthday that she had bought online at Best Buy. However, after about a month of use the camera had some mechanical problems, and the flash stopped working. Romulus's wife took the camera to the nearby store and exchanged it for a new one.*

This is a vignette that illustrates the confidence the Romulus's wife had from going online, because the store's return policy and its distance were not dominant inhibitors. Integration of channels is an important factor tipping the scale toward online shopping for stores that are integrated across the various channels, as the above vignette shows.

Hypothesis 3: For a consumer, the *likelihood* of selecting any channel-type for shoping will increase, the more unified the multi-channel system is within the firm.

Considerations of barriers and drivers are included in many other types of situations. We now provide additional scenarios to help capture these influences.

Vignette 4: *Mr. Gunter Boll is a jazz aficionado. He loves to browse on e-bay and other sites to identify rare and esoteric collections, albums, and composers. He visits the regular music stores to check out the offerings, but is very rarely surprised by mainstream retail supply.*

Vignette 5: *Prof. Raymon Beauvoir is a biographer who loves to read new fiction and non-fiction, and keep up with children and feminist literature. But she works in a rural area and cannot easily access Borders or Barnes and Nobel. This problem is greater in the winter due to unpredictable weather and road conditions. Consequently, she frequently visits amazon.com or other sites to check out the best-seller lists and orders her books online. She has also racked up a lot of points from these stores, and derives benefits from additional discounts. She also takes advantage of ordering enough books to avoid shipping charges.*

Vignette 6: *Ann Mathilde has three kids of different ages, all with different prefer-ences for clothing, haircuts, food, toys, games, dvds, books, shoes, make-up and other "general stuff". They all like to hang-out in the outlet malls and buzz in and out of big name stores like Hollister, American Outfitters, Aeropostale, Top Gun, Pac Sun, Olympia, Journeys, Ecstatic, and snack at Aunt Annies, OrangeJulius, Starbucks cart and at the food court. Ann can rarely get what she and the kids want by browsing. However, a day at the mall gets the job done for her.*

Vignette 7: *Clark Griswold is not very tech savvy. He is afraid to browse and get stuff without seeing and feeling the product. Further, he is scared to give his credit-card and other information online as he constantly hears and reads about security breaches. Finally, his early experience with email and browsing were very slow due to poor dial-up connections and an outdated machine.*

Vignette 8: *Nora Gabbler, while reading a catalog of Christmas Specials saw the web-site address for the company printed at the bottom of every page. Excited about getting ready early for the season, she ordered some mittens, caps and shoes for gifts, all online, her first ever online-purchase. However, when the package arrived, she found that several items were missing, that several unordered items were added in the bill, and finally, that many item specifications did not match her original order. She tried to contact the company via email, and phone, but was very unsuccessful in get-ting her complaints heard. The email was not functioning, and the phone representa-tive would not claim responsibility for web-orders, and finally, "billing" itself was out-sourced by the company to an agency in Bungluru (India), while "shipping" was handled by a wholesale agent in China. Out of sheer frustration, Nora Gabbler com-plained to Consumer Agencies, and is still waiting for a proper response.*

These scenarios in many ways represent the barriers/drivers considerations experi-enced by consumers facing the new world of retailing. Our next goal is to apply these ideas into a model structure and provide testable implications. Further, it is also impor-tant to understand the implications of each hypothesis using interactions between eco-nomic factors and demographic covariates. Our empirical framework can be extended to include such interactions. Figure 1 above presents the various drivers and inhibitors of at least two channels within the consumer's shopping domain. The vignettes pre-sented above shed light on how the relative differentials can be brought into the con-sumers' shopping perceptions, patterns and behavior. We present the empirical frame-work in the next section that will enable us to quantify the model's predictions.

Empirical Framework

In order to estimate the testable implications of our model and hypotheses, we need data on a variety of consumer shopping determinants such as the number of web pur-chases, types of channels employed and the corresponding benefits in terms of price differentials. Further, one must also collect information on visits to the store or mall in a given year, family size and income, access and use of internet, and other covariates outlined in Figure 1. The researcher can administer surveys to collect individual-level

data from a spectrum of consumer groups covering randomly selected consumers across age, gender, family size, residence (urban/rural), income, education etc. Obviously, issues regarding recall, repeat purchases and free-riding can be established via detailed questions concerning specific web-sites.

Estimation Methodology

We present some possible econometric implementation strategies of our conceptual framework with respect to the drivers and inhibitors and other determinants in this section. Specifically, a limited-dependent variable analysis, to estimate our model using the standard procedures outlined in Greene (2001), is most suitable. Given individual-level data, it is important to adopt appropriate techniques to account for variation across demographic groups. Following Greene (2001), one could include dummy variables and corresponding interactions with relevant variables, to conduct a probit analysis or an ordered probit. One can apply the framework with a simple structural model below. To focus our attention, consider a model of multi-channel participation. The consumer (the respondent in the survey) either shops in the traditional setting ($Y = 0$) or seeks internet shopping services ($Y = 1$) for a particular item, say books, on an unobservable utility index I_i, that is determined on a set of factors such as age, income, education, distance to the nearest mall, internet services available, family size and so on, gathered in a vector $\mathbf{x}$. We express I_i as:

$$I_i = \mathbf{b'x}$$

where $\mathbf{b}$ is a vector of parameters that indicate the impact of changes in $\mathbf{x}$. It is usual to assume that for a threshold level of I_i the respondent will choose to use the web. Since I_i is not observable, researchers work with a probability distribution of I_i, using a standard normal distribution (See Gujarati 2003, p. 609):

$$P(Y = 1; \mathbf{x}) = \mathbf{F(b'x)}$$

where $P(Y=1; \mathbf{x})$ means the probability that the respondent is a web-shopper for given values of $\mathbf{x}$. Among the factors that might be of interest is the marginal effect of "distance to a mega outlet mall" on the probability of internet-purchase. It is possible to obtain such estimates from our setup using standard procedures. Clearly, our theoretical framework is flexible to include other dimensions of probability models, such as Ordered Probit (where respondents rank a preference of one channel over another). The above implementation framework provides a systematic empirical analysis, which is complete, *unified*, and is a logical treatment of channel-shopping behavior across a cross-section of individuals.

Consider the extension of the above-mentioned probit models that includes the type of consumer channel choice (mail, in-store or mall or the web, or other venues, or mixing) as a dependent variable, with several independent variables, covering economic

and demographic aspects.[5] The extant literature does not consider the factors that increase the *likelihood of specific channel usage* or a specific channel-mix configuration. Our extension of shopping-decision models to measure channel-selection-*likelihood* under alternative channel-structure-arrangements for individual shopping data across a spectrum of consumers will indicate the relative benefits of alternative channels based on different consumer attributes. That is, our framework using limited dependent variable analysis identifies the different consumer characteristics that increase the *likelihood* of using *specific* multi-channel attributes. It will also determine those retailers who are *most likely* to benefit from multi-channel retailing. We can thus derive implications for "gains from trade" and the advantages of channel-mixing.

Summary and Conclusions

The purpose of our paper is to extend the current literature on e-services and multichannel shopping behavior by including consumer's perception, expectations and behavior, rooted in economic and non-monetary considerations. In this context, our conceptual framework provides a *unified*, logical treatment of shopping determinants and trends, across channels and improves upon the extant treatment, and is suited for estimation procedures that *unify* different modeling assumptions in a natural manner (economic factors along with socio-demographic determinants). We have also identified the kind of data needed for testing the implications of our theoretical model. That is, we have stressed the importance of data involving the growth of different inputs, output of different channels for the major product categories, for individual-level data. This will enable the researcher to identify the trends in returns to different shopping modes, and to different types of consumers and demographic groups. Limited dependent variable analysis under the scrutiny of such data will characterize web-shopping more comprehensively.

The approach presented in this paper can be used directly to measure the extent of the growth potential of different channels. Retailers can adopt smart-growth techniques by strategically positioning their products and investing in smart-channel activities, based upon consumer-driven estimates of this potential. In addition, so long as the inhibitors of channel-shopping is lower than its benefits for only a few product categories, the traditional mall or in-store environment can still operate efficiently, by incorporating newer strategies in sales promotion, such as W2S. Future research should focus on collecting comprehensive data to test the implications of our model.

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[5]   Except for (Youn-Kyung et al. 2002), such individual data had never been applied to examine this issue.

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Systematic development of E-Services through Co-Design of Software and Service: Results of an empirical study

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Abstract

In view of the importance that business attaches to e-services, the systematic design of these services is an important topic for research. Existing models cover the singular development of software as well as of services. Since modern e-services are based on a tight interlocking of both software and service components, it must be assumed that existing development processes are not sufficient for the design of complex e-services. Therefore, a study was conducted which provides a unique insight into the current state of the art of the development of e-services in German companies. The aim of the study is to provide an appraisal of the current situation as well as to sketch out research approaches and highlight the challenges. Thus, we attempt to provide a base over which subsequent research could develop a suitable engineering model. Our study focuses on the market for e-services, the development of e-services, software engineering for e-services, service engineering for e-services, and implications for managerial actions.

Keywords: Software-Service-Co-Design, Service Engineering, Software Engineering, E-Service Development, Service Design, New Service Development

Introduction

Challenges in the tertiary sector

E-service is the term used to represent a development which is characterized by the link between the service sector and information technology (Rust and Kannan 2002). Companies that have been involved in either service or information technology are confronted with the challenge of satisfying greater customer expectations through such e-services. As a consequence, companies must tackle the question of how to develop such services in a structured way. Also, assessment by international experts reflects the importance of research on this topic. Among the six fields in service research that have been identified as important for the future are "service innovation" and "technologies and services" (Ganz, Meiren, and Tombeil 2002). At present, no comprehensive methods for developing e-services (as a combination of software and services) are available (Fähnrich 2005). To develop such methods, it is necessary to analyze the state of the art of service and software engineering, as well as the existing practical approaches for a simultaneous engineering. This article analyzes the results of an empirical study and illustrates the state of practice in the area. It also provides an initial insight into current research approaches in the area. Additionally, this article pinpoints where research and business need to act so that they are able to exploit, develop, and support the emerging e-services sector. In particular, questions concerning the value chain are considered, thus ensuring that appropriate attention is also paid to the creation of services involving cooperation across various companies.

Changes in the tertiary sector

The tertiary sector, which over the past few years has taken the place of the secondary sector in many highly developed countries such as Germany (Fitzsimmons and Fitzsimmons 2005), has in itself undergone a change in recent years. Greater links between the service sector and information and communications technology (Bullinger and Scheer 2003; Fitzsimmons and Fitzsimmons 2005; Kasper, Helsdingen, and de Vries 1999) have contributed to the emerging field of *e-services*. E-service, defined as the provision of service over electronic networks (Rust and Kannan 2002), includes the concepts of IT services, web services, and infrastructure services. As well, e-service encompasses the service product, service environment, and service delivery that comprise any business model, whether it belongs to a goods manufacturer or a pure service provider (Rust and Kannan 2003). Concerning a simultaneous engineering of software and services, three variants of e-services can be outlined, due to the complexity of the respective areas. Such a differentiation explains the need for different methodologies and procedures for developing e-services. The variants are: IT support for existing services (*services supported by IT*) (e.g., terminals for selling tickets); enrichment of IT products to include services (*IT provided with services*) (e.g., full lifecycle support for sold IT); and highly integrated packages containing IT and services (*hybrid products*) (e.g., video on demand via internet, consultancy by using mobile devices) (Böttcher and Meyer 2004; Husen and Meyer 2005). *IT provided with services,* which essentially consists of IT with only the service aspect taking a secon-

dary role can apply software engineering methods during the service development phase. In contrast, methods and tools from the discipline of service engineering or new service development are applied in the case of *services supported by IT* in order to allow the advantages of systematic development to be exploited. While very good formalized methods exist for the respective sub-disciplines, no approaches exist that take *hybrid products* into account. For future development tasks, it will therefore be crucially important to ensure that a unified development approach – termed *Co-Design of Software and Services* – can be achieved. This need has its roots in the fact that a high level of qualitative dependency exists between the sub-areas when closely linked hybrid products are developed and offered. For this reason, current research projects focus on precisely this set of problems and are developing approaches and solutions that are both scientifically rigorous and relevant for practice (Fähnrich 2005).

Need and implementation of the study

The area of e-services demands a provision of sufficient methods and tools. For that, the experiences of software and service engineering should be used, as should the ways in which the problems are handled by practitioners. Therefore, it is important to be aware of the current state of the art and the requirements from the point of view of companies engaged in the design and delivery of e-services. In order to identify problems and needs of practical relevance, an initial stage of the study included interviews with experts from 20 companies that have been developing software and services for several years. The interviews, lasting at least two hours, were based on a semi-standardized questionnaire comprised of topics related to development of e-services, software engineering for e-services, service engineering for e-services, and challenges and solutions for further development of the e-service sector. A questionnaire for the empirical study was developed using these expert interviews. It contains 36 questions on the topics of the company's range of services, development of e-services, management of the development process, development objects, software development, development of services, and need for action (Husen et al. 2005).

Background of the Study

As mentioned above, the study is meant to provide insights into the emerging field of e-services, which combines techniques and methods of Software and Service Engineering. Whereas Software Engineering has been under development for several decades (Sommerville 2006), Service Engineering as a discipline for structured development of services emerged within the 1990s (Fähnrich and Opitz 2003). For both areas, methods and tools have been developed to support successful creation of software or services (Spath et al. 2006). Up to now, no combined view has existed, even though both fields are interrelated due to the increasing dependency of software and services. It can be assumed that methods and tools for e-service development can be based on certain aspects of the existing concepts of software and service development. A study was conducted to obtain insights into existing practical approaches for the separated and integrated development of software and services.

From the study results, methods and tools for combined engineering for e-services can be developed, grounded on the basics of software and service engineering, and satisfying the evaluated requirements.

Method of the Study

The sampling frame was comprised of all enterprises in Germany which consider e-services as a main or additional business. Companies from the ICT (Information and Communication Technology) industry were selected, as well as service companies (without ICT industry). To ensure a sample representative of the German market, the companies were selected from the Hoppenstedt®-Database, which includes 225,000 enterprises. In order to reach a sufficient number of companies, service-sector companies with 50 or more employees were selected, and ICT-field companies with 10 or more employees were taken into account. Since the development of services is not consistently assigned to certain departments in the companies, the survey contacted the executive boards in order to achieve a sufficient response rate. In companies with more than 1,000 employees the public relations departments were requested to forward the survey to appropriate respondents. The survey was conducted in spring 2005 and the questionnaire was sent to 3,892 enterprises. (1,386 were ICT and 2,506 were other services.) 111 companies responded, a rate of 2.9 percent. To analyze the data frequency analysis, crosstabulation and cluster analysis were used.

Because the executive boards were the contacted agents, the questionnaire was answered primarily by board members (42 percent), but also by representatives from sales and marketing (17 percent), and by development personnel (15 percent). 85 percent of the respondents were from the board level or higher management. Noting that the distinction of service or IT companies is rather a smooth transition in the field of e-services, the companies were asked about their core competence and shares of added value in order to characterize the sample. As some of the enterprises indicated that they have core competencies in more than one field, the results were 85 percent service, 38 percent software, and 13 percent hardware (Husen et al. 2005).

Study Results

The following section details the results of the study and the insights obtained from the study.

The market for e-services

The study involved contacting companies that are active in the field of services and/or information and communications technology. As a result of the description of the objectives of the study and the presentation of the field of e-services, questionnaire respondents were primarily companies that see themselves firmly anchored in the services sector.

A majority of the companies that responded (52 percent) indicated that they offer services for other companies. With respect to the company workforce and sales, a balanced cross-section could be ascertained, where the number of employees varied from under 50 to above 1000, and sales ranged from less than five to over 500 million euros. In 50 percent of the companies surveyed, the number of customers is over 100 but for 25 percent of the companies the number exceeds 1000. All the companies surveyed stated that they offer a mix of services, software and hardware, and can therefore be considered as belonging to the segment of e-services. As the majority (85 percent) defined their core competency in the field of services (software 38% and hardware 13%; multiple responses possible), the corresponding distribution of the service portfolio (share of added value) is understandable (services ≈58%, software ≈25% and hardware ≈18%). In addition, the services were classified according to the three-part classification of e-services, indicating that 43 percent could be assigned to the segment *services supported by IT*, 19 percent to the segment *IT provided with services* and 38 percent to the segment *hybrid products*.

One of the major challenges when developing e-services is the simultaneous standardization (for cost savings) and individualization (for differentiation) of the service portfolio. Companies want to respond to this challenge by establishing a range of services with a modular structure, and thus put together standardized segments to form individual offerings. Sixty-five percent of the companies already fully implement such a modular structure, with 27 percent applying this partially. Although this indicates that companies have already made extensive approaches with regard to this problem, a majority of the companies still consider that modularization represents a major challenge for the future.

Apart from the efficient and effective development of e-services, the necessary link between the areas of information technology and services, and in particular the customers' demand for "all inclusive" packages, point toward a value chain in the tertiary sector that is becoming increasingly complex. Additionally, the efforts to enter international markets that are becoming possible as a result of the increasing use of IT present new challenges in the service sector, because cultural differences have a significant effect on the services offered.

In order to define the customer focus of companies that offer e-services, the study assessed whether the services are aimed at companies or consumers, and whether new developments are driven by the market (market pull) or by technology (technology push). Eighty-four percent of companies stated that they offer services for other companies, and thus are mainly active in the B2B sector. Many of the companies surveyed are service providers for other service providers, and their task is to support the development process of IT services or their implementation. Many companies also deliver parts of e-services to other providers. As a result, increasingly complex value chains are created in the service sector. With regard to new development work, 84 percent stated that the market (market pull) is clearly responsible for the development of new e-services. It is therefore apparent that companies do not immediately respond to new technological developments with a new e-service, but instead wait until the market demands an appropriate service.

The targeted co-design of software and services must also be appropriate for the length of time a service will be offered in the marketplace. Here the following information was provided by the companies: ≈26 percent offering the service had a presence in the marketplace for one to three years; ≈42 percent offering the service had a presence in the marketplace for three to five years; ≈18 percent offering the service had a presence in the marketplace for five to ten years; and ≈13 percent offering the service had a presence in the marketplace for longer than ten years.

In summary, it can also be seen that the area of e-services is supplied by a number of companies with different foci. In particular, development methodologies must meet the needs of the B2B market and be appropriate for a short presence in the market place. Also, companies must be able to offer modular service offerings.

Development of IT-based service products

As early as the 1970s, efforts were made to provide comprehensive engineering support for the development and use of software products. Software Engineering is the academic discipline that deals with this task and has provided the necessary procedures, methods, and tools for doing so. Similar endeavors in the field of service development have been made only in the last decade or so. Here, too, the background is similar to software engineering in that it has been recognized that services should no longer be developed and delivered on an ad hoc basis but should make systematic use of suitable procedures, methods, and tools. The corresponding academic discipline is called Service Engineering.

In the context of the service society, the trend towards greater integration between information and communications technology and services is becoming increasingly apparent. This development should be matched by the integrated development of the appropriate e-services. Our study was able to confirm that identification of the dominant component is decisive for the procedure and management of the development process. The questionnaire responses show that all of the three types to be differentiated (*services supported by IT, IT provided with services* or *hybrid products*) are of practical relevance. In over 40 percent of cases, the software is considered the more complex component in the development process, but in 60 percent of cases it was stated that the development of services is at least as complex as the development of software (see Figure 1). Accordingly, the significance of the still emerging field of Service Engineering is clear, but so too is the necessity to link the two parts.

Figure 1: How Is the Development Effort for E-Services Distributed?
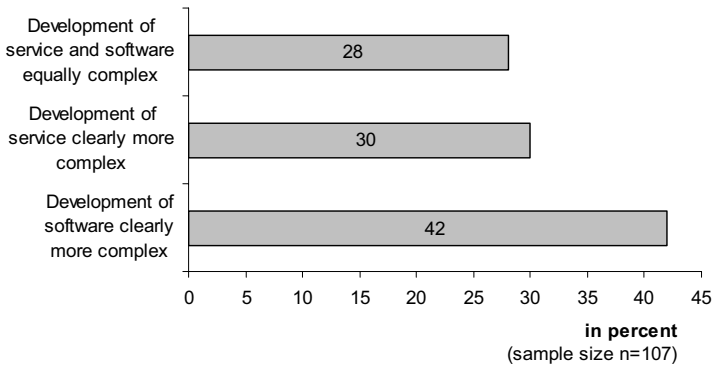
Within the context of the study of the development of e-services, we attempted to ascertain the extent to which the development of services and software is formalized during the management of the development process. The results show that the software development process is more formalized than the development of services. Half of the companies have a formal software development process for which written procedures exist, and a further 21 percent of those surveyed speak of a formalized process but it is not documented in written form. Somewhat less than a third of companies however have no, or only have minimal, formalization in respect to software development. Only a few companies document services and software together. What is also interesting is the observation that this formalization is not dependent on the size of the company, and the tendency to greater formalization is only slightly more pronounced among large companies.

When developing services, the outcome is different with regard to formalization. In only about a fifth of the cases, a written procedure for formalizing service processes was at hand; a further fifth had a formal development process but it was no recorded in writing. The majority of companies either have not formalized their service development process, or the level of formalization is only minimal.

The question of interest here was whether formalization of development projects had an influence on the success of the company. To establish this, the study examined characteristic "Change in the profit-sales ratios before tax in the years 2001 to 2003." Even though the extent of formalization is understood more as an indication and there are a number of other factors that influence the success of the company, it can be seen very clearly that the successful companies formalize their service development projects to a greater degree than do the less successful companies. The successful companies use considerably more of both written and unwritten formalization.

With regard to development, the questionnaire asked which divisions in the company are involved in the management of the development process (with multiple responses possible). As was the case for the handling of development by an organizational unit,

the areas of IT (66 percent), management (61 percent) and product management (47 percent) are very significant. The customer-facing areas of sales (52 percent), marketing (39 percent) and service (24 percent) are involved to only a lesser extent. However, 42 percent of the companies surveyed involve their customers directly in the development work in order to achieve a high degree of customer focus. Other external parties involved in service development are cooperation partners (28 percent) and external advisors (12 percent). The organization department (25 percent) and other internal units, classified under "Others" were also listed. On average, four company divisions or external participants were named as being involved in development, thus creating a fairly considerable complexity for coordination. Therefore, from an organizational point of view, the development of e-services presents a considerable challenge.

Software engineering for IT based service products

The planned and formalized procedure during the process for creating e-services requires a combined approach integrating both software and service engineering, as a singular creation of both parts would require great efforts to combine and adjust them. A standardized approach is based on the use of formal methods in the various specific areas. The area of software creation, in particular, offers extensive methods, procedures, and tools for systematic, effective, and efficient generation of software. Planned development of software is particularly significant in the context of e-services. The companies in the survey classified the direct effect of the quality of the software on the quality of the service, using a scale from one (absolutely minimal) to five (very high). With a mean value of 4.2, the result was well above average.

In accordance with these results, the significance of Software Engineering within the context of e-services is closely related to the complexity of the software used. In particular, highly complex software requires the supplier to implement a formalized, systematic procedure during the creation process. When examining the complexity with regard to the variants of e-services, it was possible to establish that the complexity of the software developed overall was high or very high (66 percent) for all three types (*services supported by IT, IT provided with services* or *hybrid products)*. In addition, the software for the hybrid service packages is of above-average complexity (high and very high complexity: 78 percent).

The actual development of software for the e-service can either be undertaken by the company delivering the service itself or it may be contracted out to an external company. The company also has the option of cooperating with other companies. Study responses reveal that nearly half of the companies surveyed stated that they developed the software themselves, and only a quarter had the software developed by external suppliers.

It can therefore be seen that since the quality of the service is highly dependent on the software and the software itself is highly complex, it is necessary to use formalized methods and procedures in order to effectively and efficiently achieve an overall high-quality product. Furthermore, such formal procedures need to be employed because many companies develop the software themselves and are thus directly responsible for the quality.

The extent to which software development is formalized depends on whether the software to be developed is produced in the company itself or in cooperation with partners, or is developed in its entirety externally by a third-party supplier. A formalized development process can most frequently be found where the software is developed in house or in cooperation with others (49 and 64 percent of cases, respectively; multiple responses possible). Awarding the software development to external partners does not necessary result in a formalized development process, as might have been expected (here, in 32 percent of cases).

The formalization level in the case of software development also leads to the use of a standardized method. Of those companies that stated that they used procedure models (multiple listings were possible here), just under 60 percent used prototyping as a method. This involved developing the product successively by means of prototypes. In contrast, only 10 percent used the V model (V-Modell 2006), which is necessary, particularly for projects where public bodies are involved, although it is often criticized because of its complexity. Apart from "traditional" procedure methods such as the waterfall model (Sommerville 2006) (20 percent), companies also use agile methods such as Extreme Programming (Beck and Andres 2004) (20 percent) (see Figure 2).

Figure 2: Which Procedure Models Do You Use for Software Development? (You Can State More than One)

in percent
(sample size n=83)
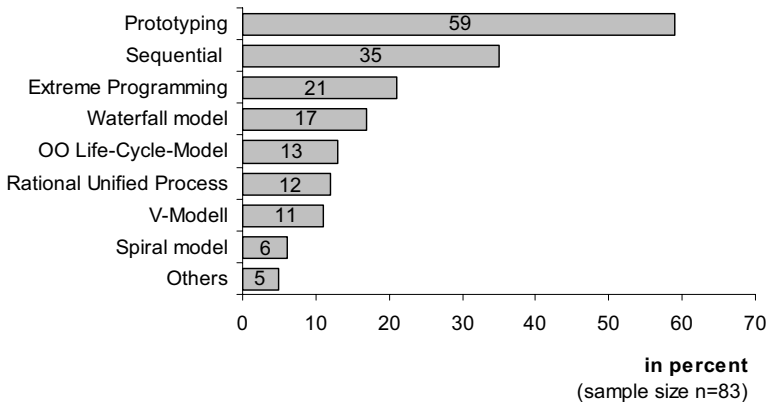
Apart from procedures as a method, the development of software can also be supported and made more effective by using tools. In this context, there are tools which either support certain phases of the development cycle (e.g., test tools) or solutions which provide overall support for the development process (e.g., project management software). Study results indicate that, in particular, software development environments were used. Half of the companies used tools to assist with project management, with test and modeling tools also used in nearly half of cases.

In summary, analysis of the development of e-services software for e-services in the companies surveyed reveals different degrees of formalization. Thus, different proce-

dures and methods are applied and various tools are used for support. The one-on-one interviews with the software experts carried out in advance of the questionnaire revealed that companies that do not use any formalized methods are aware of the problems caused by a lack of formalization, and intend to work more with formal procedures in the future.

Service engineering of e-service products

Services are increasingly being seen as products which can be planned and delivered systematically. Some authors even postulate that successful services must be planned systematically (e.g., de Brentani 1995; Ramaswamy 1996; Cooper and Edgett 1999; Fitzsimmons and Fitzsimmons 2000). Within the field, Service Engineering regards itself as a technical discipline that is concerned with the systematic development and design of innovative service products using suitable procedure models, methods, and tools (Meiren 1999). Research for New Service Development started in the 1980s (Shostak 1984; Bowers 1985; Easingwood 1986), and became a field with broader research activities in the 1990s (e.g., Shostak and Kingman-Brundage 1991; Congram and Epelman 1995; Edvardsson, Haglund, and Matsson 1995; Ramaswamy 1996; Fähnrich et al. 1999). Its relevance has been confirmed in several publications (e.g., Ramaswamy 1996; Cooper and Edgett 1999; Fitzsimmons and Fitzsimmons 2000). The transfer of engineering knowledge from goods design into the design of services was strongly driven by German researchers (e.g., Fähnrich et al. 1999). Most of the existing models for services engineering are sequential (e.g., Ramaswamy 1996; Cooper and Edgett 1999; Scheuing and Johnson 1989; Edvardsson and Olsson 1996; Tax and Stuart 1997). Constitutive definition approaches (originated by Donabedian 1980) led to a characterization of services by three distinct dimensions shown in Figure 3. In the sense of Service Engineering, these three dimensions are relevant for the development process, which consists of the following typical phases (cf. Bullinger, Fähnrich, and Meiren 2003):

- Idea generation
- Requirements analysis
- Concept development
- Implementation
- Market launch.

Figure 3: Derivation of a Methodology for Service Concepts (Bullinger, Fähnrich, and Meiren 2003)
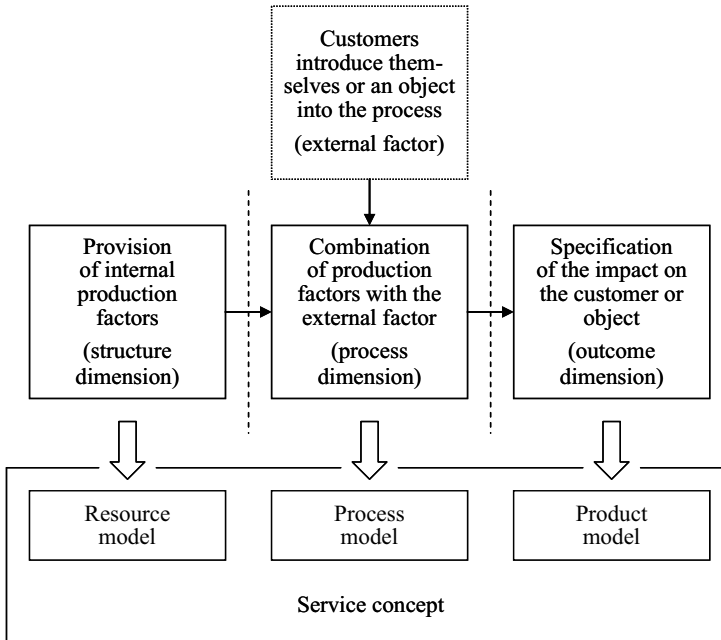
When developing e-services, Service Engineering is significant where complex services are dominant (generally services supported by IT), as well when developing service components within a complex overall process. The study examined the extent to which procedures and suitable methods are familiar in practice and are used.

With regard to the procedure for developing services, it is worth noting that nearly 60 percent of companies either did not have any formalized development process or the process they had was minimal. Where a system for development is in place, the procedures that are applied in practice are primarily simple, static, and phase-oriented. In many companies, the degree of formalization for the development of services is at a much lower level than is the case for software development. When co-design of software and services is implemented, it is particularly difficult to coordinate the partial development processes.

A broad spectrum of methods is available to support service development so that high-quality products can be developed quickly and efficiently. Commercial, engineering, and especially service-related methods may all find their way into the service development process. They are used in the analysis, modeling, and design of products and

processes, in innovation management, or to involve customers. However, in practical situations, it is clear that companies do not make full use of these instruments. Conventional business instruments are dominant among the methods used. Cost-benefit, economic feasibility, competition, and further analyses are used regularly and are widely known. Process modeling and prototyping are also used more than average, presumably because of the special role of software in e-services. In contrast, product modeling, which is a part of Service Engineering, is only used somewhat frequently by nine percent of the companies surveyed. Overall, it has become clear that specific methods for developing services (such as role concepts or service blueprinting), and engineering methods such as FMEA (Failure Mode and Effects Analysis) or QFD (Quality Function Deployment) that are also very suitable for the development of services, are hardly used; in the study, fewer than half of those surveyed are familiar with the methods (See Figure 4).

Figure 4: Which of the Methods Listed for Developing Services Are Familiar to You or Have Already Been Used by You?
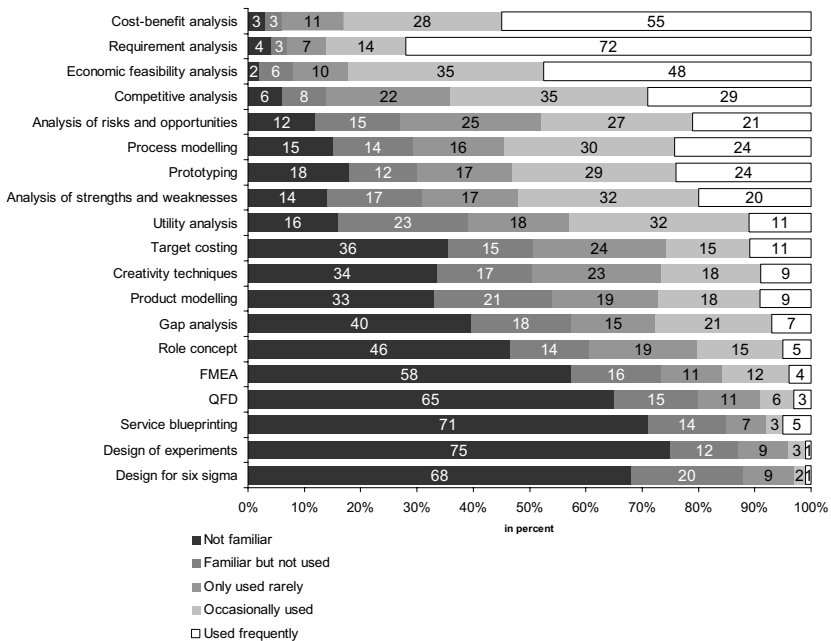
The quality of a service is greatly influenced during the development process. Because quality is of key importance, it is not sufficient to wait to take action until the performance level is rejected by the customer. A proactive approach is required to ensure that quality is developed as an inherent part of the service and that it can be controlled using suitable instruments from the time of the launch. Various methods are available to measure quality. General methods to measure customer satisfaction, benchmarking,

the measurement of internal key performance indicators, and analyses of complaints are planned by many companies at an early stage. The analysis of repeat purchases is somewhat known and used. Specific methods such as Statistical Process Control, the Frequency Relevance Analysis of Problems (FRAP), or the Critical Incident Technique are hardly known and are rarely used (See Figure 5). It is clear that quality, with respect to the provision of services, is definitely taken seriously, and it is also clear that companies consider this at an early stage in order to make a systematic record of customer satisfaction. Secondly, methods that supplement quantitative measuring instruments with qualitative information need to be used more intensively but they are still not deployed adequately in practice. In this context, if suitable methods were to be incorporated, they could later provide an indication of the most likely places to improve customer satisfaction.

Figure 5: Which of the Methods Listed for Measuring Service Quality Are Familiar to You or Have Already Been Used by You?
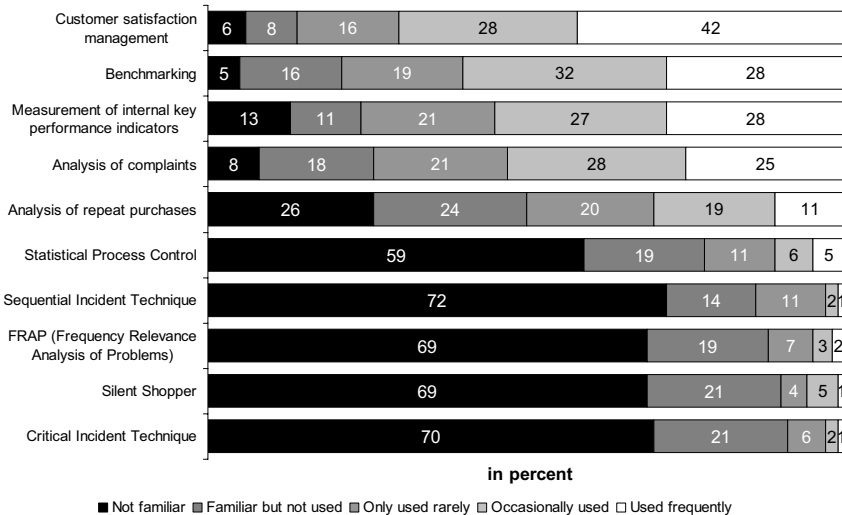
In order to classify the significance and situation as regards general attention to quality, the companies were asked to rate their own maturity level for quality orientation with respect to the development of e-services (on a scale of 1= very low to 5 = very high). A strong majority of the companies surveyed rated their own maturity level as being medium to high (74 percent). This confirms that companies are very conscious of quality. However, it does reveal a certain inconsistency regarding the use of specific methods, which have been analyzed in detail. Precisely those methods that support systematic development and that are intended to bring about quality-oriented development of services are not widely used and are not familiar to many companies. The strengths of those methods include the involvement of customers at an early stage and the scheduling of quality measurements for subsequent provision of services. The chal-

lenge is for a systematic design of services to close the gap between the customer-oriented calculation of requirements and quality-oriented provision.

Limitation of the Study

The study is only a preliminary step towards the development of specific methods for the holistic development of e-services. The data implies possible and necessary steps towards an integrated engineering method as a basis, but further research is needed to actually develop such an integrated development method. We capture the trends observable in the marketplace, though the market focus of the study was limited to Germany. While similar observations may be made in other industrialized countries, this cannot be confirmed with the data at hand.

Another limitation of the study is the fact that service engineering is not very common among the companies, with only very few large companies already employing service engineers or service designers. Therefore, the study must rely heavily on answers given by managers who might not have much related experience.

It needs to be stated that in our initial sampling frame, not all companies (ICT and service companies) necessarily offered e-services as part of their product portfolio. That some companies did not feel equipped to answer the questions may explain the response rate. Hence, non-response-bias cannot be completely ruled out.

Implications

A specific problem as regards e-services relates to the interdependencies between the two components: service and software. While the specification of the service will usually influence the specification of the software, conversely the feasibility of the IT solutions usually needs to be taken into account when conceptualizing the service itself. In fact, the quality of the service deliverable can only be as good as the quality of the supporting software. Appropriate attention must also be paid to this relationship during the development process. If the development engineer for the subordinate component is involved at too late a stage, the efficiency of the overall process will suffer and it will be more difficult to take account of interrelationships.

Although e-services have been developed in companies for years, this task was not observed in the study as an integrated area. Instead, software and service developers often work independently of each other, and coordination is difficult. In order to be specific about the research activities required, both existing success factors and also the need for action from the company's point of view were determined in the study.

The relevance of the topic was clearly confirmed by the fact that 78 percent of companies expect that the systematic development of services will become more significant in future. Companies consider that the greatest need for action is required in respect to the provision of suitable procedure models (65 percent) and methods (62 percent; multiple responses possible). These techniques also represent the most important levers for

developing efficient, quality-oriented services suitable to meet customers' require-
ments. Special organizational concepts for development projects are of secondary im-
portance (47 percent). Case studies (39 percent) and options for training (31 percent)
may also be useful (See Figure 6). Of particular interest is the desire expressed for
suitable methods, bearing in mind that the study shows that respondents hardly use the
majority of suitable methods and, in many cases, were not even familiar with them. It
would appear that what is needed, first, is to make the methods that are already avail-
able known in practice. Any gaps that then exist must be closed by selective new
methods or further development of methods.

**Figure 6: In Your Opinion, Where Will the Greatest Demand Be in the Future
for the Development of E-Services? (You Can State More Than One)**
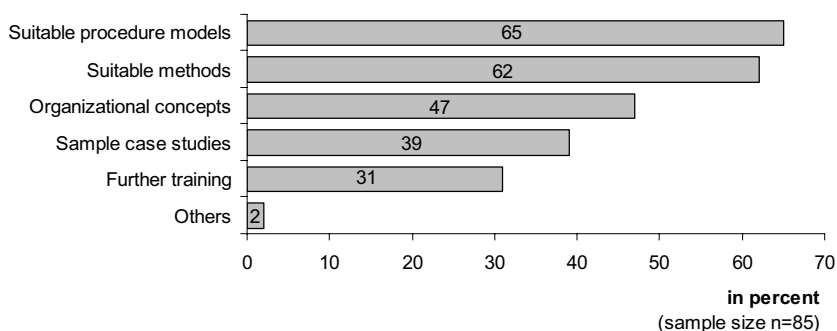
Classifying the action required within the respective development phases produced a
broadly similar picture. It can be concluded that there are fewer challenges in the indi-
vidual phases and more in what is required for a holistic approach, which is also dem-
onstrated in the considerable demand for suitable integrated procedure models. The
desire for consistent guidelines on the development of e-services is also expressed in
the survey question about the most important success factors. Companies were asked
in an open-ended question format as to what they consider the essential success factors
in the development of e-services. The large number of statements made in the survey
was subsequently analyzed by the frequency of mention and then classified. In particu-
lar, companies identified three topics as success factors in the development of
e-services:

- Customer focus,
- Project management and
- Quality.

As a success factor within the context of the development of e-services, the greatest
importance was attached to customer focus. As prerequisites to achieving customer
focus, respondents mentioned closeness to customers, active listening, and knowledge
of their customer's requirements and a good understanding of the customers' proc-

esses. In some individual cases of development, direct collaboration with the customer is recommended. A market focus is closely linked to customer focus; this also encompasses potential customers.

Another and very significant group of success factors can be attributed to the term "project management." With regard to project work, important factors include cooperation in small teams empowered to take decisions, a good project structure, and information communicated/disseminated to all those involved. In addition to the project work, suitable documentation, monitoring, and project controlling are also important. If the work focuses on these success factors, it will be possible to obtain the result originally planned ("on target"). According to the answers provided in the study, the points that must be safeguarded during this process are the economic feasibility of the new service, compliance with the project budget, and the planned development time (time to market).

The quality of the developed e-service is also important for success. Quality attributes include an error-free and efficient service, defined Service Level Agreements (SLA), availability, data quality, support, ease of operation, and advice. Ultimately, the solution must be appropriate and offer the right price-performance ratio. Another strategy to secure quality and economic efficiency as well, is labeled as Mass Customization. In this method, standardized service components are brought together to satisfy the requirements of an individual customer.

In addition, it was possible in the study to attribute individual success factors to the group "management." This primarily involves ensuring a clear long-term strategic direction, and also includes the principle "IT follows Strategy." Service development projects must not be dominated by the IT alone, regardless of how important the contribution may be.

The results of this study are currently being used to develop methods and tools for a co-design of software and services. For such a use, the strengths and weaknesses of the existing approaches are analyzed and a comprehensive method is under development. In addition to a comprehensive and quite linear development method that can be used for creating extensive e-services within large companies, an agile approach has been developed for rather small projects with several customers and quick changing requirements. These development approaches are under evaluation and further adaptation will be made.

Conclusion

The insights from our empirical study illustrates that e-services are increasingly becoming an established practice among companies and are taking over from traditional services. As a result, systematic and qualitative development of such e-services is needed to link the disparate Service and Software Engineering development lines that used to exist. The survey reveals that some companies still do not have adequate approaches for structured development, even in individual areas. In order to achieve end-

to-end co-design of software and services, these basic approaches must first be established, and new approaches must be developed that will meet the need to link the two activities.

Companies which already use a formal approach give priority to clear approaches rather than comprehensive procedures. Consequently, although the co-design must be appropriate for the complexity of connecting both areas, it must also meet the need to achieve simple implementation.

Many companies stated that they themselves provided services for other service providers, and thus supplied the B2B market. Consequently, it can be seen that the value chain is becoming increasingly complex. Individual companies that are responsible for providing e-services but instead, the services are provided by extensive cooperation projects. As a result, approaches for development and delivery must be suitable for this cooperative concept.

This study provides a unique insight into the current state of the art of e-services and can therefore be used as a basis for further academic efforts geared towards implementation in practical situations.

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