

Exploring human image appeal similarity in website design

Research-in-Progress

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Abstract

Trust is an important factor for improving e-commerce purchase intention. Nonetheless, the study of information technology (IT) artifact design and evaluation as a direct predictor to trust still remains at a preliminary stage. This research attempts to suggest and examine a model of cognitive and emotional trust in human image as one type of IT artifact. Referring to the similarity-attraction theory, we develop a research model. The model depicts that customer's purchase intention is influenced by two dimensions of web interactivity, namely active control and reciprocal communication, which is mediated by a newly proposed construct, called perceived human image appeal similarity (PHIAS). This novel construct also helps to improve the formation of cognitive trust, emotional trust and eventually customer's purchase intention. We plan to conduct an empirical study to test the hypotheses.

Keywords: perceived human image appeal similarity, purchase intention, cognitive trust, emotional trust.

Introduction

Trust is an important factor that has been proved to have significant impact on such factors as consumer's brand loyalty (Reichheld and Scheffer 2000) and increasing use intentions of information technology (IT) artifacts (Benbasat and Barki 2007; Vance et al. 2008). Prior research has demonstrated that recommendation agents (Al-Natour et al. 2006; Komiak and Benbasat 2006; Wang and Benbasat 2008) and other technologies (Vance et al. 2008) can influence trust and other salient beliefs such as social presence, perceived usefulness and so on. Affected by those salient beliefs and trusting beliefs, people can subsequently adopt IT artifacts (Benbasat and Wang 2005). Nonetheless, the study of IT artifact design and evaluation (e.g., the web interface) as a direct predictor to trust still remains at a preliminary stage (Gefen et al. 2008). This study is a response to this need.

Different from the majority of prior research focusing on recommendation agents, the objective of this study is to suggest and examine a model of consumer's cognitive and emotional trust in human image as one type of IT artifact. In this study, human image is defined as the website images of human model displaying, promoting or advertising commercial products (Cyr et al. 2009). We examine the model of apparel and accessories products' human images displayed by e-commerce sites.

In order to increase the ad's effectiveness, highly attractive models (HAMs) with beautiful facial appearance and thinness are usually employed to create "haunting images of perfection" (Bower and Landreth 2001). In this research, we postulate that normally attractive models who are similar to the optimal level of consumer's physical attractiveness should be utilized. HAMs may cause consumers' negative feelings when comparing themselves with HAMs (Martin and Gentry 1997). In addition, consumer still has high uncertainty about whether the website will honestly display commercial products

(Xiao and Benbasat 2011) or whether the product can fit well with him or her self-image. Therefore, we believe that it is instrumental to test how to optimize website design feature so that the model's human image can promote consumer's cognitive and emotional trust.

Grounded on similarity-attraction theory (Byrne 1971) and Al-Natour et al.'s (2006) model, we propose a new construct, namely perceived human image appeal similarity (PHIAS) to bridge the connection between human image design characteristics and consumer's beliefs. Our model delineates how IT design factors (i.e., active control and reciprocal communication) influence PHIAS, which in turn influences purchase intention through cognitive trust and emotional trust. Our novel construct of PHIAS can assess the perceived similarity between the model's human image appeal of a product on website and customer's optimum level of physical attractiveness. Over the years, physical attractiveness similarity has received considerable attention in the psychology and sociology literatures. Those studies from reference discipline already confirmed individuals who were similarly attractive expressed the most mutual liking for each other (Berscheid et al. 1971; Little et al. 2006; Murstein and Christy 1976), whereas the similar terms surrounding this concept have not been studied in IS literature.

This research contributes to IS research in several ways. First, current research proposes a new construct of PHIAS. This new construct complements Al-Natour et al.'s (2006) research, which proposes two types of similarity to examine online shopping assistant. Second, this research develops a new research model of PHIAS. This model enriches our understanding of how human image on website can be utilized to enhance consumer trust (Buller et al. 1994). Third, there is scarcity of research regarding the visual elements' effectiveness in online advertising (Cyr et al. 2009; Larsen et al. 2004). Our investigation demonstrates that adjusting human image appeal to customer's physical attractiveness level has several implications for the design of e-commerce website interfaces. Consequently, the research can ultimately benefit practices by showing how to manipulate and affect beliefs through website design.

Theoretical Background

Website Interactivity: active control and reciprocal communication

Website interactivity is defined as "the extent to which users can participate in modifying the form or content of a website in real time" (Jiang et al. 2010, p. 37). Recent research emphasizes the significant role of website interactivity in consumer's willingness to trust and purchase (Constantinides 2004; Jiang and Benbasat 2007; Jiang et al. 2010; Lee 2005), in that website interactivity is a crucial criterion to assess the success of website (Palmer 2002). After extensive review, Jiang et al. (2010) identified two important facets of web interactivity: active control and reciprocal communication, which positively foster customer's purchase intention. Those accordance with trust and purchase intention research makes web interactivity especially relevant and viable for integration into our conceptual model.

In line with the previous study (Jiang et al. 2010), we selected those two website interactivity constructs. This research seeks to understand how the two important facets of web interactivity endows users with ability in modifying a model's human image on website to be paired with the customer's physical attractiveness level. We adapted the definition of active control to be the extent to which choices are available on website in terms of adjusting human image (Wu and Wu 2006). Customers enjoy flexibility viewing the shopping website's content. Active control allows users to freely choose information content during the interaction with the website to display product-relevant information (Ariely 2000; Liu 2003; Srinivasan et al. 2002). Reciprocal communication is defined as the ability to conduct reactively two-way communication between two or more parties (Liu 2003). The two-way communication is characterized as reciprocal communication or mutual discourse so it facilitates positive word of mouth and forges good relationship with customers (McMillan and Hwang 2002).

Similarity-attraction theory

This study examines ways in which online consumer perceives model's human image on website as one type of IT artifact and generate the subsequent beliefs. Using similarity-attraction (SA) perspective, prior IS research provides extremely valuable insights, pointing to the role of similarity in bridging IT artifact and the user's behavioral beliefs (Al-Natour et al. 2011; Al-Natour et al. 2005). Nonetheless, to the best of

our knowledge, they mostly have capitalized on the SA perspective to explain the facilitating effect of behavioral and personality similarities on customer's trust in recommendation agency. When it comes to applying SA perspective to IT artifact, previous research has been focused on recommendation agency.

The adage that "birds of a feather flock together" can in general annotate the essence of similarity-attraction theory (SA). SA posits that individual is predisposed to become aroused and influenced by another individual with multiple similar characteristics rather than a dissimilar individual (Byrne 1971). The core assertion is that sharing similar attitudes toward a given object creates feeling of mutual liking among people. The similar characteristics involve a variety of attributes, such as shared attitudes and physical attributes, and so on.

In the literature, the influence of similarity on evaluative beliefs can be interpreted by three underlying mechanisms: 1) effectance-arousal, 2) uncertainty reduction, 3) pleasurable and enjoyable interactions (Baxter and West 2003; Byrne and Griffitt 1973). First, similarity as a positive reinforcement stimulates affective responses namely attraction. Similarities are considered to be mutual agreements with other people to satisfy their self-evaluative craving. Second, similarity reduces uncertainty about a targeted individual's behavior because partners' future behaviors and the anticipated rewards can be predicted with more confidence and effectiveness (Baxter and West 2003; Berscheid and Walster 1974). Third, the relationship between similarity and attraction is mediated by pleasurable and enjoyable interactions. Similarities reduce the probability of conflict collisions in daily interaction with others (Byrne et al. 1967).

The Effects of Similarity on Trust

Three explanations can collectively provide sufficient justifications for the link between similarity and different types of evaluative beliefs (Al-Natour and Benbasat 2009). Effectance-arousal explanation indicates favorably affective responses are aroused by similarity. People may feel more secure and comfortable because their characteristics or views are not deviant from everyone else, which aids in the formation of emotional trust (Komiak and Benbasat 2004). Similarity reduces potential risks, because shared characteristics endow people with more knowledge of the similar people. Observable cues are available knowledge which serves as a foundation for cognitive trust (Komiak and Benbasat 2004). Similarity also makes interaction more pleasurable and enjoyable by virtue of communication ease and less odds of conflict (Berscheid 1985).

Therefore, given the connection between similarity and subsequent evaluative beliefs, this study chooses cognitive trust and emotional trust (Komiak and Benbasat 2006) as endogenous variables to encapsulate most salient and pertinent beliefs. We follow Komiak and Benbasat (2004)'s research to conceptualize trust as a combination of cognitive trust and emotional trust. Cognitive trust is defined as "a trustor's rational expectations that a trustee will have the necessary attributes to be relied upon" (Komiak et al. 2006, p. 943). Cognitive trust is composed of beliefs in competence (ability of the trustee to do what the truster needs), integrity (trustee's honesty and promise keeping), and benevolence (trustee's caring and motivation to act in the truster's interests) of the trustee (Gefen et al. 2003; McKnight et al. 2002). Emotional trust is defined as "the extent to which one feels secure and comfortable about relying on the trustee" (Komiak et al. 2006, p. 943). Customer's trust can positively lead to purchase intentions (Gefen et al. 2003) so trust is directly related to the objective of this study.

Bridging design feature and beliefs using perceived human image appeal similarity (PHIAS)

Human image on website deserves attention because in the context of online shopping, images of people can induce emotional responses (Riegelsberger et al. 2003). It should be noted if applied properly, human image can energize consumer's favorable attitudes toward the website (Cyr et al. 2009). For example, when a department store's website hires models to advertise their products highly attractive models (HAMS) are often chosen to ensure the ad's effectiveness. However, there is inconsistent support for the relationship between the use of HAMS in advertising and ad's effectiveness in marketing literature (Bower and Landreth 2001). One explanation is that the unattainable level of physical attractiveness and thin figure of HAMS are very sensitive issues for many ordinary women (Gustafson et al. 1999).

Due to the limiting benefits of HAMS in advertising literature, normally attractive models and unattractive

models have been proposed to replace the usage of HAMs (Bower and Landreth 2001). In this study, normally attractive model is defined as a model displaying a commercial product and possessing moderate or average attractiveness. We call for the adoption of normally attractive models (NAMs) in e-commerce industry because NAMs are more similar to the optimum state of customer's physical attractiveness level and therefore more representative of the better image of customer. Nonetheless, we are opposed to that models should be completely unattractive and model's human image should utterly reveal his or her natural looking without any makeup or jewellery on. We contend the physical attractiveness level a model's human image should be on a par with the ideal level of a customer when putting on the advertised product.

In order to study and measure physical attractiveness similarity between customer and model, a new construct for perceived human image appeal similarity (PHIAS) is created in an IS context. In this study, we only consider the image appeal that pertains to any model's human image, displaying, interacting with and promoting the product. PHIAS is defined as the extent of which consumer's self-evaluation of the similarity between the optimum level of consumer's human physical attractiveness when putting on the advertised product and the corresponding model's human image appeal. We formally define human physical attractiveness as the degree to which a person's physical traits are considered as aesthetically beautiful, pleasing, and appealing. In alignment with the definition of physical attractiveness, human image appeal refers to as the extent to which model's human image on the website are perceived as aesthetically beautiful, satisfying (Cyr et al. 2009).

Research Model

Figure 1 depicts our conceptual research model. Our research model is built on similarity attraction theory and Jiang et al. (2010)'s research. The present research seeks to understand how the two important facets of web interactivity render users with the ability to modify model's human image appeal on website to be paired with the optimum level of the user's physical attractiveness. We adopted SA perspective from interpersonal domain to examine ways in which online users perceive human image appeal and the consequence of the resulting perceptions. Purchase intention is chosen as the dependent variable, which is defined as the extent to which a consumer will buy a product from a website he/she is knowledgeable of (Dodds et al. 1991). Age, gender, number of product items bought online in the past year, total hours spent online in the past week perceived ease of use and perceived usefulness(PU) are chosen to be control variables (Jiang et al. 2010; Pavlou et al. 2007).

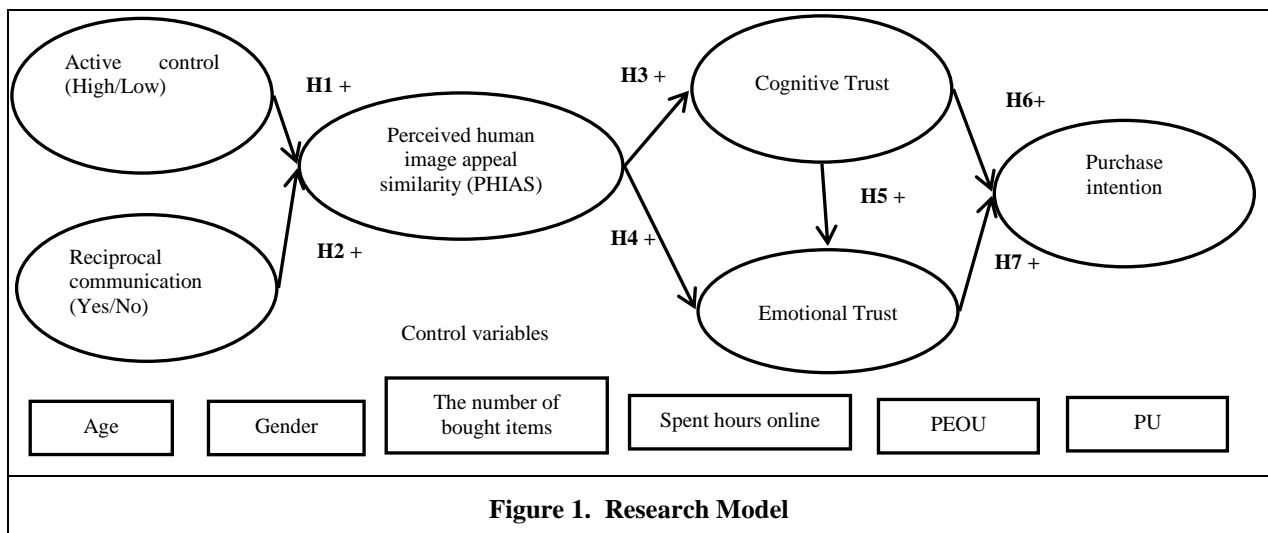


Figure 1. Research Model

Hypothesis

E-commerce websites presents consumers with product-relevant information in an appropriate and desired way so consumers won't be bewildered to make their purchase decisions among variety of

products (Ariely 2000). However, sometimes consumers' needs are fairly personalized and unique (Swan et al. 1985). Marketers are not able to constantly read the consumers' minds and accordingly present product specific image in an appropriate way to demonstrate that their products can satisfy the special needs. If the website affords consumers a couple of human images in different levels of physical attractiveness in advertising, it grants consumers with enhanced active control. Active control empowers consumers with the ability to appropriately select a human image which matches up with their own physical attractiveness to maximum extent and filter out what is unlike to their own appearance. Hence, we posit:

Hypothesis 1: Active control will positively influence PHIAS.

Reciprocal communication requires the bi-directional message flow between sender and receiver, regardless of continuity or synchronicity. Interpersonal two-way communication through the web is characterized as mutual discourse and providing feedback (Burgoon et al. 2002). Conveyance of information through computer-mediated two-way communication allows consumers to pursue PHIAS faster and more effective (Dennis et al. 2008). Given high reciprocal communication the website can create human image resembling to the customer. To make websites friendly to users, reciprocal communication can also enable customers to input the discrepancy between customers' physical attractiveness value and human image appeal value. Based on customers' feedback human image of a certain product can be better paired with the viewer's image more effectively.

Hypothesis 2: Reciprocal communication will positively influence PHIAS.

With the advent of online shopping, the intangible interaction fosters the unscrupulous vendors to swindle the unwary customers by misleading advertising (Heckman and Wobbrock 2000). The inclusion of highly attractive models (HAM) in website is taken as granted that beauty is associated with more good outcomes. The physical attractiveness and the thinness of HAM touch many women's nerves (Grabe et al. 2008). Stemming from the gap between model and consumer in terms of attractiveness, customers may doubt the credibility of the image's source, namely the website (Bower and Landreth 2001). Besides, the product may not fit with the customer and even expose his or her body figure's shortcoming, which makes him or her more unattractive. The phenomenon gives rise to the increase of uncertainty. A high level of this uncertainty increases the need for trust between the seller and the buyer (Pavlou et al. 2007).

As a result, we hypothesize that PHIAS will have a direct effect of developing trust-related knowledge and forming cognitive trust beliefs from two perspectives. In general, similarity is a means of enhancing trust (Levin et al. 2002; Ziegler and Golbeck 2007). During the trust formation process, people observe available cues to remove uncertainty and make more accurately judgment. PHIAS can timely provide reference point to match up model and customer's attractiveness (Bower and Landreth 2001).

Second, PHIAS has direct effects on the specific three dimensions of trust: competence, benevolence, and integrity. Supposing the website is capable of obtaining customer's physical attractiveness attribute data, it can subsequently alter human image to be more like the customer. This ability makes the user realize that the website owner possesses necessary knowledge and skills to design website, i.e., competent (Flavián et al. 2006; McKnight et al. 2002). Besides, the website's is believed to perform its task solely for the benefit of users, i.e., benevolence. Finally, honestly presenting product-relevant information is perceived to have more integrity (Petty and Cacioppo 1980). Thus, we hypothesize

Hypothesis 3: PHIAS will increase the user's cognitive trust in website.

In addition to the positive impact on consumer's cognitive trust, PHIAS can enhance emotional trust. Based on the above-mentioned SA perspective's effectance-arousal model (Byrne et al. 1967), similarity is a consensual validation of one's own characteristics so similarity can elicit positive affective reaction (Ziegler and Golbeck 2007). Accordingly, we posit when a customer detects of similarity in a model's image appeal, PHIAS allows the development of positive affect toward the website due to the validation of customer's physical characteristic (Bower 2001). In other words, ordinary customers feel more comfortable and develop a cooperative and accommodating attitude towards the normally attractive model's human image (Richins 1991). Similarity begets liking, which positively drives the receiver (customers) likes the source (website) more and places more trust in the source (Byrne 1969; O'keefe 2002). Accordingly, when a customer detects PHIAS in an image provider, namely the website, an

affective response is aroused and leads to the development of trust in the website (Johnson and Grayson 2005). Thus, we hypothesize

Hypothesis 4: PHIAS will increase the user's emotional trust in website.

The Theory of Reasoned Action (TRA) justifies the relationships among cognitive trust, emotional trust in website, and purchase intention (Komiak and Benbasat 2006). TRA posits a person's behavioral intention to perform a behavior is partially determined by the person's attitude toward a specified behavior (Fishbein and Ajzen 1975). Attitude is defined as "an individual's positive or negative feelings (evaluative affect) about performing the target behavior" (Fishbein and Ajzen 1975, p. 216). So emotional trust in website is the user's attitude toward e-commerce website. TRA theorizes a person's attitude toward a behavior is affected by his or her salient beliefs in the consequences of conducting a behavior. In the context of e-commerce, according to our definition, cognitive trust is composed of user's beliefs in website's competence, integrity and benevolence, served as the base for emotional trust. Those beliefs in website enable users feel secure and comfortable about relying on the website to purchase commodities (Komiak and Benbasat 2006). Thus, we hypothesize

Hypothesis 5: Cognitive trust is positively related to emotional trust.

The impact of cognitive trust and emotional trust has been well studied in previous research and thus is not the focus of this research. Basically, trust facilitates online customer's participation in business activity so is a significant antecedent of consumer's purchase intention (Gefen et al. 2003; Komiak and Benbasat 2006; Sun 2010). In the given context of online shopping, E-vendors have greater chance to behave in an opportunistic manner (Reichheld and Scheffer 2000). The uncertainty and social complexity faced by the consumers can be solved by trust. Trust allows them to subjectively eliminate undesirable yet possible behaviors of the e-vendors (Gefen et al. 2003). If consumers perceive the website to be trustworthy, they are vulnerable to the actions of an online store of their own accord (Mayer et al. 1995). In this way,

Hypothesis 6: Cognitive Trust is positively related to purchase intention.

Hypothesis 7: Emotional trust will is positively related to purchase intention.

Research Methodology

Experimental Task and Design

We plan to conduct a 2 x 2 factorial experimental design to test the hypotheses. The context is an online apparel purchase where we will manipulate the two independent variables: active control (high or low) and reciprocal communication (present or absent). Active control will be manipulated at two levels (i.e., high and low) by varying the ability of users to choose the model's human image, with a focus on the figure features such as weight and height, which are an important factor in human appeal. Our manipulation is consist with prior studies (Ariely 2000; Jiang et al. 2010). In the high active control condition, products are displayed by several models varying in weight and height status. Participants will browse through human images interacting with the same product on the navigation bar, which allows them to select the preferred human image at each moment. In contrast, in the low active control condition only one highly attractive model with idealized figure features displaying the same product. In this condition, participants do not have the ability to control which model will be used.

As for reciprocal communication, participants in the presence of reciprocal communication will be assigned to the websites where they are able to submit their weight and height indexes and in response, the model's human image will be morphed in real-time. After viewing the morphed human image as feedback, if they are disgruntled with the result the image can be further morphed by revising weight and height indexes. Participants in the treatment without reciprocal communication were not exposed to the weight and height textboxes so they cannot correspondingly modify human image on website.

With regard to three mediators' and a dependent variable's scales, questionnaire items were adapted from previously validated measures on, purchase intention (Dodds et al. 1991; Li et al. 2002), trust (McKnight et al. 2002) and emotional trust (Komiak and Benbasat 2006). Therefore, past research aids in establishing content validity for these constructs (Straub 1989). The PHIAS scale was validated through

expert judges. Two usability experts were independently asked to list items for measuring physical attractiveness and image appeal of model. Then we compared expert lists' commonality and determined a list of four items which were then used as the basis for the new PHIAS construct.

Table 1. Measurement	
Level of Active Control (Jiang et al. 2010)	AC1. I felt that I had a lot of control over my visiting experiences at this website. AC2. While I was on the website, I could choose freely what I wanted to see. AC3. While surfing the website, I had control over what I can do on the site. AC4. While surfing the website, my actions decided the kind of experiences I get.
Reciprocal Communication (Jiang et al. 2010; Liu 2003)	RC1. This website is effective in gathering visitor's feedback. RC2. This website makes me feel like it wants to listen to its visitors. RC3. This website encourages visitors to offer feedback. RC4. This website gives visitors the opportunity to talk back.
Perceived Human Image Appeal Similarity (Self-developed)	(7-point Likert, "very different" to "very similar"): Judging from the appearance, how similar or different do you think the optimal you when putting on the advertised product and model's human image are in terms of: PHIAS1. Your pleasing to eye level PHIAS2. Your arousing interest level PHIAS3. Your drawing favorable attention level PHIAS4. Your overall attractiveness level
Cognitive Trust (McKnight et al. 2002)	TR1. I believe this website is competent. TR2. I believe this website to be benevolent. TR3. I believe this website has a high integrity. TR4. Overall, I believe this website is trustworthy.
Emotional Trust (Komiak and Benbasat 2006)	ET1. I feel secure about relying on this website for my decision. ET2. I feel comfortable about relying on this website for my decision. ET3. I feel content about relying on this website for my decision.
Purchase intention (Dodds et al. 1991; Li et al. 2002)	Seven-point Semantic Differential Scale How likely/willingly/probable/certain/definite/ are you going to buy a product from this website: PI1. unlikely (1) / likely (7) PI2. unwillingly(1)/willingly PI3. improbable (1) / probably (7) PI4. uncertain (1) / certain (7) PI5. definitely not (1) / definitely (7)

Table 1. Measurement

A pretest and extensive pilot study will be conducted to increase construct validity. We will ensure two conditions for each manipulation are sufficient and appropriate. College students will participate in the experiment and will be randomly assigned to one of four combinations. Students are qualified to be samples for e-commerce studies since they are the primary constituent element of Internet shoppers (Lim et al. 2006). After interaction with different conditions, each subject will take a post-experience survey. The questionnaire included demographic questions, items for measuring all the constructs appearing in our model and items for control variables. All of items for each latent construct are listed in Table 1. Except items for PHIAS and purchase intention all other questions will be measured on a seven-point Likert scale, ranging from (1) strongly disagree to (7) strongly agree.

Partial Least Square (PLS) will be used to assess the measurement model and structural model. Each construct's reliability will be measured to ensure that the score for the final reflectively measured scale exceeds .707 (Chin 1998). Besides, discriminant validity, convergent validity and common method bias will be evaluated as well before we examine the structural model.

Theoretical and Practical Contributions

The current research's contribution to existing IS adoption research are fourfold. First, this research introduces PHIAS to purchase adoption research and studies the role of web interactivity in shaping purchase intention from a novel type of similarity. In particular, our model illustrates that both active control and reciprocal communication can lead to higher level of PHIAS concurrently. PHIAS is the predictors for both types of beliefs in purchase intention. Our work complements Al-Natour et al. (2006)'s research by investigating the effect of a previously unstudied physical attractiveness-based dimension of similarity.

Second, this research addresses the call from Gefen et al. (2008) to interpret why risk and trust beliefs arise while using e-commerce websites and how IT artifacts can enhance trust and thus facilitate adoption e-commerce sites. Our research model suggests that PHIAS plays an important role of mediating the influence of active control and reciprocal communication on trust. This explains how IT artifact features influence trust.

Third, this research directly responds to Benbasat and Barki's (2007) call for studying design features that impact users' behavioral beliefs. In order to benefit practice, our work provides actionable design-oriented advice by granting more active control and reciprocal communication to consumers.

Finally, our research contributes to IS research because it affirms both the relevance and significance of the similarity-attraction perspective to the study of IS adoption. IS adoption research usually employed perceptions of the artifact or user's characteristic independently to study user-artifact interactions. The similarity perspective offers an alternative way, which allows us to examine evaluative beliefs through the interaction of IT artifact and user's characteristics. A consideration of the effects of web design characteristics relative to the user's own helps to shift our focus and advance adoption research.

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