Enabling trust formation within agent-mediated virtual environments

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In e-commerce, the role of trust becomes vital for establishing and maintaining customer relationships. Drawing from established theoretical work on trust and relationship marketing, this paper synthesizes a series of trust constructs, determinant variables and trust building processes, and proposes a framework for the formation of trust in customer-business relationships. The framework is conceptualized in the context of an electronic servicescape, where trust is formed through iterative interactions with promises being made, enabled and fulfilled. Based on this framework the paper illustrates how the application of agent and virtual reality technologies can provide the environment and facilitate the expressiveness demanded by such a servicescape.

Introduction

E-commerce organizations operating in intense competitive environments are forced to extend traditional marketing practices and focus on developing long-term relationships with customers to ensure their retention and loyalty. Customer relationships constitute an important new asset category, as the accumulation of relationship capital increasingly provides a new foundation for marketing and sales revenue (Tapscott *et al*., 2000). The cornerstone for a successful and lasting relationship with the customer is *trust*, as it could determine the customer's future behavior and loyalty towards the business (Berry and Parasuraman, 1991; Berry, 1993). Considering the cost and return of relationship investments that a business needs to make to establish its position in e-commerce, building loyalty becomes an economic and competitive necessity (Reichheld and Schefter, 2000) rendering trust, its predecessor, the "sine qua non of the digital economy" (Tapscott *et al*., 2000).

Wanninger *et al.*, (1997) suggest that building customer relationships in e-commerce involves meeting customer expectations of service encounters that take place in an electronic servicescape, one of the three primary components that comprise an information system specifically designed to support commercial transactions over the Internet. The other two are the supporting infrastructure plus the customer database and analytical tools to support the relationship marketing. The three components are interrelated enabling the close integration of the traditionally discrete functions of relationship marketing, advertising and fulfillment. These are represented by the separate but partially overlapping functions of making, enabling and keeping customer promises (Bitner, 1995), leading to customer satisfaction and relationship building. Based on the above conceptualization we suggest that e-commerce web sites should be transformed to customer-centric servicescapes offering a digital experience that can contribute

towards the development of an indelible relationship between the business and the customer (Papadopoulou *et al.*, 2000).

This paper argues that e-commerce activities should be conducted within a three-dimensional virtual servicescape populated by agents so as to enable a reciprocal communication that will serve as the foundation for the development of trust. A virtual environment can help in attaining a high level of realism serving as the metaphor of a 'bricks-and-mortar' setting, while the three-dimensional representation of such an environment allows for depicting the visualized information with a great level of detail, thus offering a usable and intuitive interface. The agent paradigm (Guttman *et al.*, 1998, Maes *et al.*, 1999, Ma, 1999) is ideally suited for developing such a virtual environment where agents can facilitate customer navigation and action, further contributing to the creation of an illusionary sense of a realistic commercial context. The personalized, autonomous, adaptive and proactive nature of agents provides for the high level of interactivity and expressiveness that is needed for an effective and fulfilling customer experience leading to a trusting relationship with the business.

Despite the continuing research advances regarding virtual environments and agents, very few studies address their application in e-commerce. In conjunction with a set of principles and criteria stemming from a theoretical framework for understanding the formation of trust within an e-commerce context, this paper discusses virtual reality and agent technologies in terms of their appropriateness and effectiveness for facilitating trust building between the business and the customer. The structure of the paper is organized as follows. The next section offers a brief introduction to trust and identifies the main works that served as the theoretical foundation for the development of our framework, whilst the framework itself is described in the section that follows. The paper concludes by describing the role of agent and virtual reality technologies in the realization of an electronic servicescape.

Trust in the literature

Trust is a highly complex and multi-dimensional phenomenon (Lewis and Weigert, 1985; Butler, 1991; Barber, 1983). Its importance to interpersonal and commercial relationships is evidenced by the plethora of research efforts within the various disciplines such as social psychology (Deutsch, 1960; Lindskold, 1978; Lewicki and Bunker, 1995), sociology (Lewis and Weigert, 1985; Strub and Priest, 1976), economics (Dasgupta, 1988; Williamson, 1991) and marketing (Anderson and Weitz, 1989; Dwyer *et al.*, 1987; Ganesan, 1994; Moorman *et al.*, 1992; Moorman *et al.*, 1993). A large stream of literature has emphasized the role of trust as being central to the success of customer relationship building, in all contexts of relational exchanges (Achrol, 1991; Becker, 1960; Dwyer *et al.*, 1987; Morgan and Hunt, 1994).

With the objective to understand how trust is formed in commercial relational exchanges that take place within electronic environments, our review of the literature identified a body of works that provided the necessary theoretical background to aid our endeavors. McKnight and Chervany (1996) provided a typology of interrelated types of trust constructs that helps distinguish and capture the conceptual meanings of trust. In order to understand the nature of trust and its development in commercial relationships, Doney and Cannon's (1997) work identified five trust-building processes, whilst Morgan and Hunt (1994) contributed a set of trust determinant variables. Building on Doney and Cannon's work, we have defined another trust building process, the *credibility* process. The above are synthesized and theoretically interrelated, culminating to a framework for building and infusing trust in e-commerce relationships as described in the next section. Drawing on the three studies mentioned above, our

conceptualization of trust involves a set of distinguishable yet related trust constructs, a set of trust precursors, and a set of trust-building processes as depicted in Table 1.

Trust Constructs [McKnight & Chervany, 1996]	Precursors of Trust [Morgan & Hunt, 1994]	Trust-building Processes [Doney & Cannon, 1997]

▪ Dispositional trust
▪ Institution-based trust
▪ Trusting beliefs:
  - Benevolence,
  - Competence,
  - Honesty / Integrity,
  - Predictability,
   Confidence in beliefs
▪ Trusting Intention
▪ Trusting Behavior
	▪ shared values
	▪ communication
	▪ opportunistic behavior
		▪ Intentionality
		▪ Capability
		▪ Prediction
		▪ Transference
		▪ Calculative
		▪ *Credibility*

**Table 1:Trust constructs, precursors and building processes**

The three facets of trust, representing its constituents, its determinants and its development modes, have been synthesized and theoretically interrelated, resulting in an integrated framework and a vertical understanding of how trust is formed in a relational exchange between two parties. This framework is presented in the next section.

A framework for trust formation in customer relationships

Having identified the structural elements of trust, our framework has been based on the assumption that building customer trust in an e-commerce company is built through repeated interactions with promises made, enabled and kept within the e-servicescape. Initially, a customer is enticed to engage in a commercial relationship through the servicescape based on a positive predisposition towards the business, which is the result of the combination of 3 constructs: disposition to trust, institution-based trust and initial trusting beliefs. The customer has a general propensity to trust others stemming from personality and cultural factors (disposition to trust), enhanced by the perceived propriety of the conditions (institution-based trust) which involves legal aspects associated with e-commerce and perceptions regarding the security and privacy offered by the business. In addition, the customer has initial trusting beliefs that have been formed through the transference process, with information conveyed from third parties regarding the business reputation and trustworthiness, including information from third party recognition bodies.

The combination of these three constructs results in the customer having a positive attitude and being open to any promises made by the business aiming to augment his trusting intention towards any service or product offerings. Provided that the customer is interested in the promise made, he expresses a willingness to depend on the business, a trusting intention, and anticipates the promise to be enabled. Enabling the promise within the servicescape allows a trusting intention to be manifested in an acceptance of the risk inherent in the situation and eventual dependence on the promise, resulting in a trusting behavior. Then, keeping the promise has a positive impact on the customer's perceptions and future expectations regarding the quality of the interaction with the business through the servicescape. This point, when all stages of promise fulfillment have been completed, represents what Carlzon (1987) calls "moment of truth". The

customer evaluates the service encounter and compares the service he expected according to the promise that was initially made to him with the service he actually received upon the fulfillment of the promise. Service quality, i.e. the degree to which the perceived service meets customer expectations (Gronroos, 1984; Lewis and Booms, 1983; Parasuraman *et al.*, 1985), will determine customer satisfaction and will be reflected in the customer's trusting beliefs in the business. These trusting beliefs will now substitute for the aforementioned three prerequisites that define a positive predisposition and will serve as the launch pad for future interaction with the business. Any such interaction within this environment will further enhance his trusting beliefs resulting in a sustained relationship between the business and the customer via the repeated use of the servicescape (Figure 1).
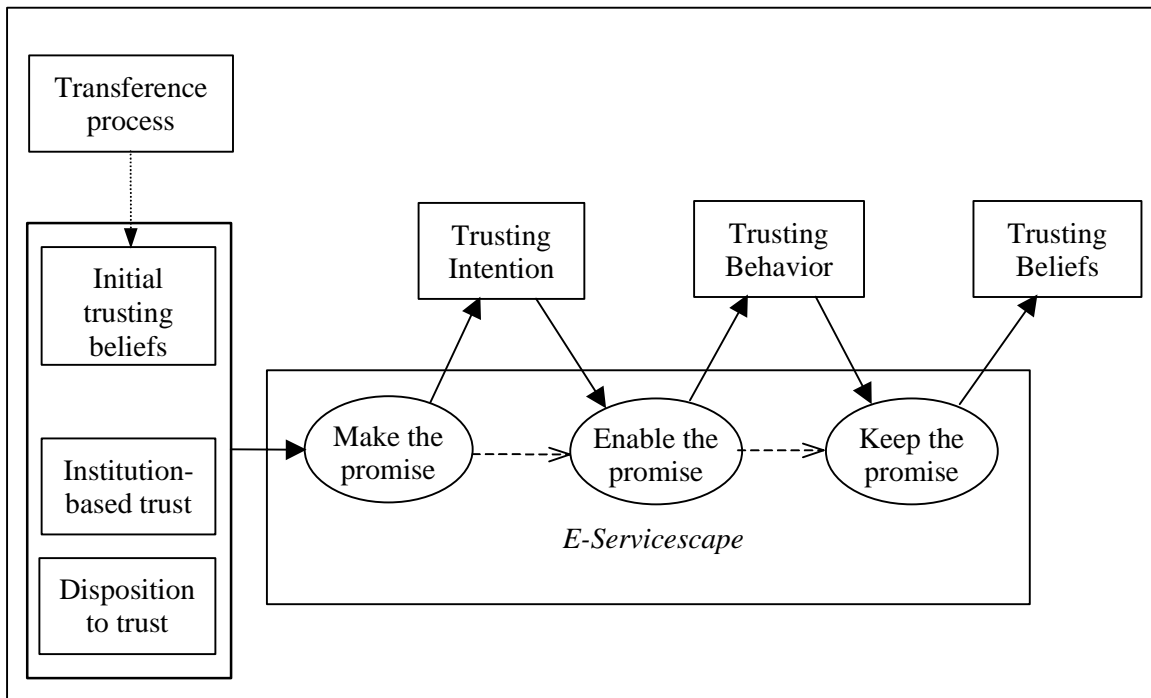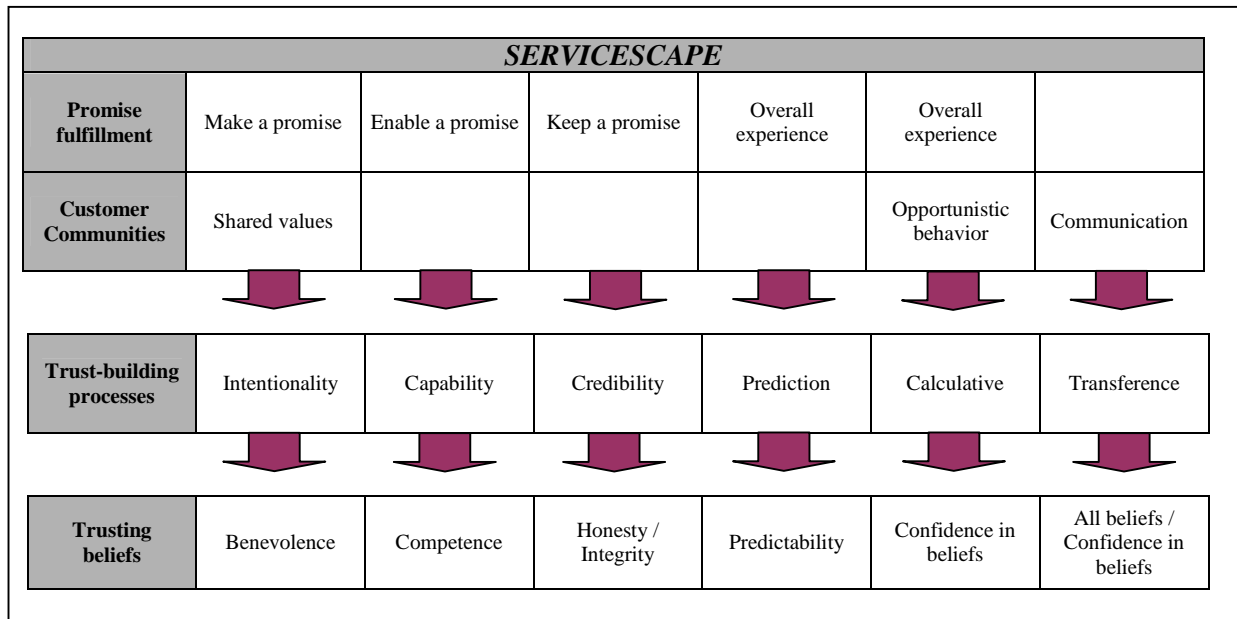

Figure 1: Trust formation through promise fulfillment within the e-servicescape

When a promise is made during the customer's interaction with the virtual servicescape, the intentionality process is initiated to help the customer determine the business motives and intentions, influencing his trusting belief in the business benevolence. Enabling the promise invokes the capability process, an assessment of the business ability to realize its promise, which affects the customer's trusting belief in the business competence. Keeping the promise triggers the credibility process by which the customer evaluates the extent to which the business has actually delivered on its promise and develops a trusting belief in the business integrity. The entire interaction with the servicescape results in the activation of the rest of the trust building processes. Relying on the prediction process the customer makes inferences about the business consistency in delivering the promises it makes, enhancing his trusting belief in the business predictability. Finally, with the calculative process, the customer performs a cost/benefit analysis on a number of scenarios where the business may act in an untrustworthy manner towards him so as to eliminate any such suspicions and increase confidence in his beliefs (Figure 2).

Trust evolves over time as the customer engages in repeated interactions with promises being fulfilled within the servicescape. Each time a promise is made, enabled and kept, it is evaluated with the intentionality, the capability and the credibility process confirming customer's trusting

beliefs in the business benevolence, competence and credibility. The level of trust is further augmented with the experience that the customer gains within the servicescape. Customers perceive the length of the relational exchange as an investment, which is made by the business and is valued highly enough to deter it from acting opportunistically. The number of business-customer contacts also provides a basis for a thorough interpretation of the business behavior, which enables the customer to predict subsequent interaction.

SERVICESCAPE					
Promise fulfillment	Make a promise	Enable a promise	Keep a promise	Overall experience	Overall experience	
Customer Communities	Shared values				Opportunistic behavior	Communication
Trust-building processes	Intentionality	Capability	Credibility	Prediction	Calculative	Transference
Trusting beliefs	Benevolence	Competence	Honesty / Integrity	Predictability	Confidence in beliefs	All beliefs / Confidence in beliefs

Figure 2: Activation of trust-building processes within the e-servicescape

Apart from fulfilling promises associated with the service encounter, a business should also understand the social aspect of the commercial transaction and enable contact between the customers to promote trust and relationship building. In this direction the business should act in the customer's interest, by proactively creating and offering customer communities as part of the servicescape so as to satisfy any customer needs for communication, socializing and self-expression that can emerge from a contact with the business. Thus, a customer-centric e-servicescape should not be restricted in strictly commercial activities, but should also include customer communities in order to be effective in its attempts to develop long-term customer relationships.

The enablement of consumer communities within the servicescape can be a value enhancement for both sides and could serve as a supplementary vehicle for infusing trust. Consumer communities can provide support for the three precursors of trust as posited by Morgan and Hunt (1994), i.e. shared values, communication and opportunistic behavior, enabling the transference, intentionality and calculative trust-building processes. As a point of information sharing, customer communities enable inter-customer communication, which in turn facilitates communication between the business and the customer. Customers can share their views and experiences relative to specific products and services and as a result learn from each other and formulate trusting beliefs using the transference process. This also offers the business a means for learning about their customers' opinions, for automating referrals and for acquiring new customers at a low cost. The emotional attachment that a customer may develop for the community he belongs to enhances perceptions about the business trustworthiness, as shared values enable inferences of benevolent intentions (Macneil, 1980) activating the intentionality process. In addition, customers see the provision of customer communities by the business and

their participation in them as a mutual relationship investment. Driven by the calculative process, they consider a business opportunistic behavior to be unlikely, thus increasing their emotional security about their trusting beliefs.

Enabling trust formation within an agent-mediated virtual servicescape

In this section, we describe how agent and virtual reality technologies[1] can offer the functionality and the contextual expressiveness for an e-servicescape that realizes the formation of trust as specified by the framework presented above. Our description will revolve around the role of agents and virtual reality in providing a potential e-commerce environment that portrays our framework for trust formation, focusing on the part of making and enabling promises.

Making a promise involves using the interactive nature of the electronic environment to provide personalized, customizable content in an attractive, usable and friendly context. The content of the promise has to be clear, explicit and carefully specified and communicated, as it will determine customer expectations from the service encounter. Moreover, propositions should be defined with the aim to meet the individual needs of specific customers that the business wishes to address to. Effective development and making of promises entails a careful identification and selection of customers to be targeted. The business should not adopt an indiscriminate approach to customer acquisition driven by the temptation to reach as many customers as possible, but instead should focus on attracting the types of customers that could be of value in the future.

Enabling promises primarily requires the provision of order submission and payment mechanisms necessary for servicing the customer and meet his expectations raised by the promise made earlier. The servicescape should also provide facilities allowing customers to preview and experience the available products and services before purchase, aiming to impel customers in a trusting behavior. An essential prerequisite for any promise being enabled is providing for the security of transactions and customer privacy, so as to remove any concerns that prevent the customer from passing from the trusting intention stage to that of a trusting behavior towards the business. Keeping promises implies a correct and on-time delivery of products/services, the effective management of the payment process and the provision of post-sales customer services. This asks for a solid infrastructure for the delivery of digital or physical goods and services. In any case, the servicescape should cater for the fulfillment of the promise exactly as this was originally made to the customer.

As argued before, we suggest that an e-servicescape should be designed as a three-dimensional virtual world depicting a shopping mall comprised of virtual stores. Each store will represent an e-commerce company, offering products and/or services available by it. This virtual environment will be populated by anthropomorphized avatars representing customers and salespersons (Figure 3). A customer will be able to visit the virtual servicescape in the form of an avatar and engage in shopping activities by interacting with the salesperson avatars, which will be implemented as agents. Salesperson agents will be divided in two categories, mall agents and business agents, depending on their role in the e-servicescape. Mall agents will welcome and greet the customer visiting the virtual mall and guide him to the stores. They will be able to perform a search and recommend the store(s) with the products or services that are best suited to the customer needs. Business agents will act as surrogates of a company's store salespersons, serving the customer that visits a store following the suggestion of the mall agent and offering assistance in the product or services available by the business represented by the virtual store. In this approach, the design of the servicescape as a shopping mall of multiple stores where customers, businesses and

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[1] See Appendix

salesperson agents are visualized allows for customer interaction within the servicescape at two distinct levels depicting the functions of making and enabling promises. At the first level, promises are made through the mall agents, while at the second level promises are enabled by the business agents in the virtual stores.

Based on the Consumer Buying Behavior (CBB) model that identifies six stages within the buying process (Guttman *et al.*, 1999), we envisage the role of a mall agent to be associated with the stages of need identification and merchant brokering and part of the product brokering of the buying process. Business agents will provide support for part of the product brokering and also for the negotiation stage. Maes *et al.* (1999) research on agents automating the buying process did not document agent systems supporting the payment and delivery, and the product service and evaluation stages. Similarly, our conceptualization of the agents role in the servicescape does not involve payment, delivery and post-purchase service, which correspond to the function of keeping a promise, but is limited to making and enabling customer promises. However, a virtual servicescape can enable post-purchase evaluation of the buying experience by including customer communities that allow for inter-customer communication.

Figure 3: An agent-populated virtual servicescape (Source: Blaxxun Interactive)

Mall agents will be responsible for making promises to the customer on behalf of the companies that are members of the virtual servicescape. This type of agents will collect information from the servicescape companies and proactively present selected advertising messages to the customer regarding business offerings, based on the customer profile. The customer will be able to request information about the advertised offers and be directed by the mall agent to the virtual store of the business making a particular offer. In addition, the customer will be able to declare his interest in a product or service and to an agent of this type, regardless of those advertised. The mall agent will perform a search based on the customer request and characteristics derived from previous

visits (Venners, 1997). In case of a new customer, the mall agent will ask the customer personal information to create a profile with his needs and preferences. Furthermore, customers will be able to watch and follow the mall agent traveling inside the virtual environment and realizing its search task. In order to make possible the visualization of the agent's searching process and the depiction of the state and percentage of completeness of an agent's task, all databases available to agents should be mapped to three-dimensional coordinates. These coordinates reflect the location of a business database within the virtual environment and along with the agent's initial position are fed to an interpolation module that is responsible for moving the agent inside the virtual environment.

The promise will be made and communicated to the customer by the mall agent presenting the results of the search to the customer and recommending the best option that fits the search criteria and the customer needs. Mall agents should deliver an objective and unbiased presentation of their findings in order to demonstrate the benevolent intentions of the business that will be assessed to determine the customer trusting belief in the business benevolence. This can be implemented by using a thoroughly designed and specified ranking system that will also take account of users' personal preferences. The presentation of an agent's findings can be further enhanced by providing a three-dimensional visualization of each finding, which the user can manipulate and interact with. In order to make such visualization possible, organizations and businesses will be responsible for providing access to three-dimensional objects associated with a specific finding. The objects used during the presentation of the search results should be small sized (for measuring the size of an object the system could either use the size in kilobytes or the polygon count) in order to decrease network traffic load. A full-featured version of the object should only be provided whenever the customer decides to visit the corresponding shop. Mall agents should also provide a complete list of references and places searched, as well as direct access to the primary information. This capability will enable users to conduct a full search by themselves and will render the agents and the businesses represented in the servicescape trustworthy, further affecting the customer's trusting belief in benevolence. When the promise has been made, the customer will be guided by the mall agent to the store of the business offering the selected product/service, displaying a trusting intention towards this business.

Business agents will be responsible for enabling promises to the customer, on behalf of a specific business that is virtually represented in the e-servicescape by a store of the shopping mall. When a customer arrives to a business virtual store driven by the mall agent, the business agent, serving as the business salesperson will take over from the mall agent and assume responsibility for offering service to the customer. This type of agents will provide up-to-date, detailed information on products and services available by the particular store and will allow customers to preview and experience them before purchase. In addition, they will help the customer with the ordering process, which should support many payment methods and provide security of transactions and customer privacy. Figure 4 shows an example of customers and business agents interacting in a virtual store.

Figure 4: Business agents and customers in a store of the virtual servicescape
(Source: Blaxxun Interactive)

Business agents will present a product's features and way of usage in a more explanatory and thorough description than the one previously given by the mall agent by having access to complete and detailed data on products and services offered by the specific business. This presentation will be made in a personalized fashion, depending on the level of customer's knowledge and experience with the specific type of product or service. Leveraging the benefits that stem from the visual representation of products within the virtual environment, customers will be able to view a product from all possible angles, fully interact with it, get accustomed to all of its capabilities and learn how to use it before even buying it. Furthermore, depending on the product in question and on customer's properties, businesses should implement different sales policies via their agents. They should also propose different payment alternatives that suit customer needs and provide security options for the order and payment of goods. Enabling the promise in this manner will positively influence the customer's trusting belief in the business competence and will incite the customer to act in a trusting behavior.

The presence of mall and business agents in such environments can greatly enhance customer experience provided that they meet certain criteria. Both types of agents should bear a user-friendly and intuitive interface, providing all kinds of customers, regardless of their degree of expertise with computers, with the ability to realize and manage their searches in a simple yet satisfactory manner. Agents should also allow for full customization so that they can be further functionally enhanced by expert users. This capability can be implemented by either providing more specific and detailed options or by exposing the agent's object model and allowing programming using a scripting language (Lange *et al.*, 1999). Moreover, the provision of an additional agent ability to understand natural language questions as well as the usage of speech recognition technologies could further facilitate interaction, augmenting the value of the customer experience within the servicescape. Another important feature that should exist in agents is learning. Agents should be able to learn users' behavior and preferences provide them with alternatives during their searches and adapt in accordance with previous experience. The output of this learning process comprises of recommendations and suggestions that originate from the agent's accumulated knowledge and should be presented to the user in a non-stereotypical and perhaps even unexpected fashion. Such behavior will increase customer's sense of familiarity and comfort with agents promoting the formation of trust with the servicescape businesses.

All of the above features should be implemented taking into consideration issues associated with the security as well as the lack of a globally accepted messaging language between agents. A type database, which will store information on different types of agent messages, should be created and used whenever agents utilizing different messages want to communicate. Additionally, agents should use proxies as representatives of themselves (Lange and Oshima, 1998). These proxies are interfaces that wrap around an agent class and are activated whenever direct access to public members of the class - i.e. user data and preferences - is requested. In this way, agents will be protected from malicious users and businesses. However, contrary to Aglets' paradigm (Karjoth *et al.*, 1997) and because of the need to visualize the agents in the three-dimensional virtual environment, the proxies will not hide an agent's location.

The spatial representation of the virtual servicescape as a shopping mall of stores where customers can navigate and interact with salespeople and products offers an illusionary sense of a realistic commercial context that is consistent with the customer's mental model of the physical shopping experience. This level of realism provided by the visual depiction of this environment and the agent functionality allows for the intuitiveness and expressiveness that is demanded for effective and efficient trust building. The advanced interactivity and usability of the virtual servicescape enables a fulfilling customer experience that enhances the trusting beliefs in the business and the confidence in these beliefs, resulting in a continuing manifestation of a trusting intention and a trusting behavior. Furthermore, an agent-mediated virtual environment is suitable for accommodating customer communities, further contributing to trust formation. A three-dimensional virtual world, in which customers are visually displayed and can freely navigate, provides for a sophisticated form of interaction and offers an attractive and easy-to-use environment that facilitates inter-customer communication (Figure 5).

Figure 5: Customer community within the virtual servicescape (Source: Blaxxun Interactive)

Customers will be able to observe other customers, watch them search, chat with them, exchange opinions and listen to others' experiences of the virtual environment and the offered services. In this way, they witness that they are not the only ones using this platform and they feel as being part of a live and constantly developing community. The enhanced experience gained from this multi-modal participation in customer communities within a virtual servicescape facilitates the development of customers' trusting beliefs in the business benevolence and strengthens the confidence in all formed beliefs.

Conclusions

In e-commerce the formation of trust remains an issue to be addressed by companies as it is an essential prerequisite for building successful customer relationships. Although traditional principles for building trusting relationships are still valid in e-commerce, their application has to be reviewed under a totally different spectrum. The absence of salespersons and the interpersonal face-to-face contact with the customer cannot be easily replaced in an electronic environment. In addition, customer expectations are higher in an e-servicescape, as they include expectations not only of the service encounter but also of the underlying technology, and thus become more difficult to manage. Therefore, in this emerging setting with which the majority of the customers are unfamiliar and reluctant, building customer trust becomes a very demanding business effort.

In this paper, we have presented a conceptual framework for the formation of trust in e-commerce. We have sought to synthesize a series of trust related concepts so as to provide an understanding of the nature of trust formation by identifying what trust is, what is influenced by and how it is built. Consequently, trust has been analyzed into constructs, determinants and building processes, which were then theoretically interrelated within a concise framework. The framework was then used as the basis for conceptualizing the design and implementation of the servicescape as an agent-mediated virtual environment. We expect that our continuing research efforts will confirm our hypothesis that customer trust in a company channeling its business over the Web can be developed through customer interaction with business promises fulfilled within a three-dimensional virtual environment. It is anticipated that our findings will further refine and validate the guidelines for designing electronic servicescapes that facilitate the expressiveness demanded for the establishment and support of lasting commercial relationships.

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APPENDIX

Agents are software entities that act on behalf of the user and offer services in an autonomous, pro-active, adaptive and continuous fashion (Green *et al.*, 1997). They are autonomous because they control their own actions, pro-active because they are after certain goals, adaptive because they sense changes in the environment and act accordingly and continuous because they execute continuously. Agents may possess additional properties such as the communicative property that enables them to communicate with other agents, the mobile property that allows them to travel around a network in order to do their work, the learning property that helps them adapt according to previous experience and the believable property that makes them appear believable to users (Lange, 1998). The services offered by agents include searching, comparing, learning, negotiating and collaborating. Several different types of agents have been identified: collaborative agents, interface agents, mobile agents, information agents, reactive agents, smart agents and hybrid agents (Jonkheer and Jansen, 1999), which are to a greater or lesser extent used in electronic commerce (Do *et al.*, 1999; Ma, 1999).

We posit that the customer experience currently provided by agent technology in e-commerce can be further enhanced with the use of virtual reality. Virtual Reality is a way for humans to visualize, manipulate and interact with computers and extremely complex data (Aukstakalnis and Blatner, 1992). Visualization involves the generation of visual, auditory and other sensual output from the computer to the user of the virtual world. This world may be a complex 3D model, a scientific simulation, or a view into a database (Isdale, 1993). The user can interact with the world and its components, directly manipulate movable objects, navigate inside the provided environment and chat with other inhabitants of the world. These inhabitants can be either computer generated characters or artificial impersonations of human participants and are visualized as avatars. Avatars are virtual representations of a 3D world's participants and can also be programmed to perform gestures, express feelings and act as humans (Roehl, 1995). Many virtual reality applications contain worlds that look and behave the way that real life does, while others incorporate features that differentiate them from anything we normally experience. In this way, virtual reality not only empowers the creation of ideal versions of our own world, but it enables for the alleviation of real world problems and the breaking of spatial and temporal bonds that exist in physical life (Horberg, 1995).