

Personalization versus Privacy: New Exchange Relationships on the Web

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Abstract

Personalization is the ability to satisfy specific needs of individual customers and has traditionally been employed as a marketing strategy for luxury goods. Advances in Internet based technologies have allowed most online vendors to offer personalization services, albeit to a varying degree. While vendors who offer personalization in the physical context usually charge a premium for the services, personalization in the online environment has become more of a competitive necessity and serves as means to acquire customer information. Such information acquisition has led to exaggerated concerns of privacy for customers and thus affecting the viability of personalization strategies. In the absence of any rigorous framework to study personalization strategies that involve customer concerns of privacy, this paper conceptualizes online personalization as an extension of a complex marketing exchange that has both temporal and contextual dimensions, and builds upon existing exchange paradigms to provide an understanding of information exchange on the Web. By incorporating the customer concerns of privacy on the Web, we develop a conceptual model and construct a set of hypotheses that can serve as the foundation for future models and empirical studies on Web based personalization.

1 Introduction

The advent of Internet based technologies has enabled vendors of all product types to offer some degree of personalization in the online environment. While mass-customization focused on satisfying segments of customers from a production perspective (Pine II et al. 1995), personalization aims to satisfy the needs of an individual and historically has been available only for luxury items. Prior to the introduction of electronic commerce, personalization was studied primarily as a service strategy for luxury goods where vendors tailor services to the needs of an individual and charged a premium (Mattila 1999) and thus rendering it a profitable strategy only for a few sectors. In the online context where personalization has become more a competitive necessity, the primary strategic benefit to vendors is the ability to acquire customer information in exchange for personalized services. Regardless of the nature of environments, personalization depends on the knowledge about an individual customer and the ability to cater to her needs. While Internet based tracking technologies enable firms to acquire information about the individual and her preferences, these efforts give rise to grave concerns of privacy on the part of the consumer, which may largely affect the viability of personalization strategies.

While trade literature has elaborated on personalization and privacy protection on the Web, there is little academic research that helps understand the dilemma a consumer faces in terms of the tradeoff between personalization needs and privacy concerns. The first goal of this paper is to identify a suitable theoretical framework through which the relationship between customers and vendors in the context of personalization and privacy can be studied. Following the identification of a theory-base, this paper aims to understand factors that would determine a successful interaction for personalization between vendors and customers. For example, how do factors such as vendors' value for customer information and privacy sensitivity of individuals affect the feasibility of offering personalization? Under what conditions will information expectations of vendors be satisfied? Do consumers exhibit the same degree of sensitivity to all the information about them and is this concern affected by the context where such information is collected? In order to address these questions, we propose a conceptual framework

that is built from social exchange theory, and argue that personalization can be studied as a specialized marketing exchange. We then extend arguments from prior studies of marketing relationships to not only study online personalization, but also to explicitly identify differences in online and offline personalization.

Consider a shopping transaction with a merchant like Amazon. Personalization is enabled and delivered by not only the online merchant, but also through infrastructure providers such as Akamai, advertising agents such as DoubleClick, and many others who have access to parts or all of the customer information in a particular transaction. In addition to the number of parties involved in the transaction, there are elements of privacy that can negatively affect such an exchange in the online context. For example, while the BestBuy physical store does not send an employee along with every customer to monitor what they are looking at, BestBuy.com indeed does that through cookies and other tracking mechanisms. While these new technologies raise privacy concerns, they can also be mitigated by the length and nature of relationship between the customer and the vendor. Repeated transactions and reputation of the vendor can make customers more comfortable in divulging their personal information (Chellappa 2001; Gefen 2000). However, such privacy sensitivities of a customer can vary depending upon the context in which her information is collected and vendor's liabilities in handling such information can differ as well. For example, a consumer may willingly disclose some information to a medical Web site, which she may not to an insurance Web site. Such varying sensitivities to information are also reflected in separate laws governing handling of information related to children (COPPA¹) and medicine (HIPAA²).

We cast online personalization as a complex (i.e., involving many entities), mixed (i.e., including both utilitarian and symbolic media) and relational (i.e., including a temporal dimension) exchange (Bagozzi 1974; Bagozzi 1975; Gundlach and Murphy 1993). We further introduce a fourth dimension, the domain of transaction, as also playing a role in

¹ See <http://www.ftc.gov/bcp/online/pubs/buspubs/coppa.htm>

² See <http://www.hhs.gov/ocr/hipaa/>

determining the outcome of the exchange relationship. This conceptualization allows us to determine conditions under which successful personalization exchange can occur through the identification of endogenous and exogenous elements of the exchange. We characterize personalized goods/services and customer information as the endogenous elements of the exchange relationship and examine how attributes of the vendor and customer affect this exchange. These actor attributes, as well as the contextual dimension of exchange relationship, form the exogenous factors in our exchange model.

The paper is organized as follows: The following section introduces the notion of social and marketing exchanges through which the offline and online personalization will be explored and compared. Subsequently in section 3, we explicitly identify actors, relationships, endogenous and exogenous variables that sustain this exchange system. Further, the influence of these elements on the exchange relationship will be discussed and summarized in the form of propositions. This paper is then concluded with a summary of contributions and a set of guidelines for future research.

2 Understanding personalization through the exchange paradigms

Personalization in the physical context has been studied as an element of service marketing and is shown to be an important determinant of perceived service quality and customer satisfaction (Mittal and Lassar 1996). SERVQUAL (Zeithaml et al. 1990) is the metric employed to measure service quality and consists of five dimensions, namely reliability, responsiveness, assurance, empathy, and tangibles. Personalization is embodied in the *empathy* dimension, which refers to treating customers as individuals. Irrespective of when these services are offered, i.e., as a complement to a product or as standalone, giving individualized attention to customers has been proposed to be a critical factor in signaling superior quality of service (Mittal and Lassar, 1996; Carman 1990). Thus the ability to treat consumers as individuals has largely been the forte of luxury goods vendors where quality is of paramount importance and where a price

premium could be extracted. While some small service firms that deal with localized customers (such as a local “mom & pop” store) are also able to deliver personalized services, such services are mostly found in places such as luxury hotels and high-end car dealerships (Mattila 1999) due to significant costs incurred in catering to the needs of a particular individual or small groups of customers (Suprenant and Solomon, 1987).

Personalization has undergone a transformation with the emergence of online buying and selling due to the lowered technological costs and increased interactivity. While the study of personalization as an element of service quality for luxury goods was sufficient in the offline context, it fails to fully address the implications of providing individualized services in the online environment. In the context of online personalization, individualized services are offered by virtually all product vendors and are almost a competitive necessity. While the SERVQUAL approach would suggest that online vendors offer services that maximize quality along the *empathy* dimension, the implicit assumption that such higher quality can be translated to higher prices due to higher satisfaction has not been tested. Furthermore, personalization may not be strictly preferred in the online context, as customers may actually exhibit significant concerns of privacy (Chellappa and Sin 2002). In order to incorporate elements that are now increasingly critical in buyer-seller relationships, we apply the exchange frameworks to study personalization.

2.1 Exchange paradigms

Exchange relationships have been considered to be at the core of any marketing phenomenon (Frazier et al.). Literature in marketing has adapted the social exchange theory to represent marketing behavior in a broad variety of contexts (Alderson 1965; Alderson and Martin 1965; Bagozzi 1974; Bagozzi 1975; Ekeh 1974; Kotler 1972b; Kotler and Levy 1969). While transaction cost theories and resource-based views have helped in the understanding of economic cost/benefit trade-offs, marketing exchanges developed from social exchange theory to include the transfer of intangible elements as well. According to Blau (1964), social exchange refers to relationships that entail unspecified future obligations based on trust between the exchanging parties. It differs from an economic exchange in the sense that it relies upon or creates social ties and

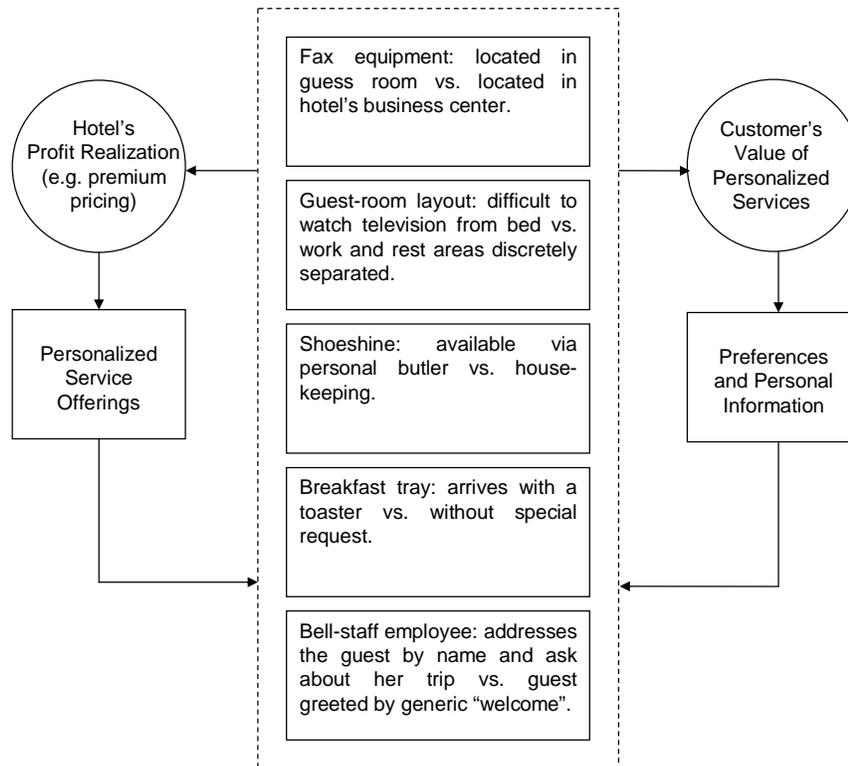
deals with informal exchange of intangibles such as feelings, favors, social power and ideas (Blau 1964; Homans 1961). People participate in a social exchange only if their expected rewards outweigh or at least compensate their loss due to participation (Blau 1964; Homans 1961; Thibaut and Kelley 1959). In other words, in a social exchange, people seek to maximize their benefits while minimizing costs with regard to intangible social benefits and their outcomes (Gefen 1997). In addition, Konovsky and Pugh (1994) maintain that the main characteristic that distinguishes social exchange from economic exchange is the expectation of long-term fairness in the social context. They suggest that social exchanges are more of a reliance relational contract (Rousseau and Parks 1993) that are often long term and open ended, and may include socio-emotional aspects. On the other hand, economic exchanges are characterized as transactional contracts, which are short-term agreements with limited influences of participating entities on each other. Personalization on the Web not only embodies elements of social exchange but is also in fact a consumer-marketer relationship. Therefore, in the following section we conceptualize personalization as a type of marketing exchange.

2.2 Personalization as marketing exchange

Many types of marketing exchanges have been proposed on the basis of a. number of actors or entities involved, b. nature of relationships between them (restricted vs. complex), c. length of the relationship between them (relational vs. discrete), d. the meaning of exchange (utilitarian vs. symbolic) e. structure of exchange (formal vs. informal), etc³. Both online and offline personalization can be studied on the basis of these dimensions. Relationships involving personalization in the physical world could be considered a classic example of a customer-salesman dyad or a form of restricted exchange relationship (Bagozzi 1974; Bagozzi 1975; Kotler 1972a; Kotler and Levy 1969). For example, in the case of luxury hotels, business travelers are known to prefer a particular hotel in view of personalized services such as being greeted by name, offered a personal butler, provided an individualized room layout, etc (figure 1). In such a relationship, the hotel offers services and derives tangible benefits such as a premium

³ Please see Mowen, John C. and Michael S. Minor (2001), *Consumer Behavior: A Framework*. Englewood Cliffs, NJ: Prentice Hall., for a full review of the various exchange paradigms.

price, and intangible benefits such as word of mouth and customer loyalty. A key characteristic of such offline personalization is that all of the processing is incorporated within the dyadic exchange relationship (Bagozzi 1974, p. 79, fig.3). For example, the traveler has no reason to believe that her personal information, shoe size for instance, would be given to a shoemaker by the hotel. Consequently, she has no reason to expect a personalized shoe offering when she gets home. This implies that information she shares with the hotel staff is restricted to the two actors, the customer and the hotel, within the exchange system, and her expectation of personal services is also typically restricted to that particular environment.



Note: Adapted and altered from R. P.Bagozzi: Marketing Notes and Communications (1974, p.79) and A. Matilla: Consumers' Value Judgments: How Business Traveers Evaluate Luxury-hotel Services (1999, p.41-42).

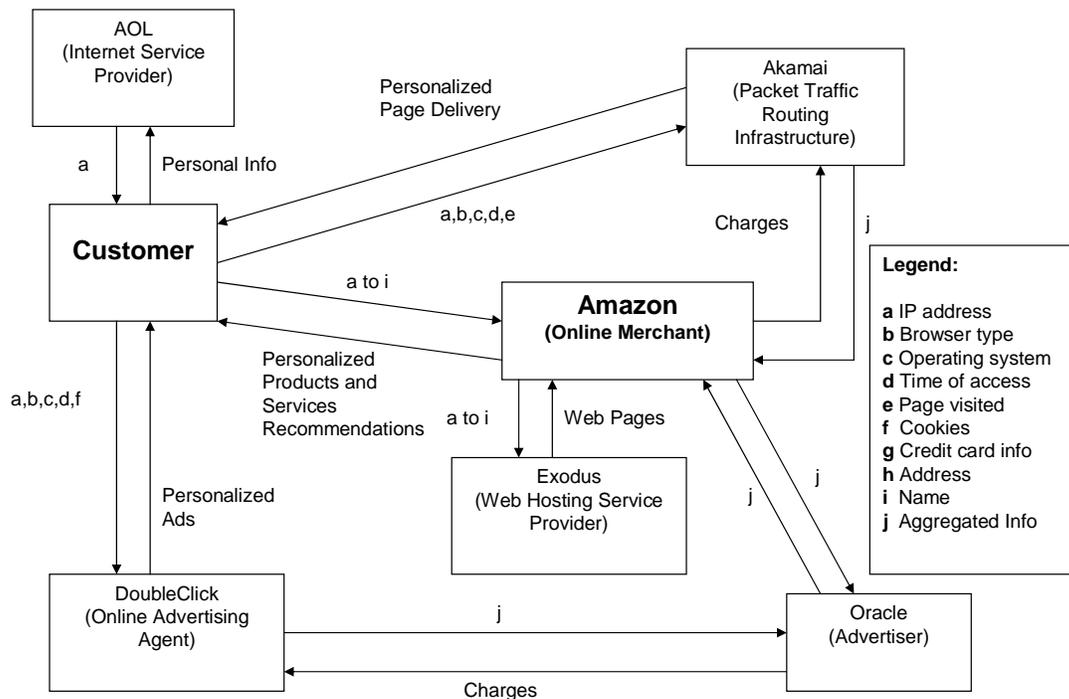
Figure 1: Restricted Exchange - Offline Personalization

On the other hand, the nature of exchange in a Web based personalization differs in many aspects from it offline counterpart. The number of entities (see figure 2) in an online transaction that can potentially acquire information (and deliver personalization) may include not only the actual intended merchant (e.g., Amazon), but also others such

as the Internet service provider (ISP) such as AOL, Web hosts like Exodus, advertisers and advertising agents such as DoubleClick, intermediate packet traffic optimizers such as Akamai, etc. An average consumer has only subjective expectations regarding the entities who will share her information and hence only a subjective expectation of the proposed personalization benefits. Some benefits maybe tangible or "visible" to the customer (e.g., a personalized Web page from the original intended entity (Amazon), an observable personal advertisement placed by Doubleclick, etc.), while others may not be observed by an average consumer (e.g., packets sent through a personalized route for faster delivery as created by Akamai Inc.). This subjective knowledge can also manifest itself in the form of consumer concerns of privacy. For example, given that all these parties are potentially capable accessing some element of information about the Web user, her machine's IP address and some content of the transaction, for examples, a consumer may perceive a threat to her privacy and hence might consider the transaction unsafe. Such consumer perceptions of privacy are prevalent in online transactions and have been shown to affect the consumer's trust of the online environment (Chellappa 2001).

Instances of consumer-marketer relationships involving multiple entities have been classified as generalized or complex exchanges (Bagozzi 1975). While generalized exchanges necessarily denote univocal, reciprocal relationships, Web based personalization is a complex exchange that is simply defined as a system of mutual relationships between three or more parties. In this characterization, we agree with Bagozzi's (1974; 1975) observation that complex exchanges can include both overt and covert coordination, i.e., those relationships that are observable and known to the user and those that are not. Further, online personalization involves both utilitarian and symbolic elements. It is utilitarian in the sense that consumers get tangible benefits through personalized products and services from which they derive utility while at the same time, it is also symbolic because the information they share with the vendors includes forgone psychological assets (i.e. privacy) that may translate into unspecified future costs (Bagozzi 1974). When a customer registers with a Web site and gives out her information, she does so with the expectation that the vendor will personalize future

transactions based on her profile and trusts that the vendor will not indiscriminately share her personal information. Moreover, the benefits to vendor are also both utilitarian and symbolic in that while there is a value for consumer information, it is largely based on non-guaranteed future payoffs. Thus online personalization can be cast as a mixed exchange with both economic and social elements (Bagozzi 1975; Blau 1964).



Note: Adapted and altered from R. P. Bagozzi: Marketing as Exchange (1975, p.34)

Figure 2: Complex Exchange - Online Personalization

2.2.1 Temporal and contextual dimensions in personalization exchanges

The duration of a customer-marketer relationship is critical in the context of personalization. Repeated exchanges over time have been known to engender trust in relationships (Gefen 2000), and such trust can allay privacy concerns that exist in online personalization exchanges. More recently, this dimension has been explored by Gundlach and Murphy (1993), who classify exchanges into transactional, contractual and relational types depending upon the duration of the exchange relationship.

Exchange Specific Factors		Offline Personalization	Online Personalization
Number of actors (Bagozzi 1974; Macneil 1978, 1980)		Typically two (Simple Exchange)	Usually more than two (Complex Exchange)
Media of exchange (Bagozzi 1974)		Money, personalized products and services	Information, personalized products and services
Meaning of exchange (Bagozzi 1974)		Typically an economic transaction (price paid for personalization delivered) Some psychological benefits may be a reason for the occurrence of the exchange (e.g., being greeted by name, title, belonging to exclusive clubs). Largely a utilitarian exchange	Similar to barter, e.g., personalization delivered upon access to customer information. Psychological elements induced by privacy concerns can negatively affect likelihood of the exchange Mostly a mixed exchange
Duration of exchange (Gundlach and Murphy 1993, Dwyer, Schurr, and Oh 1987, Macneil 1978, 1980)		While some personalization is feasible for a one-time transaction, it mainly depends on the amount of knowledge about the customer Characterized by contractual relationships, but largely a relational exchange	Repeated transactions can lead to better customer profiling and delivery of personalization of greater value Characterized by contractual relationships, but largely a relational exchange
Domain of exchange	Contextual Liability	A vendor is liable for information collected and stored about the customer. Vendors' liability may vary depending upon the type of information (SSN, financial information, medical information) and type of customer (children). Given the amount of information collected is limited, contextual liability can be relatively small	Vendor is liable for customer information in online context as well. However given that increased amount of information and the potential number of actors involved in collecting this information, contextual liability may be higher. Also technology is highly susceptible to hacking and other malicious activities
	Contextual Sensitivity	While general privacy concerns are low, they can be accentuated by the domain. Customer sensitivity to medical and financial information maybe higher as compared to information about automobile preferences.	Privacy concerns are already high and may be significantly accentuated by the context of information exchange. May explain why some vendors offer to take orders online and yet allow for credit-card information to be given through telephone
Overall exchange type		Restricted exchange	Complex exchange with temporal and contextual elements

Table 1: Offline vs. Online Personalization Exchange

Given that potential benefits from personalization are a function of the vendors' knowledge of the customer, it is reasonable to assume that prolonged interactions can lead to better benefits as the cumulative information that can be acquired about the customer is greater over a period of time. Therefore, even though personalization can be a one-time affair (when vendors have *a priori* knowledge of customers), i.e., a transactional exchange, the real benefits can be observed only when there has been repeated interactions between the two parties and thus is better characterized as a relational exchange. Gundlach and Murphy (1993) also observe that relational exchanges, unlike the transactional ones, are characterized by merged transactions, high switching cost, social interdependence and convergence of goals. The implications being that in the luxury hotel context, repeated visits not only can help the hotel pre-empt any customer requirements but also can dissuade the customer from switching to another hotel. In this paper we introduce another dimension to studying personalization exchanges, namely the domain or context of the exchange. An important challenge that online firms face today is that even if a personalization exchange is successful in one context, e.g., books or music, it may not necessary be successful in another, e.g., medical or children services. This paper argues that both the marketer and the consumer in a personalization exchange are affected by the context where personal information is provided and collected. We propose that the effect of the domain manifests itself in the form of *contextual sensitivity* to the consumer and *contextual liability* to the vendor. While contextual sensitivity refers to the consumer's increased sensitivity with regards to her personal information in certain contexts, contextual liability refers to the increased cost to vendors due extra legal and security burdens in the collection and storing of customer information in some sensitive domains. Table 1 provides a summary of both online and offline personalization exchanges.

Characterizing personalization as a marketing exchange in itself is only the first step towards understanding viabilities of personalization as a strategy. Following this we identify factors and elements that influence the outcome of a personalization exchange. In order to understand when and how personalization becomes a viable strategy for

vendors it is important to understand the relationships between these elements in a personalization exchange. In the following section we construct hypotheses reflecting such relationships and their roles in affecting the outcome of a personalization exchange.

3 Elements of a personalization exchange relationship

Web based personalization is neither a costless exercise nor will all consumers exhibit the same level of concern in sharing their information. While Web-based services are often provided as competitive necessities and for increasing switching threshold of consumers (Chellappa and Kumar 2001), the most important benefit to vendors is the customer information itself. In other words, customer information should be valuable enough for the vendors to offset the cost of offering the services. In view of the complex network of entities who share this information, such a value would be derived both from within (e.g., Yahoo's own value of information) and in the form of rent/royalties from others (such as those from Doubleclick, advertisers, etc.). Similarly, the cost of adopting a personalization strategy on the Web is not merely a function of the technology infrastructure, but also the investments in reputation building efforts such as relationship with trusted third parties (such as TRUSTe, VeriSign, etc.) and the responsibility or liability of holding customer information. While reputation is key in offline as well, prior research (Chellappa 2001) has shown that trust building in online environments also require significant technological investments in security and privacy protection mechanisms. The factors that affect personalization exchanges and their specific roles in online versus offline exchanges are shown in Table 2.

An important goal of this paper is to study online personalization so as to understand the viability of personalization strategies for vendors. In the exchange paradigm these viabilities translate into the likelihood of individual actors participating in the exchange, i.e., vendors offering personalization services and consumers providing information in return. We develop a model for online personalization exchange and subsequently discuss specifics of the endogenous and exogenous factors for future empirical analysis.

Non-exchange Specific Factors	Traditional Personalization	Web-based Personalization
Economic viability of personalization	Feasible for personalization of services	Feasible for product purchase experience and some digital products
Strategic reasons for employing personalization	Typically offered by luxury goods/services merchants or “mom&pop” stores Primarily involves a premium price being charged	Offered by virtually every online vendor for free Almost a competitive necessity, but provides the ability to gather customer information
Ability to collect and process customer information	Often restricted to information explicitly provided by the customer and some observed information at the point of sale Typically this information has to be processed in batches	Inordinate ability to collect information about customer’s device, medium of access, browsing profile, etc. Also the ability to process such information instantly
Presence of privacy concerns	Typically low concerns regarding how a vendor might use customer information	Customers exhibit a high degree of concern regarding their online transactions
Consumer expectations of personalization	Reasonably clear expectations, e.g., degree of personalization may depend on price-premium extracted The price premium signals the quality and/or quantity of personalization	While product personalization expectations are clear, personalization of Web pages, automatic email notifications, etc. can be somewhat vague. May depend upon customer’s knowledge of how information is collected/used.
Consumer’s trust perceptions	Largely based on the reputation of the vendor.	While reputation of the vendor is important, research shows that consumer perceptions of privacy and security also to play an important role. Consumer awareness of the online environment (expertise) is also important Trusted third parties can also build trust

Table 2: Online vs. Offline Personalization - General Factors

3.1 A conceptual model of online personalization exchange

The exchange model (shown in figure 3) essentially comprises of customer and marketer with whom the customer directly interacts. The endogenous elements that we consider for this model are the personalization services and customer information being

exchanged. The customer's decision to participate in the exchange is the result of her cost/benefit analysis, i.e., her value from using personalization services contrasted with her privacy concern. Similarly, the marketer's decision to employ personalization services is a function of his liability and trust building costs contrasted with his value for customer information. The relationships between these factors are mediated by actor and domain characteristics such as the vendor's reputation and the context where the exchange takes place. We present a detailed discussion of each of the factors in the following subsections.

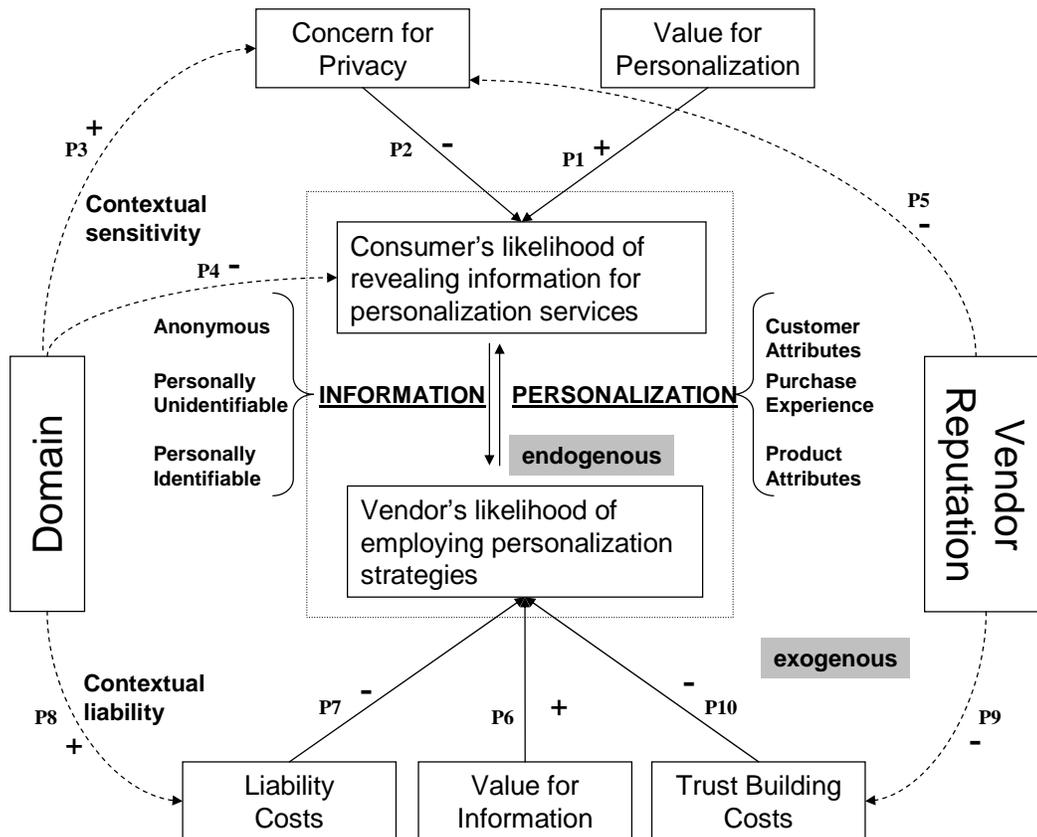


Figure 3: Conceptual Model of the Online Personalization Exchange

3.2 Consumer's value for online personalization

Consumers use online personalization as they expect to derive a certain value from these services. The actual value provided by personalized services is based upon the attributes on which personalization is accomplished. The nature of personalized services on the Web vary from personal portals such as my.yahoo.com that offers

individual-specific views of a customer's stock portfolio, to news interests, to automated emailing of new virus protection files from Symantec personalized for the individual's machine as well as the version of her virus-scan program. The level of personalization benefits that can be delivered is dependent on the various types of information that can be acquired. For example, automatic virus protection requires the customer's machine information, operating system, specific serial number of her software, address, etc; while in the case of portals, information such as ZIP Code is necessary to provide personalized commentaries on local weather, and television programs. Although personalization on the Web can be classified in many ways, (e.g., personalization of content and presentation, access and delivery, advertisements and coupons) recent literature provides a broad classification of online personalization based on the following three attributes on which the value is delivered (Chellappa and Dutta 2001).

a. Personalization based on customer attributes (non-purchase related): This type of personalization includes the attributes of the customer that is typically independent of any specific product/service purchase. These attributes can be categorized into individual specific attributes (e.g., ZIP code, preferred language, shipping address, response to promotional activities, etc.) and technology specific attributes (e.g., browser type, IP address, and connection device)

b. Personalization based on product purchasing experience: Online vendors offering the same set of products may differentiate themselves through services that offer unique purchase experiences to their customers. For example, firms like Amazon and Barnes and Noble leverage the collective knowledge (through collaborative filtering) of their entire customer base to anticipate the preferences of each individual customer to make personalized recommendations; while others employ personalized search, navigation or comparison screens depending upon user preferences.

c. Personalization of products or services themselves: In some instances the products themselves can be personalized. Firms such as Dell and Gateway provide personalized page views that are tailored for individual customers to configure, order, and pay for products on line. Many also personalize after sales support specifically for the system purchased. Such services may include static support information as well as

dynamic information gleaned from postings of other users as well as support personnel. While physical product vendors such as car manufacturers and furniture designers use the Internet to create an interactive environment that allows consumers to provide inputs into the final production of their physical products, the products themselves can be fully personalized in the case of digital goods and services (e.g., music albums, software bundles, stock quote recommendations).

Consumers may exhibit different levels of needs and expectations for each of the above personalization types based upon their own preferences. For example, a consumer who travels frequently may value personalized services delivered to her mobile and hand-held devices as compared to a frequent shopper who prefers personalization that enhances her product purchase experience. Thus the aggregate value of personalization along the above attributes is a determining factor in the consumer's use of such services.

P1: *A consumer's value for personalized product/service including her individual specific and technology attributes, and product purchase experience expectation, positively influences her intent to use personalization services.*

3.3 Consumer's concern for privacy

A consumer cannot enjoy the benefits of personalization without being somewhat concerned about her privacy. The degree or the amount to which a consumer is concerned about her information is individual specific. Although individuals value privacy and have always been concerned about what and how much others know about them (Schwartz 1968), research suggests that compensation may help reduce privacy effects (e.g., Goodwin 1991; Milne and Gordon 1993; Sheehan and Hoy 2000; Westin 2001), and that customers maybe willing to give up privacy in exchange for products, coupons, services, or financial benefits (Barker 1989; Chebat and Cohen 1993; Kanuk and Berenson 1975). Similarly we propose that consumers will trade their privacy for expected online personalization benefits, and hence to understand a consumer's likelihood of using personalization services we need to measure the consumer's perception of privacy.

Chellappa (2001) argues that a consumer's perception of privacy in her transaction is a subjective anticipation defined as "the subjective probability with which she believes that the collection and subsequent access, use, and disclosure of her private and personal information are consistent with her expectations." Even if the expectations of privacy are typically set by known legal guidelines, consumers themselves may vary in their assessments of privacy. While privacy has been dealt with primarily as a legal or human rights issue (Culnan 1993; Thomas and Maurer 1997), only recently has it been formally examined as a belief regarding a particular consumer-marketer transaction as observed on the Internet. Chellappa (2001) provides scales for this perception that has been developed from Smith, et al., (1996) and the FTC guidelines (1996). These scales measure consumers' subjective beliefs regarding the aspects of notice, choice, access, security, and enforcement. However, generic assessment of privacy concerns may be problematic since privacy itself is a "complex array of individual consumer attitudes" (FTC 1996). Recent literature in public policy and marketing identifies dimensions of privacy other than those covered under the FTC guidelines. Prior research suggests that privacy concerns may be influenced by information sensitivity (Sheehan and Hoy 2000). Therefore, to measure privacy concerns during use of personalization services, it is important to assess the perceptions of privacy regarding information of different sensitivity. A categorization of information that is increasingly personal can be developed from the FTC guidelines as given below:

a. Anonymous information: Anonymous information refers to information gathered about page visits, without the use of any invasive technologies, sent with any Web or Internet request. Such information includes a machine's IP address, domain type, browser version and type, operating system, browser language, and local time.

b. Personally non-identifying information: This refers to "information that, taken alone, cannot be used to identify or locate an individual". It mainly refers to information such as age, date of birth, gender, occupation, education, income, ZIP Code with no address, interest and hobbies. The consumer typically has to explicitly disclose most of this information through radio buttons, menus or check boxes on a Web page. In addition to solicited information, this category often involves the use of sophisticated tracking

technologies, such as cookies and clear gif files that enable the information collecting entity to sketch an effective customer profile without identifying a customer individually.

c. Personally identifying information: The third and most personal form of information refers to information that can be used to identify or locate an individual. These include email addresses, name, address, phone number, fax number, credit card number, social security number, etc. Invariably, such information is almost always gathered explicitly from the customer and is typically collected when consumers register with Web sites.

The overall privacy concern for a consumer is a function of the cumulative information rather than just the concern from the individual pieces of information (Chellappa and Sin 2001), as two seemingly disconnected pieces of information about a consumer can be combined to create an accurate profile. This is a reason why firms such as DoubleClick Inc., (an advertising network that can construct anonymous browsing profiles) were disallowed from acquiring physical addresses and mailing-list databases. The combined information can essentially construct accurate Web browsing profiles of an individual whose name and address are known. Therefore we propose:

P2: *Consumer's privacy concern regarding the collection and use of her anonymous, personally un-identifiable and personally identifiable information negatively influences her likelihood of using personalization services.*

3.4 Contextual sensitivity

Cranor et al. (1999) find that privacy concerns vary with both the individual and context. A consumer may be willing to share some information with certain people in particular contexts but not with others or in a different setting because of the fear of unfavorable repercussions due to harmful intentions and unfair practices (Culnan and Armstrong 1999) of the information collecting parties. Perceived privacy is measured by the difference between the expected and actual information collection and usage (Chellappa 2001). This gap may vary with different domains, leading to varying privacy concerns of a consumer providing the same piece of information in different contexts. For example, while a customer may be willing to inform a tobacco company about her

smoking habit, she may be sensitive to revealing such information in a medical domain such as one involving an insurer or a HMO. In other words, in addition to general concerns for privacy, the domain of exchange may also influence customers' willingness of parting with their information. Research defines information sensitivity as "the level of privacy concern an individual feels for a type of data in a specific situation" (Weible 1993) to incorporate domain specific concerns of privacy. Others have also pointed out that consumer's perception of sensitivity to be situation-dependent (Cranor et al. 1999; Gandy 1993; Jones 1991; Milne 1997; Weible 1993). We define effects arising from the nature of particular domains on privacy concern as the customer's *contextual sensitivity*, and posit that such sensitivity relates to a consumer's privacy concern and likelihood of participation.

P3: *A consumer's concern for privacy increases with the sensitivity of the domain where the information exchange occurs.*

P4: *A consumer's likelihood of participating in a personalization exchange is influenced by the domain where the information exchange occurs.*

3.5 Vendor reputation and customer concerns

Consumers' perception of privacy is closely related to the trust in the entity with whom they conduct a transaction (Chellappa 2001). Prior research has also pointed out that familiarity with the marketers (Sheehan and Hoy 2000), and past experiences (Ganesan 1994) with the vendors are important determinants of consumers' trust and future relationships. In other words, increased familiarity and positive previous experiences with a vendor is positively associated with trust and hence lowered privacy concerns of the consumer.

P5: *A consumer's concern for privacy is inversely related to reputation of the vendor providing the personalization services.*

3.6 Vendor's value for customer information

Customer information and profiles are very important to sellers (Deshpande and Zaltman 1982; Johanson and Nonaka 1987; Kohli and Jaworski 1990). In the absence of information about targeted individuals, a product or service is tailored to an average consumer, implying increased customer arbitrage and sellers' inability to price discriminate (Choi et al. 1997). The more information about a particular customer a company has, greater is the ability of the firm in providing higher value to that customer (Moon 2000). Customer information is typically shared across the supply chain from retailers to suppliers, and it has been argued that firms are able to maintain their competitive edge despite competition by information sharing (Karimi et al. 2001).

For manufacturers, customer information translates into understanding demand for their products. For physical goods, inventory cost form an important part of the overall manufacturing cost structure. Knowledge of consumer information can help reduce this cost and is the key to getting the suppliers to move at the same pace as the business (Magretta 1998). Many strategies such as JIT have evolved primarily on the notion of accurately forecasting demand (Daugherty et al. 1999; Hurley and Whybark 1999; Lummus and Vokurka 1999; Petty 2000; Woo et al. 2000). Better inventory control implies lower overhead costs and lower prices for the consumers, motivating research to study the substitutability between information and inventory (Milgram and Roberts 1992).

Customer information is also important to sellers who adopt strategies such as mass-customization (Gilmore and Pine II 1997) or one-to-one marketing (Peppers et al. 1999), as both these strategies rely on customer information, be it for a segment or an individual. At an individual customer's level, one-to-one marketing can increase customer satisfaction, develop customer loyalty, and contain the high costs associated with new customer acquisition and customer support (Charlet and Brynjolfsson 1998). It can also increase cross-selling possibilities (Peppers et al. 1999). Vendors value customer information also because it is used to increase product differentiation and reduce price competition by offering merchandises and services that cannot be offered elsewhere (Alba et al. 1997). Interactive media has allowed marketers to communicate

to specific customers with specific messages (Pine II et al. 1995), and customer information is the key to success in such marketing practice (Moon 2000).

Customer information has also been used by vendors to provide services that increase switching cost as well as loyalty (Alba et al. 1997). Such information, when coupled with prolonged contact, makes it more difficult for a competitor to entice customers away (Pine II et al. 1995). Since it may cost the firm up to ten times more to obtain a new customer compared to retaining an existing one (Karimi et al. 2001), it is important for businesses to improve customer satisfaction and retention (Hagel III and Rayport 1997; Peppers et al. 1999). The key to customer retention, according to Billington (1996), is to treat customers as individuals and learn about particular needs of the individuals instead of market trends. However, such practices were not economically feasible prior to the introduction of IT based personalization services that enable vendors to collect and analyze hundreds of thousands of individual consumer profiles (Bessen 1993; Billington 1996; Pine II et al. 1995). In sum, customer information is valuable to a vendor in employing a variety of strategies. The higher this value, the more incentive a vendor has in collecting such information. Therefore, we propose that:

P6: *A vendor's likelihood of participating in a personalization exchange is positively influenced by his value for customer information.*

3.7 Liability costs

When vendors employ personalization strategies they collect, process and store customer information. Extant literature (Chellappa 2001) has discussed the economic implications of protecting personal information. Such protection mechanisms not only include millions of dollars spent on technological artifacts (Lemos 2001), but also the significant investments in legal support. Additional intangible costs that need to be taken into account in vendor's consideration include damage of reputation and customer base in case of security breach and improper handling of information. Thus a vendor is always conscious of his costs involved in handling customer information.

P7: *A vendor's liability costs from handling customer information negatively affect his likelihood of participating in a personalization exchange.*

3.8 Contextual Liability

The liability costs not only increase with the amount of customer information collected, but also vary with the context in which it is collected. Bills passed by the congress (FTC 2000) stipulate specific requirements and guidelines for vendors operating in special domains such as those that involve children and medical information. For example, HIPPA (Health Insurance Portability and Accountability Act) provides specific liabilities regarding how medical information should be handled and the actions that need to be taken when such information is compromised. More recently, federal regulators fined Etch-A-Sketch (Reuters 2002) and warned many other online retailers for violating the children's online privacy protection acts (COPPA). In this research, we term the implications of such domains as contributing to a seller's *contextual liability* in handling customer information.

P8: *A vendor's liability costs are increases with the sensitivity of the domain where the information exchange occurs.*

3.9 Trust building

The direct cost of offering personalization services is the fixed cost of employing personalization tools such as collaborative filtering systems and rule based engines, etc. (Ansari et al. 2000; Kwak 2001), but the ability to collect information also depends on the consumer's trust in the firm. Customers not only distinguish between marketers with whom they are familiar and those they are not (Sheehan and Hoy 2000), but also tend to be more willing to respond to and part with personal information for a data-gathering entity they trust (Rogers 1996; Vidmar and Flaherty 1985). Prior research has argued that consumer trust in retailers is an important factor for successful e-commerce transactions. It has also been shown that such trust is dependent upon reputation of a firm (Doney and Cannon 1997; Gefen 1997). In the online context, reputation of a firm can be enhanced through trust building activities such as alliances with trusted third-parties, implementation of security mechanisms, reassurances through disclosure notices, and compliance with the FTC rules. Therefore it may be argued that less reputed vendors are less likely to engage in personalization strategies as the costs may be prohibitive.

P9: *Reputed vendors incur lower trust building costs in the online exchange environment.*

P10: *A vendor's trust building costs negatively influence his likelihood of participating in a personalization exchange.*

4 Summary and discussion

It can be argued that the importance of customer information has only increased with the advent of electronic markets. The expectations of efficient transactions in the electronic supply chain can be met only by the smooth sharing of customer information with all partners across the supply chain. It is for this reason that most vendors today invest in Customer Relationship Management (CRM) tools that are integrated with the extant supply chain systems. In fact much of personalized services discussed in this paper are typically enabled through personalization engines, and collaborative filtering tools that are part of the CRM systems. Therefore, in order for these investments to be fruitful it is critical that firms allay customer concerns of privacy in their design of personalized services. This paper points out that while vendors need to understand their cost structure, they also need to pay sufficient attention to building consumer trust. It is also important to understand the nature of the product or service where personalization services are proposed. Not only can the context affect the customer's concern for privacy, but the legal bindings can also create unique cost requirements on the part of the vendor.

While it is not the focus of this paper, online personalization can be an important element in both customer acquisition and customer retention strategies. In fact it has been argued that providing personalized services can not only increase a customer's loyalty, but the information acquired can also increase her switching costs. This may provide some first mover advantage to personalization leaders (Chellappa and Sin 2001) and may even allow for some price dispersion to exist in electronic markets. For example, a consumer who has already provided her shipping address and other personal information would be less inclined to switch from one online store to another even if the price in the latter is marginally lesser. It would be interesting to explore this

price differential created by the inconvenience of re-entering customer information. More research is warranted on the suitability and type of personalization that can be offered by different segments of sellers. For example would manufacturers and retailers employ similar personalization strategies? Would there be significant differences information requirements of physical and digital product vendors? While this paper doesn't explicitly address these questions, it provides a conceptual foundation to explore these questions both analytically and empirically.

4.1 Conclusion

Both personalization and consumer concerns of privacy online have generated considerable interest in recent times. In the absence of any theoretical framework to study online personalization, this paper adopts the marketing exchange paradigm to develop a conceptual model to understand an online vendor's personalization strategy in the presence of consumer concerns of privacy. The contributions of this work are many fold. Firstly it identifies the contextual dimension as another exchange specific factor for studying personalization. Second, it provides guidelines to measure online personalization value to a consumer in addition to incorporating varying information sensitivity into a consumer's privacy concern. Third, it establishes marketer specific constructs that affect the viability of online personalization strategies and provides a linkage to the consumer characteristics. Finally the paper accounts for the role of well-known mediating variables such as trust and reputation in the personalization exchange context. These constructs and the relationships between them can serve as a basis for future empirical studies on Web based marketing strategies.

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