

Building Online Trust through Socially Rich Web Interfaces

Khaled S. Hassanein and Milena M. Head

Abstract— This paper investigates how human warmth and sociability (social presence) can be integrated through the Web interface to positively impact online trust. An empirical study was undertaken to explore the impact of various levels of socially-rich text and picture design elements on the perception of online social presence and its subsequent effect on online trust and its antecedents. Higher levels of social presence are shown to positively impact the perceived usefulness, enjoyment and trust of commercial Websites. Implications of these findings for practitioners and future research are outlined.

Index Terms— e-Commerce, social presence, trust, Web interface

I. INTRODUCTION

Electronic commerce (e-Commerce) has thus far failed to live up to its potential [1, 2]. In particular, business-to-consumer e-Commerce transactions have not reached a point of critical mass, largely due to a lack of online consumer trust [3-5]. Trust is a critical component for any business transaction, and is particularly essential in the e-Commerce environment, where transactions are more impersonal, anonymous and automated. Business-to-consumer (B2C) online vendors are particularly challenged when trying to build consumer trust. Compared to business-to-business (B2B) e-Commerce, B2C is more transaction-oriented and relationships are typically shorter in term. Therefore, B2C e-Commerce trust tends to be more difficult to attain than trust in a B2B environment.

Furthermore, the offline shopping experience encompasses a wide range of emotions involving various types of social interactions with humans [6]. In contrast, the online shopping experience may be viewed as lacking human warmth and sociability [7], since it is more impersonal, anonymous and automated. Shopping experiences that involve positive emotions have been linked to several important outcomes,

such as increased time spent in the store, increased spending and increased unplanned purchasing [8, 9]. The social aspect of shopping has been shown to be a major contributor towards these positive emotions [9]. Online vendors face a significant challenge in making their virtual storefront socially rich [10].

This study explores how human warmth and sociability can be integrated through the Web interface to positively impact online trust. Prior research [7, 10-13] has suggested that the perception of social presence can positively influence user trust and intentions in an online context (e-mail and e-Services). However, to date, no studies have systematically examined how features of the Web interface can be manipulated to instill a feeling of social presence. As such, this paper specifically focuses on empirically investigating the effects of manipulating social presence through the Web interface on online trust and its antecedents.

II. THEORETICAL BACKGROUND

A. Trust

Trust is a complex concept that has been studied from varying views and disciplines. From a business perspective, trust has been defined as the willingness to depend on an exchanging partner in whom one has confidence [14], the willingness to be vulnerable to the actions of another party [15], and the expectation of ethically justifiable behavior [16, 17], among others. Geyskens et al. [18] provide a concise and meaningful view, where trust is described as the belief or expectation that the vendor's word or promise can be relied upon and the vendor will not take advantage of the consumer's vulnerability. The establishment of consumer trust is highly desirable for vendors, as it facilitates long-term relationships [19] and encourages repeat interactions/purchases [20].

In an online shopping context, consumers are vulnerable and likely to expose themselves to loss if they [21]: (i) provide their email address (making themselves vulnerable to receiving spam email or other annoyances); (ii) provide their shipping information (making themselves vulnerable to privacy invasion); (iii) provide their credit card numbers (making themselves vulnerable to credit card fraud); or (iv) complete online purchase transactions (making themselves vulnerable to quality and service inadequacies).

Factors that can hinder the development of online trust include [20, 22-24]:

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- Location is not a barrier to e-Commerce transactions; however confusion and mistrust may exist of the varying regulations and legislations in different parts of the world.
- There are lower barriers to entry and exit for online businesses. Online vendors may be considered “fly-by-night” as there are few assurances that they will stay in business for some time.
- In offline environments, consumer trust is affected by the vendor’s investments in buildings, facilities and personnel. These factors are not as visible in the online environment.
- Products can not be physically evaluated in an online environment to the same extent they can in an offline setting.
- Online environments lack human elements. First, trading partners may be more likely to not know each other in an online environment, compared to an offline environment. Second, the possibilities for person-to-person interactions are limited in an online environment.

Many models for online trust have been proposed in the literature (examples include [22-33]). The McKnight et al. model [33] has quickly become one of the most widely cited online trust model in information systems literature [34]. This model focuses on initial trust, which is defined as trust in an unfamiliar trustee [35]. As in the McKnight et al. [33] model, this study focuses on initial trust, which is the period during which a consumer visits and explores a vendor’s Website for the first time.

B. Social Presence

Social presence has been defined as the extent to which a medium allows users to experience others as being psychologically present [36]. Social presence theory regards social presence as a quality inherent in a communication medium [37]. Some researchers characterize the social presence of a medium as its capacity to transmit information about facial expressions, posture, dress and non-verbal cues [37]. Others focus on its close relationship to information richness [12, 38], which centers on the interactivity of the media [39]. Yet others stress the psychological connection, where social presence is concerned with “warmth”. In this perspective, a medium is perceived to be warm if it conveys a feeling of human contact, sociability, and sensitivity [40, 41]. Here we adopt the last perspective on social presence, where the medium gives the user a sense of human warmth and sociability.

A significant difference between online and offline shopping environments is that the latter encompasses a wide range of emotions involving various types of social interactions with humans through multiple sensory channels. Kumar and Benbasat [10] stress that in this era of new retail, “shoppers have become guests, shopping has become an experience and malls have become entertainment centers with communities”. The online shopping experience, on the other hand, is primarily geared towards reducing the user’s

cognitive burden through functional and performance based Website design heuristics [10, 42]. As such, e-Commerce may be viewed as lacking human warmth and sociability, since it is more impersonal, anonymous and automated than traditional person-to-person commerce.

The CASA (Computers Are Social Actors) paradigm suggests that social dynamics and rules guiding human-to-human interactions apply equally well to human-to-computer interactions [43, 44]. In a World Wide Web context, interface features have been suggested to help impact the perception of social presence. Gefen and Straub [7] suggest that pictures and text content can convey a personal presence in the same way as personal photographs and letters can. Choice of language can help create a sense of psychological closeness and warmth [45]. The use of natural and informal language can impact perceived social presence [46]. Advertising research suggests that text that stimulates the imagination may evoke elaborate, pleasurable fantasies involving the use of the product [47], which in turn can enhance liking and purchase intention toward the product [48]. The effect of pictures may be even more pronounced. According to Short et al. [37], our visual senses dominate our perception and visual media have more social presence than written media. Advertising has long relied on imagery of “friendly faces” to build a positive attitude towards products [49]. Dormann [50] suggests that paying attention to picture effectiveness, via emotional or social display, can be a key factor to the success of electronic commerce. Additionally, these Website features (text and pictures) are common across most commercial Websites. Hence, this paper focuses on investigating the effects of manipulating social presence through these Web interface features on online trust.

III. RESEARCH MODEL AND HYPOTHESES

To investigate the impact of various levels of socially-rich Website design elements (socially-rich text and pictures) on the perception of social presence within an online shopping environment and to examine its subsequent effect on online trust and its antecedents, we propose the research model depicted in Figure 1. This model incorporates several constructs that have been shown to impact online shoppers’ trust towards Websites. Support for these constructs and the hypotheses (H1 to H8) shown in the model are developed below. It is important to note that our main objective is to study the impact of manipulating social presence through the Web interface on online shoppers’ trust. As such, we do not attempt to incorporate all possible antecedents to the various model constructs.

A. Trust and its determinants

Corritore et. al. [51] posit that Websites could be objects of trust. From this perspective, Websites could be seen as a technology that mediates trust between consumers and an online vendor in much the same way that a salesperson is seen as mediating trust between a consumer and an offline business [20, 52, 53]. Therefore, it is reasonable to expect that

customers' experience while visiting a Website would influence their trust in an online vendor. Our model, presented in Figure 1, consists of the following four factors that can affect the trust a consumer has in an online vendor: perceived usefulness (PU), perceived ease of use (PEOU), enjoyment and social presence.

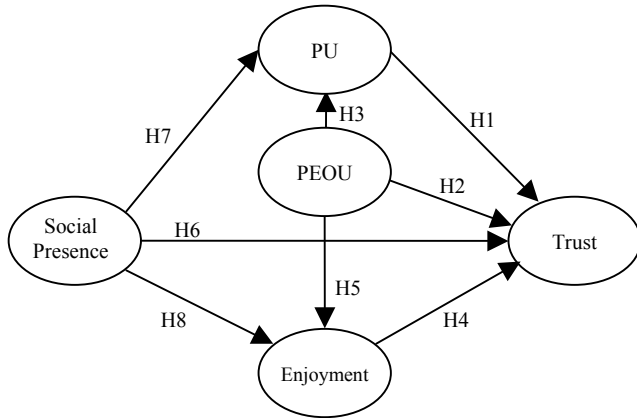


Fig. 1. Research Model

The Technology Adoption Model (TAM) has long been considered a robust model for explaining user attitudes and adoption towards technology. According to TAM, intention to use information technology is determined by the perceived usefulness (PU) and perceived ease of use (PEOU) of the technology, where PEOU also positively influences PU [54]. It has been applied to various contexts, such as word processors, spreadsheets, e-mail, voice mail, among others [55-57]. More recently, TAM has been studied within the Web environment to help predict user intention to use, revisit or purchase from a Web site [22, 58-60]. The TAM variables of PU and PEOU were also used and validated as antecedents in various online trust studies [59, 61, 62]. Therefore, it is expected that:

H1: Perceived usefulness of an e-Commerce Website is positively related to a customer's trust in an online vendor.

H2: Perceived ease of use of an e-Commerce Website is positively related to a customer's trust in an online vendor.

H3: Perceived ease of use of an e-Commerce Website is positively related to a customer's perceived usefulness of that Website.

In addition to PU and PEOU, enjoyment has emerged as another important factor for the online experience [61]. Van der Heijden [63] found that perceived enjoyment and perceived ease of use had almost as much influence on attitude as perceived usefulness. Koufaris et. al. [64] found that shopping enjoyment can positively influence new Web shoppers to return to a site. Since trust is correlated to intention to use an online store [22], it is reasonable to expect that enjoyment may impact trust. Building on these findings,

we hypothesize:

H4: Enjoyment of an e-Commerce Website is positively related to a customer's trust in an online vendor.

Research using TAM has found that the perceived enjoyment of using a system has a positive relationship with PEOU [58]. Systems that are easier to use will be less threatening [58] and will encourage feelings of control [65]. This, in turn, can result in a more enjoyable experience with the technology. Therefore, we hypothesize:

H5: Perceived ease of use of an e-Commerce Website is positively related to a consumer's enjoyment of that Website.

Trust is created within the context of a social environment [66, 67]. As such, social presence is a necessary condition for the development of trust [7]. It is easier to hide information and engage in untrustworthy behaviour in a lean social presence environment than in a high social presence environment. Thus, more trust can be developed in a situation that displays greater social presence [7]. We, therefore, hypothesize that:

H6: Increased levels of social presence in an e-Commerce Website will result in greater trust in an online vendor.

B. Social Presence and TAM

There is a psychological connection between perceiving that a medium is warm and its usefulness across a range of communications tasks [40, 68]. Therefore, when a Website serves as a communication interface between an online vendor and a customer, it is expected that social presence will be positively related to perceived usefulness. This relationship between social presence and perceived usefulness has been investigated and established by Straub [12], Karahanna and Straub [13] and Gefen and Straub [11]. While Gefen and Straub [7] were not able to show a link between social presence and perceived usefulness in an e-Services context, there is enough evidence to suggest the following hypotheses:

H7: Increased levels of social presence in an e-Commerce Website will result in greater perceived usefulness in that Website.

C. Social Presence and Enjoyment

Perhaps the most prominent psychological impact of social presence is enjoyment [69]. However, there is very little research linking social presence to enjoyment, perhaps because this effect is taken for granted [69]. Therefore, we hypothesize:

H8: Increased levels of social presence an e-Commerce Website will result in greater enjoyment in that Website.

IV. METHODOLOGY

An empirical study was conducted to validate the proposed

research model and test our proposed hypotheses. The study was designed as a one-factorial experiment manipulating three levels of Website social presence with three independent groups. There were a total of 234 participants in our study (80 in group 1; 82 in group 2; and 72 in group 3). Subjects were given the task of purchasing a gift for a female friend. To increase the realism of the task, subjects were told they had a chance of winning the product they selected from the Website, in a random draw conducted at the end of the study.

In order to isolate the impact of social presence on our model constructs, multiple Websites were created for a fictitious online store. A fictitious store was chosen to avoid any potential bias from previous branding or experiences. The manipulated levels of social presence were offered incrementally, as shown in Table 1. With this approach, differences between the three groups could be directly attributed to the increasing levels of social presence. This incremental design has been adopted by similar studies, such as Teo et al. [70].

As previously mentioned, this study was restricted to manipulating social presence through textual and graphic information. Example Web pages are shown in Figures 2, 3 and 4 for a clothing product. These figures show the same product page for the low, medium and high social presence Websites respectively.

TABLE 1

SOCIAL PRESENCE (SP) MANIPULATIONS OF THE EXPERIMENTAL WEBSITES

Site Name	SP Level	Available Features
SP-1	Low	<ul style="list-style-type: none"> • Products are shown in a solitary format • point form, functional descriptions
SP-2	Medium	<ul style="list-style-type: none"> • all features of SP-1 • socially-rich text: descriptions aimed at evoking positive emotions
SP-3	High	<ul style="list-style-type: none"> • all features of SP-2 • socially-rich pictures: products are shown used by people in emotional, dynamic settings

A. Instrument Design and Validation

Measures for the various constructs in our model (i.e. PEOU, PU, enjoyment and trust) came from existing literature, where they had been repeatedly shown to exhibit strong content validity (see Appendix for survey questions). Construct validity (measured through convergent and discriminant validity) examines the extent to which a construct measures the variable of interest. A construct is considered to exhibit satisfactory convergent and discriminant validity when items load highly on their related factor and have low loadings on unrelated factors. Table 2 includes the results of the varimax rotation on the original 16 items (outlined in Appendix I) constrained to four factors. Hair et al. [71] suggested that an item is significant if its factor loading is greater than 0.50. From the original 16 items, two were eliminated (PU1 and PEOU1) due to high cross-loadings on other constructs. Table 2 also shows that the Cronbach α -values (measure for construct reliability) were satisfactory (ranging from 0.883 to

0.932) and the average variance extracted from each construct exceeded Fornell and Larcker's [72] 0.5 benchmark.

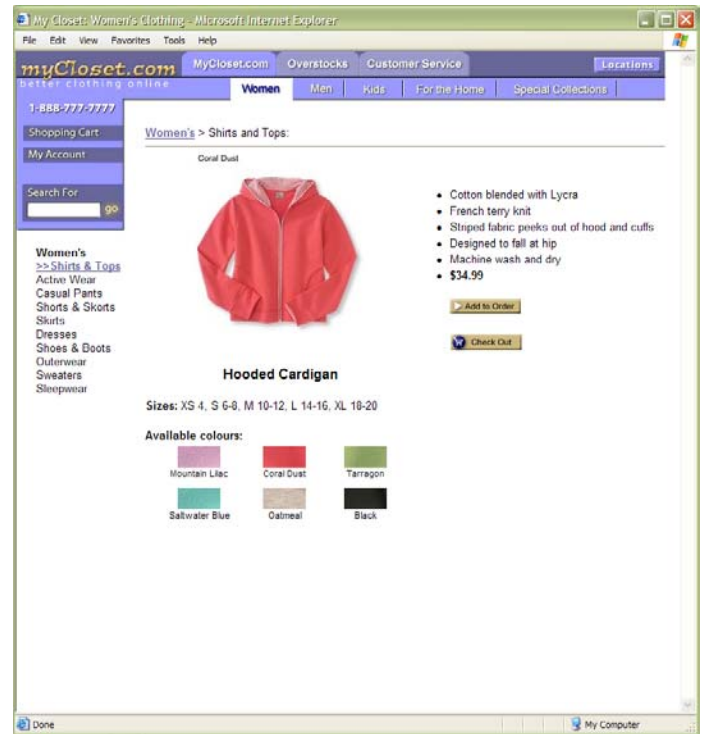


Fig. 2. Low Social Presence Website (SP-1)

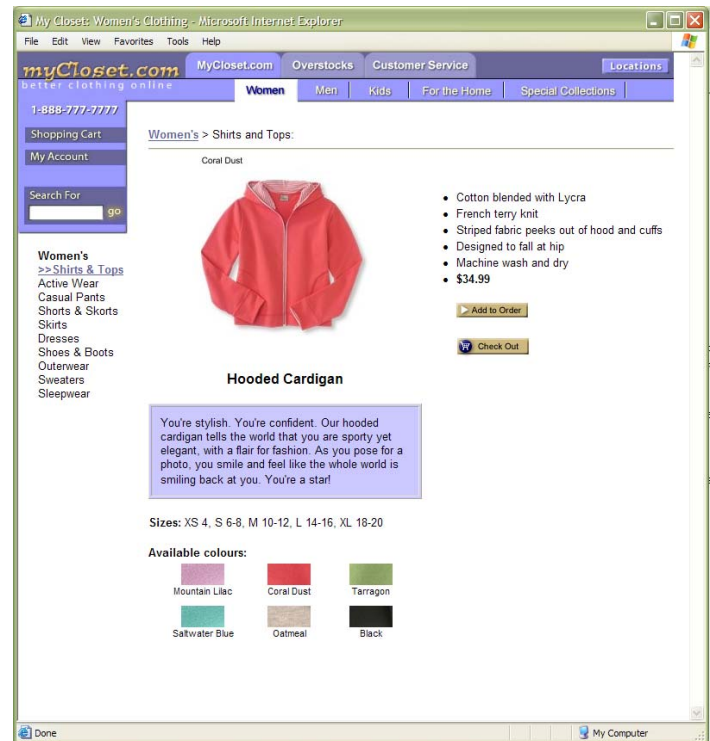


Fig. 3. Medium Social Presence Website (SP-2)

As shown in Table 3, the square root of the variance shared between a construct and its items is greater than the correlations between the construct and any of the other

constructs in the proposed model, satisfying Fornell and Larcker's [72] criteria for discriminant validity.

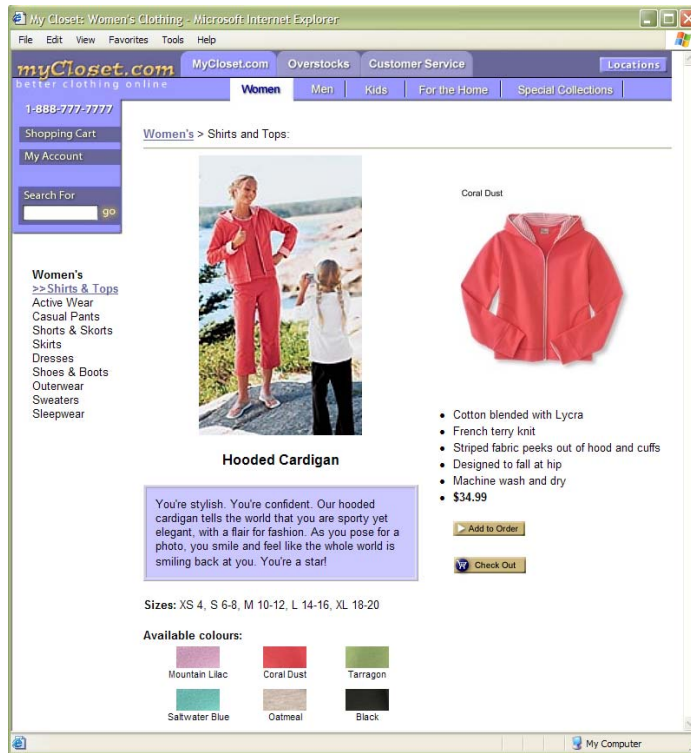


Fig. 4. High Social Presence Website (SP-3)

TABLE 2
CONVERGENT VALIDITY TESTS

Construct Items	Item Loadings	Construct Reliability (α)	Average Variance Extracted
PU2	.834	.903	.633
PU3	.846		
PU4	.699		
PEOU2	.724	.884	.664
PEOU3	.846		
PEOU4	.867		
E1	.783	.932	.693
E2	.890		
E3	.858		
E4	.793		
T1	.834	.883	.628
T2	.855		
T3	.703		
T4	.770		

TABLE 3
DISCRIMINANT VALIDITY TEST[†]

	PU	PEOU	ENJOY	TRUST
PU	0.796			
PEOU	0.631	0.815		
ENJOY	0.628	0.519	0.832	
TRUST	0.546	0.548	0.552	0.793

[†]The diagonal elements in bold (the square root of the average variance extracted) should exceed the inter-construct correlations below and across them for adequate discriminant validity.

Manipulation validity checks the validity of manipulating experimental treatments (in this case, social presence). Subjects assessed the social presence of the fictitious Websites before the dependent measures were taken to prevent bias formed from responding to the dependent measures [73]. On a seven-point Likert scale, subjects were asked to rate the following items that were adapted from a validated construct developed by Gefen and Straub [7, 11] for Perceived Social Presence:

- There is a sense of human contact on this Website
- There is a sense of sociability on this Website
- There is a sense of human warmth on this Website

An ANOVA test indicated that the three subject groups were significantly different in terms of their perceived social presence ($F(2,233)=100.96, p<.000$). Table 4 shows the results of a post-hoc Tukey test, which confirmed significant differences between the three social presence groups.

TABLE 4
MEAN DIFFERENCES BETWEEN SOCIAL PRESENCE (SP) GROUPS

SP Group	SP-1 (Low)	SP-2 (Medium)	SP-3 (High)
SP-1 (Low)	--	1.574***	2.646***
SP-2 (Medium)	--	--	1.073***
SP-3 (High)	--	--	--

*** denotes significance at the .001 level

V. RESULTS

The results of a PLS analysis of the research model shown in Figure 1, are presented in Figure 5. All path coefficients of the causal links in our hypothesized model are significant. These findings support all our hypotheses at a minimum $p<0.05$ level. Approximately 44% of the variance in online trust was accounted for by the variables in the model ($R^2=0.442$). All the R^2 of the endogenous constructs in the model exceed the 10% benchmark recommended by Falk and Miller [74].

Our results show that the social presence level of a commercial Website appears to have a positive significant effect on perceived usefulness ($b=0.144$), enjoyment ($b=0.199$) and trust ($b=0.168$). The effect of social presence on trust supports Gefen et al.'s findings in an e-Services context [7], and the effect on perceived usefulness agrees with earlier work by Straub [12], Gefen and Straub [11], Karahanna and Straub [13] in an e-mail context. Further, our results provide empirical support for Lombard et al.'s [69] proposition that social presence has a prominent psychological impact on enjoyment. Social presence level appears to have equally important impacts on PU, enjoyment, and trust as the path coefficients are comparable. All of our trust antecedents had a significant impact on building online trust, however it is worth noting that the path coefficient from perceived ease of use is the highest at 0.304.

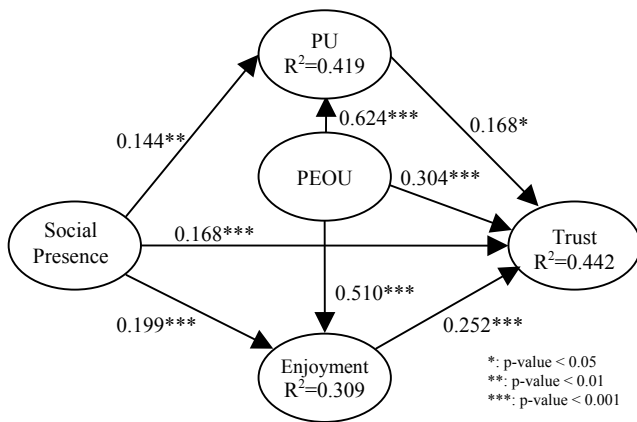


Fig. 5. PLS Structural Model

VI. CONCLUSION

From a theoretical point of view, this study extends social presence research in the e-Commerce domain. Previous studies have explored the impact of social presence for online digital products (i.e. airline tickets) [7] and email [11-13]. Findings from this study suggest that social presence is also important in forming positive consumer attitudes towards Websites selling physical products. Previous work has suggested that perceived social presence could play an important role in the online environment, but did not empirically investigate how social presence can be manipulated through the interface. We have demonstrated the positive impact of socially-rich design elements (i.e. socially-rich text and pictures) on online trust and its antecedents.

From a practitioner point of view, results from this study can have direct implications for designers of online shopping Websites. We have shown that online trust can be built by infusing social presence through descriptions aimed at evoking positive emotions and pictures that depict products with people in emotional and dynamic settings. Text and pictures are standard elements in Web pages, not requiring advanced technologies from the designers' or users' points of view. Therefore, inducing a sense of social presence on a commercial Website can be an immediate and attainable goal for online vendors.

Areas for future research may include: (i) replication of this study across various settings, products and times; (ii) examination of other socially-rich design elements (such as video, audio, virtual communities, chats, message boards, human Web assistants, etc.); (iii) further exploration of the impact of social presence through formal usability evaluation methods; and (iv) examination of the impacts of social presence across various cultures.

APPENDIX

All items were measured on a seven-point Likert strongly disagree/strongly agree scale.

Perceived Ease of Use (PEOU)

Sources: [22, 54, 75-77]

1. PEOU1[†] This Website is easy to use for product assessment
2. PEOU2 I can quickly find the information I need on this Website
3. PEOU3 This is a user-friendly Website
4. PEOU4 My interaction with this Website is clear and understandable

Perceived Usefulness (PU)

Sources: [22, 54, 58, 78-81]

1. PU1[†] This Website provides good quality information
2. PU2 This Website improves my performance in assessing products online
3. PU3 This Website increases my effectiveness for products assessment online
4. PU4 This Website is useful for assessing products online

Enjoyment (E)

Sources: [58, 75, 78, 81-83]

1. E1 I found my visit to this Website interesting
2. E2 I found my visit to this Website entertaining
3. E3 I found my visit to this Website enjoyable
4. E3 I found my visit to this Website pleasant

Trust (T)

Sources: [22, 77, 84-86]

1. T1 I feel that this online vendor is honest
2. T2 I feel that this online vendor is trustworthy
3. T3 I feel that this online vendor cares about customers
4. T4 I feel that this online vendor would provide me with good service

[†] indicates a dropped item to increase construct reliability

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