Designing online stores for a trust-building interaction

Panagiota Papadopoulou, University of Athens, Athens, Greece, peggy@di.uoa.gr
Drakoulis Martakos, University of Athens, Athens, Greece, martakos@di.uoa.gr

Abstract

Building customer trust remains one of the main challenges facing electronic commerce today, largely because previous research efforts have not explained trust formation as a process which can be influenced through a number of discrete interaction stages with the vendor. In this paper, we present an empirically tested model that describes these stages and shows that customers come to trust incrementally as they assess the online vendor's benevolence, competence, integrity and predictability. Based on these findings, we explore how online stores can be effectively designed to build customer trust at each interaction stage. We analyze each interaction stage into the underlying functions and we explain how each of these functions can separately build trust in an online vendor. The study derives a set of principles that can inform and guide the design of trust-centric online stores.

1. Introduction

Trust has long been recognized as a critical success factor for e-commerce [26]. Recent surveys show that the success of current online shopping sites is primarily attributed to the fact that they have built the trust of users [4]. At the same time, the lack of customer trust, long identified as one of the greatest barriers inhibiting online commercial transactions [13, 6], continues to be high [3, 4, 7, 8]. Despite the technological advancements and the adoption of trust building mechanisms by online vendors, such as trust seals and security and privacy policies, recent surveys show that the portion of Internet users who do not trust online shopping sites has increased since 2002 from 14% to 21% in 2005 [3, 4]. Building customer trust is still a major challenge for online vendors and remains an open issue as to how it can be accomplished within an e-commerce environment.

Although a growing number of studies have advanced our knowledge regarding trust building in e-commerce, there is still a gap in understanding how trust is formed and evolves during a customer interaction in an online store. Empirically tested models mainly describe trust building before interaction, for first-visit customers (e.g. [18, 12, 20, 14]), or before a repeat interaction with an online store [10], without explaining how trust is built during the interaction with an online store. The effect of the interaction on trust has hardly been examined, in terms of web site characteristics, such as perceived site quality and ease-of-use, without explaining how these influence trust as it progresses during interaction. As such, how trust is built while the customer interacts within an e-commerce environment remains elusive. This results in an incomplete understanding of the trust-building process, whilst, at the same time, impeding the effective design of online stores that infuse trust in the online vendor, through the interaction offered.

In an attempt to address this gap, the objective of this paper is to shed light on how customer trust can be built during the interaction within an online store. Rather than examining antecedents of trust, the paper focuses on the effect of the interaction on trust formation. Based on an empirically tested model, it analyzes interaction into discrete stages and shows how each of them contributes to the trust-building process. The empirical findings are then interpreted from a practical standpoint to provide an in-depth analysis of the principles that should inform and guide the design of trust-building online stores. Each interaction stage is vertically analyzed and mapped into online store functions, discussing how each of these functions can separately build trust in an online vendor at each interaction stage.

The rest of the paper is organized as follows. In the next section a comprehensive review of the literature of trust in e-commerce is provided. The third section presents the research design of the empirical study, which served as the basis focusing on the findings that explain the interaction stages and how each of them builds trust in an online vendor. The trust-building design principles derived from these findings are described next, analyzing the separate trust effect of each function for each interaction stage. The paper ends with concluding remarks.

2. Literature review

Trust in e-commerce has been extensively addressed as a research topic from different viewpoints and to different levels of analysis. A growing number of studies have proposed empirically tested models that describe trust building in e-commerce. Their focus is on the determinant factors of trust, at an initial stage for first visit customers [18, 1, 12, 15, 17, 20, 14, 9], or at a later, repetitive stage for return customers [10], or both [16], whilst several others [25, 2, 11, 5, 19], do not specify the phase of trust investigated. These models describe the formation of trust in terms of factors that influence it before a customer engages in the first or a repeat interaction with an online store. They examine the trust effect of factors that are shaped before or after interaction with an online store, without addressing how trust is built during interaction.

The effect of customer interaction per se on trust has been addressed to a limited degree. Several models

include interaction and web site characteristics as factors that affect trust, such as perceived site quality [15, 5, 21, 20], web site appeal [12], ease-of-use [10, 17], usefulness [17], usability [23] and security [17, 10]. However, whilst these studies examine the effect of these factors on trust, they do not explain how such factors contribute to the building of trust during the customer interaction with an online store. In this direction, [1] have examined similar trust antecedents, such as ease-of-use and structural assurance, at stages of the consumer decision process. However, their work is restricted to three stages, information search, alternative evaluation and purchase and does not cover the entire span of the online interaction. Furthermore, their focus is on antecedents of trust at each of these stages and their relative impact and not on the effect of each interaction stage on building trust. The model presented next addresses this gap, by analyzing interaction into discrete stages and showing how each of them builds trust.

3. Research framework

As mentioned earlier, our aim is to explore how the design of online stores should be informed for providing a trust-building interaction. The design principles are rooted in an empirically tested model for building trust in e-commerce. This section gives an overview of the research design which has been followed for the study that provided the theoretical foundation of these principles. The research design, depicted in figure 1, is analyzed into discrete steps which are described in the following paragraphs. The development of the trust model and its empirical testing (steps 1-4), will be briefly presented (a detailed analysis can be found in Papadopoulou *et al.*, 2003). The section places emphasis on the findings emanating from the empirical study (step 5), which serve as the basis for deriving the trust-building design principles (step 6) presented in the next section.

The first step of this research design was the development of a conceptual model describing trust building in e-commerce (step 1). Trust is approached as a multidimensional concept and is analyzed into (a) a set of four trusting beliefs, the beliefs in the benevolence, competence, integrity and predictability of the e-vendor, (b) trusting intention and (c) trusting behavior. These constructs have been synthesized and theoretically interrelated, resulting in an integrated model and a vertical understanding of how customer trust is formed in e-commerce (Figure 2).

Trust formation is described as an evolving process that takes place before and during customer interaction with an online vendor. The model suggests that prior to interaction, reputation, in conjunction with attitude towards e-commerce affect trusting intention. Attitude towards e-commerce is the result of propensity to trust, perceived security and perceived privacy of the e-commerce context. The rest of the model describes trust formation as it continues during interaction with an online vendor. The model, extending previous works, makes a clear distinction between trust constructs and shows how each trust construct is affected as the interaction progresses.

Trust evolves gradually as the interaction takes place. Interaction is analyzed in three stages reflecting a promise being made, enabled and kept by the online vendor. These three promise fulfillment stages are mapped into the set of services available by an online store. Making a promise is conducted through welcome, recommendations and search facilities. A promise is enabled through product and product-related information view, order placement and purchase/payment facilities. Keeping a promise involves the prompt and correct, physical or electronic, delivery of the order, including order-tracking mechanisms.

Trust - trusting beliefs, intention and behavior – is built during interaction, as the latter progresses through the three stages. Trusting intention is influenced by the promise that is made by the online vendor. Trusting intention in turn and the enabling of the promise made influence trusting behavior. The latter together with the keeping of the promise will determine customer's satisfaction from the overall
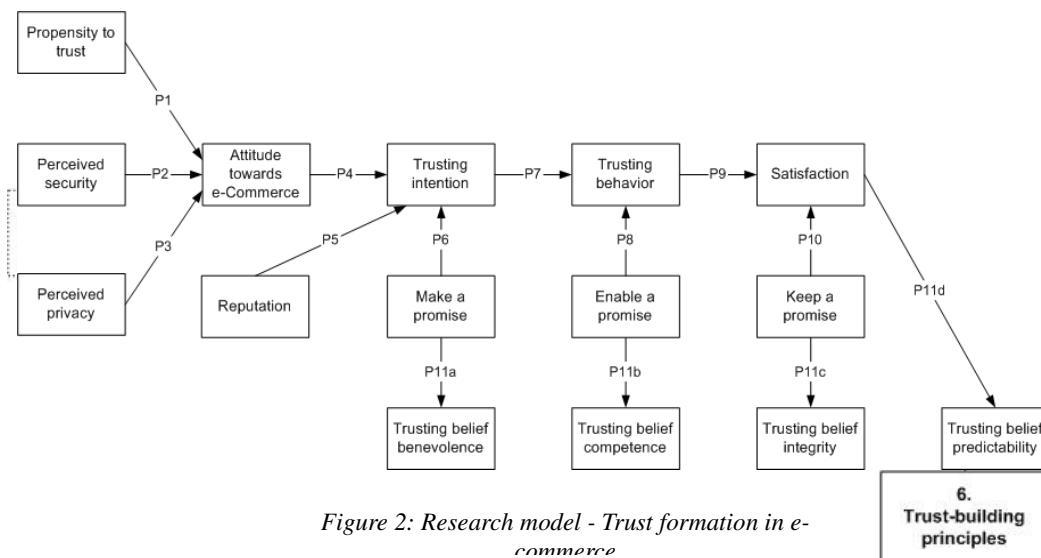

Figure 2: Research model - Trust formation in e-commerce

Figure 1: Research Design

interaction with the online vendor. Finally, the three promise fulfillment stages and satisfaction from the overall interaction shape the trusting beliefs of the customer. Making a promise forms the trusting belief in the e-vendor's benevolence, enabling the promise forms the trusting belief in the e-vendor's competence, keeping a promise forms the trusting belief in the e-vendor's integrity and satisfaction from the overall interaction forms the trusting belief in the e-vendor's predictability. As such, customer beliefs in the benevolence, competence, integrity and predictability are built gradually, with each interaction stage, as well as interaction as a whole, building a specific trusting belief.

An empirical study has been performed to test the model and the depicted relationships (Papadopoulou et al. 2003). A measurement

constructs and the relationships involved in the three stages of promise fulfillment, i.e. the part of the model that describes trust formation during customer experience within the e-commerce environment.

According to the findings of the empirical testing of this model, each stage of promise fulfillment has a separate impact on trust, by influencing, directly or indirectly, one of the trusting beliefs and intention about the vendor. Making a promise influences a customer's trusting intention towards the online vendor and a trusting belief in the vendor's benevolence. Enabling a promise affects a customer's trusting belief in the vendor's competence. Keeping a promise shapes a customer's trusting belief in the vendor's integrity. The overall interaction influences a customer's trusting belief in the vendor's predictability.
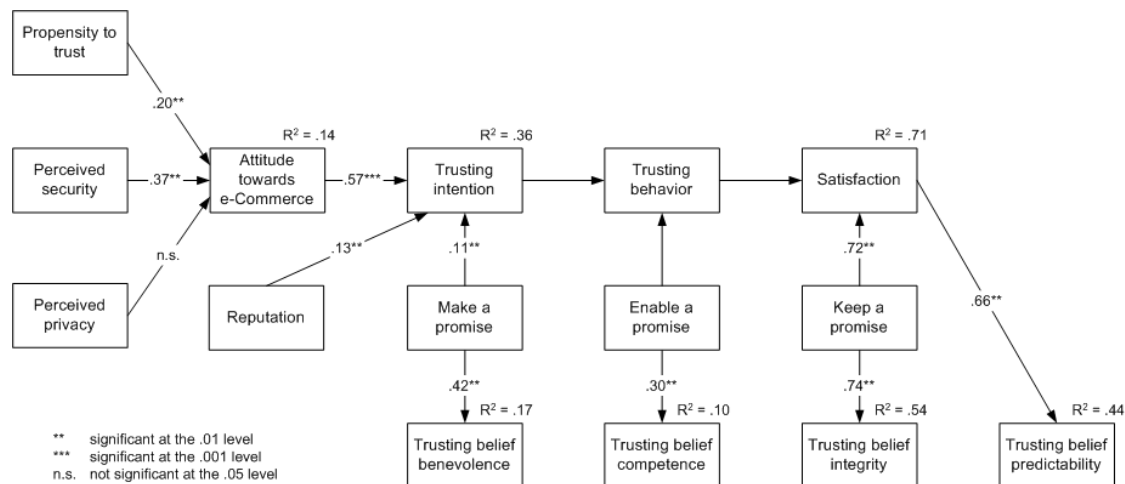
These findings show that the stages of promise

Figure 3: Empirical results - Trust formation in e-commerce

instrument was developed and pretested to derive the refined final instrument which was used for the study *(step 2)*. Data were collected by administering an online questionnaire to a sample of 132 university students on a postgraduate information systems course, yielding an effective response rate of approximately 86% *(step 3)*. After establishing the validity of the instrument *(step 4a)*, the hypothesized relationships were tested using multiple regression analysis *(step 4b)*. The results provide empirical support for the relationships depicted in the model. The standardized path coefficients and the variance explained (R^2) for each dependent variable are presented in Figure 3.

The following paragraphs describe the findings of the empirical study *(step 5)*. Based on these findings, we derived the design principles for trust-building online stores *(step 6)* which will be explained next. Considering the scope of this paper, it should be mentioned that we only focus on the

fulfillment reflect vendor attributes which are assessed to form the respective trusting beliefs and intention. Based on the interaction characteristics and satisfaction yielding from it at each stage of promise fulfillment, the customer makes inferences about a vendor's attributes reflected by that stage, i.e. benevolence, competence, integrity and predictability.

Thus, the functions underlying the stages of promise fulfillment, beyond enabling transactions with an online store, are the tools for exhibiting a vendor's attributes and delivering a satisfying interaction so as to build customer trust. Welcome, recommendations and search mechanisms associated with making a promise are the means for showing benevolence. Satisfaction from the interaction with these mechanisms influences a customer's trusting belief in the vendor's benevolence. Facilities for order placement and payment related to enabling a promise are the vehicle for showing competence. Satisfaction

from the interaction with these facilities influences a customer's trusting belief in the vendor's competence. Order tracking services, beyond the delivery of an order which can be out of an electronic context, are the channel for showing integrity. Satisfaction from the interaction with these services influences a customer's trusting belief in the vendor's integrity. As a whole, these services offer a way for showing predictability, with satisfaction from the overall interaction affecting a customer trusting belief in the vendor's predictability. The functions of each interaction stage and their effect on building customer trusting beliefs are summarized in Table 1.

Therefore, our empirical work highlights that the functionality of an e-commerce environment should be delivered in a way so as to convey a vendor's trust-building attributes, i.e. benevolence, competence, integrity and predictability and generate satisfaction from the interaction in order to shape customer trust. The remainder of this paper discusses how this can be practically feasible within an online shopping environment *(step 6)*.

4. Designing for a trust-building interaction

This section aims to explore the principles that should guide the design of online stores for enabling a trust-building interaction. In specific, we explain how the functionality of an online store should be provided so as to build trusting beliefs in an online vendor. We focus on the three stages of the interaction and how each belief can be practically formed in each interaction stage. We analyze how each function, at each interaction stage, can convey a specific vendor attribute, i.e. benevolence, competence, integrity, and build the respective trusting belief. As such, our description illustrates how each belief can be built during the progress of the interaction, through the functionality of each interaction stage.

4.1 Benevolence

A customer trusting belief in the benevolence of an online vendor is built at the first stage of the interaction (making a promise) through welcome, recommendations and search functions. The interaction with these functions should enable the customer assess and believe in the vendor's benevolence. The following paragraphs analyze how this can be accomplished in practice, for each specific function.

Welcome: An online vendor's effort to show benevolence should start early within interaction, as soon as a customer arrives at a web store. The home page should create the perception of a vendor with benevolent intention, seeking to help the customer in shopping and not to take advantage of the customer. A web home page perception is largely driven by understanding (i.e. how information is structured) and involvement (i.e. how rich is the information) (Singh et al., 2005). It

Table 1: Interaction stages, functions and trust-building effect

Interaction stage	Functions	Trust-building effect
Make a promise	Welcome Recommendations Search	Benevolence
Enable a promise	Product view Product information Order placement Order view Purchase	Competence
Keep a promise	Order tracking	Integrity
Overall interaction	All	Predictability

can thus be argued that the structure and richness of the home page information can shape perceptions of benevolence.

For this purpose, a clear and at the same time appealing home page is needed as it will convey that the vendor cares for the customer and wants to act in the customer interest. The home page should present few options, which are simple and intuitive to use, carefully organized, and do not confuse the user. An example of such a home page is that of Puma.com which offers its options well grouped into a limited set of categories.

On the other hand, a common practice in several web stores home page is to display lots of advertisements about different and diverse products and services. For instance, an Amazon.com visitor is presented with various, unconnected advertisements which involve chocolate, toys, shavers, cameras, jewelry and exercise bikes. Such a practice fails to signal a vendor's benevolence as it gives the impression of a vendor whose aim is to promote his stock rather than act in the customer's interest. A similar impression of promotion over benevolence is also created by the imprudent use of pop-up windows.

Vendors should also be cautious with the use of features offering rich appearance in their home page, such as flash technology. Although such features can be impressive, at the same time they can be slow to load. In addition, they may require the customer to download special plug-ins for viewing them. In this way they may create a perception of an indifferent vendor instead of a benevolent one. In case an introduction flash/video is included in an online vendor's home page, it should be short and always accompanied with a 'skip intro' option. Providing a 'skip intro' option lets the customer decide whether s/he spends time to wait for the introduction flash/video to load as well as to watch it before proceeding in actual shopping activities. In this way, the customer feels he has a choice and this creates a positive impression about the vendor's benevolence.

Recommendations: Recommendations made to customers should project a vendor's benevolence. A

customer should not think of a recommendation as another trick to sell but as an attempt to help. This means that recommended products should be carefully selected and shown so as to ensure that they are can be of interest and of value to the customer rather than being annoying advertising messages. A number of issues have to be considered such as the number of recommendations shown, the connection among them, and their connection to customer needs. We often see online vendors bombarding customers with recommended products/services which are excessive in number, unrelated between them and unrelated to customer needs. This is a frequent phenomenon which appears even among top online vendors such as Amazon.com, especially when a customer arrives at the web site. Such behaviors inhibit vendors from looking benevolent and should rather be avoided. Instead, vendors should present a limited number of related products which are tailored to the customer.

Another issue is when a recommendation is presented, either as soon as a customer arrives at a web store or later, while a customer searches or views a specific product. Recommendations can be effective in demonstrating benevolence at almost any stage of the buying process. However, those shown to a customer when looking at a product, presenting others that may also be of interest, could be perceived as more useful and helpful, and therefore they can be stronger in conveying benevolence.

These vendor recommendations are usually accompanied by customer recommendations, ratings and reviews. The provision of customer opinions, irrespective of being positive or negative, strengthens customer belief about a vendor's benevolence. At the same time, the ability of posting and sharing reviews is also a strong cue of benevolence. With Web 2.0 technologies, recommendations control is shifted from the vendor to the customer. This embraces two aspects. First, recommendations are customer-generated. Customers can provide ratings and/or reviews about products, in text or video, which will be available for other customers to see and comment. In addition, with web 2.0, recommendations are not only displayed within the online store interface but they transcend the store's limits and can appear in other web 2.0 applications such as facebook, digg and del.icio.us and shared with customer friends or other customers. This applies to recommendations generated by the vendor, the customer or other customers. Online vendors should encourage customer-generated recommendations, both in terms of customers providing them as well as posting them to other web 2.0 applications. By accepting and supporting this transfer of recommendations control to the customer online vendors can promote their benevolence.

Search: An online vendor can show he is benevolent by enabling customers to find the product/s they actually want. For this purpose, searching should be convenient in terms of use and also effective in terms of the results returned. But above all, for showing benevolence, search should be ruled by the principle that it should facilitate the customer in the shopping process, in finding the desired product/service.

Thus, search should be possible based on a number of criteria where a customer can set preferences. Criteria should vary in type and range depending on the nature of products/services. In any case vendors should provide the widest variety of criteria possible for meeting customer needs. Search should also be progressive and incremental, through a number of steps, with each step refining the results of the previous one. For example, Adidas.com helps customers find the shoes that are suitable to them and best fit their needs, matching customer answers to five different criteria referring to the intended use of the shoes. Using customer answers to one or more of these criteria, it reduces the number of available shoes to only those few that fit customer individual needs. Such a feature can be deemed as a sign of benevolence as it shows the vendor's willingness to best serve the customer and help him get the right product that is really suitable for him. Such benevolent willingness can also be conveyed through the availability of multiple options for the presentation of search results. For example, a customer should be able to sort found products by price, either from low to high or from high to low, as in Nikestore.com

4.2 Competence
A customer trusting belief in the competence of an online vendor is built at the second stage of the interaction (enabling a promise) through product and product-related information presentation, order placement and payment functions. The interaction with these functions should enable the customer assess and believe in the vendor's competence. The following paragraphs analyze how this can be accomplished in practice, for each specific function.

Product and product-related information presentation: In an online environment, a vendor's competence will be largely assessed through the presentation of products and product information. In most web stores, products are presented using images. These should be clear, of high quality and with high color precision, so that the customer has a detailed view of products. Amazon.com, as well as others, provides different views for some products, which can be zoomed and dragged to pan, whilst other products are shown in still pictures of a specific size which can not be altered by the customer. However, to increase customer perceptions of competence, vendors should provide a rich and full view of products. In a web store's environment lacking an actual look-and-feel of products, the customer should be enabled to view and experience

products/services in the best and most realistic way possible. This could be achieved by offering a preview of products in 3D images. Such images should be possible to move and rotate so that customers can have a complete view of the product from all angles. They should also be possible to zoom in and out in many levels.

In addition, product images should be accompanied by product information. Product information should be detailed, concise, accurate and sufficient for the customers in their decision-making process. Such information demonstrates the vendor's competence, the ability to provide the intended product as expected. Apart from the content of the information, the way it is presented and accessed will also contribute in conveying a vendor's competence. Web 2.0 features, e.g. dynamic inline pop up windows, can be used in order to show details/information about a product fast, without the user having to transfer to a new page. Both product view and product information are important to convey an online vendor's competence, i.e. the ability to do what the customer needs.

A successful case of demonstrating competence is the way personalized customization of products is offered by NikeiD at Nike.com. For example, customers can create their own personalized shoes, selecting the style of their preference, size and with the option to have different size for left and right foot. Then they can choose the type of material and color for each different part of the shoe. At each step of the process, the provision of helpful information and images, with all the properties discussed above is even more important for the customer to realize and believe that the vendor can actually make a product exactly according to the customer preferences; in other words, persuade the customer that he can actually have the shoes 'made to order'. NikeiD at Nike.com provides the customer with alternating images as examples for clarifying alternative options for the type of material. It not only offers several (5+1) view options of the shoes, but also provides the option to switch between a grey and white background so that the customer can have a better perception of the colors. Finally, it offers customers a personal storage space giving customers the option to save their design.

Order placement and payment: When a purchase is being made, involving order placement and payment, online vendors should project competence, i.e. the ability to do what the customer needs done. This entails convenience in selecting size, color or other product characteristics for placing an order. As a strong cue of competence, online vendors should provide detailed information about charging, payment options, shipping, delivery and returns, to ensure that the process is clear and unambiguous to the customer. When a

customer has explicit and exact knowledge about issues such as how much he will pay and how he will be charged, how and when the order will be delivered and what happens in case something goes wrong, he will be inclined to perceive and trust the online vendor as competent to act according to the information provided. This includes security mechanisms (e.g. encryption) and privacy policies, which should be clear and specific so as to convince the customer about the vendor's ability to enforce and adhere to them.

In addition, online vendors should offer shipping of products to as many destinations as possible. Failure to do so can be deemed as lack of competence of a vendor in selling online. However, several leading online vendor have restrictions on items and destinations for delivery as well as shipping options. For example, Nike is an international company with retailers worldwide, however its online store ships only to 13 countries in Europe. From the Amazon.com's vast product collection, only books, DVDs, music and VHS videos can be shipped to (almost) all international destinations.

4.3 Integrity
A customer trusting belief in the integrity of an online vendor is built at the third and last stage of the interaction (keeping a promise) through order delivery and order tracking functions. The interaction with these functions should enable the customer assess and believe in the vendor's integrity. In addition, this last interaction stage, is the principal antecedent of customer satisfaction from the overall interaction with an online vendor, which in turn affects customer beliefs in the vendor's predictability. The following paragraphs analyze how this can be accomplished in practice, for each specific function.

Order delivery: Integrity is manifested by keeping promises. Vendors should ensure a fast, prompt and correct order delivery, physical or electronic, as promised and expected by the customer. This imposes the existence of an underlying infrastructure for order fulfillment, in terms of a wide network of fulfillment centers as well as carriers, to guarantee that an order can be delivered fast and within the promised time frame as well as support such deliveries to various destinations. In addition, on time delivery requires an order fulfillment infrastructure that can provide a correct estimation of the expected delivery date. In case such an estimation changes, for example due to wrong estimation of product availability as in the case of pre order items which are released late, an online vendor should notify the customer as soon as possible about the delay of order delivery, providing an explanation for the reason of the delay and offering the customer the option to cancel the order.

In case an order has not been received after the estimated delivery date, either as being undeliverable

and returned to the vendor or as delivered but lost or cannot be located at all, customers should be fully refunded as an attempt to amend their perception of the vendor's integrity. In contrast with that, Amazon.com, in case a customer does not receive an order, although the tracking information indicates that the package has been delivered, will not issue a full refund. Instead, Amazon.com's official response, posing a serious integrity breach with respect to guaranteed delivery, is that packages are occasionally left with neighbors or are placed somewhere relatively safe such as behind bushes.

Projecting integrity also entails that the charge of a credit card will be made as stated at order submission, with respect to the amount and date of charging. The customer should not be charged with additional costs, such as custom fees and import duties, other than those estimated at payment time. In addition, a credit card should not be charged before the foreseen date, e.g. not until the order is shipped. Furthermore, after the completion of the interaction, online vendors integrity can be undermined in case of a wrong or faulty product delivered to the customer. In order to balance for this integrity degradation the vendor should act for rapid product repair, replacement or refund, adhering to the return policy and warranties provided on the web site.

Order tracking: An order fulfillment infrastructure should also encompass a trackable shipment service, such as UPS integrated solution for package delivery and tracking. Order tracking facilities can enhance a customer belief in the vendor's integrity on condition that they provide detailed and always up-to-date information about the progress of the order. Since tracking information is not available by all carriers and for all shipment methods, online vendors should be explicit about such restrictions to preserve their integrity. This also applies for restrictions regarding the eligibility of items and destinations for delivery and delivery shipping options. These restrictions can result in late deliveries or even order loss, putting a vendor's integrity at severe risk.

5. Conclusions

This study highlights the importance of the interaction provided in an online store for building customer trusting beliefs in the online vendor. The paper shows that customer trust is built during interaction, in three stages, and that each interaction stage has an impact on a specific trusting belief about the e-vendor. This means that online vendors should leverage the functions at each interaction stage as tools to promote the respective attribute, i.e. benevolence, competence, integrity, and deliver a satisfying interaction so as to build customer trust.

As trust is a necessary antecedent of online purchases, these beliefs, constituting the ingredients of trust, are essential to be part of customer mindsets. The challenge of building customer trust can thus be translated to building these beliefs. The need for building customer beliefs has already been pointed out to practitioners (e.g. [11]). Our study goes beyond this to explore how this can be accomplished in practice, providing principles that can inform and guide the design of online stores so as to enable an interaction that builds trusting beliefs in an online vendor. The potential practical value of the paper grows as these principles are specific for each trusting belief and for each function underlying the stages of customer interaction.

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