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**A Meta-analysis of Online Trust: Examining Main and Moderating
Effects**

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**A Meta-analysis of Online Trust: Examining Main and Moderating
Effects**

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Dedication

To my family, Hye In Jeong and Erin Kim,
who provided an eternal passion for life

To my parents, Won Yong Kim and Heesook Kim,
who nurtured my dream and guided my life

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A Meta-analysis of Online Trust: Examining Main and Moderating Effects

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The University of Texas at Austin, 2015

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The purpose of this study was (1) to conduct a meta-analysis on the antecedents and consequences of online trust; (2) to test for seven moderating variables involving online trust; and (3) to use the pooled correlation matrix to fit the research model. The data for the meta-analytic procedure involved 120 papers reporting 150 independent studies. Results showed statistically significant relationships involving online trust and its various antecedents (e.g., perceived security) and consequences (e.g., behavioral intention). The relationships were heterogeneous across studies and the variances for the reported effect sizes were partially explained by certain methodological characteristics. The meta-analytic structural equation modeling analysis indicated that online trust mediates the effect of various antecedents on behavioral intention. A discussion of results, implications, limitations, and future research is provided.

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Chapter 1: Introduction

1.1. STATEMENT OF THE PROBLEM

Consumer trust is an important construct in e-commerce because it is known to be the decisive factor in accepting and using e-commerce websites (Beldad, de Jong, & Steehouder, 2010). For that matter, the antecedents and consequences of online trust in e-commerce are frequently studied. It is vital to determine which antecedents play a role and uncover the extent to which they influence online trust. It is equally imperative to identify the consequences of online trust because they serve to accentuate the importance of trust, and trust has a bearing on consumers' intentions to continue to use any e-commerce website, which in turn has an influence on actual use (Pavlou, 2003). Thus, understanding the antecedents and consequences of trust is an important goal. It is especially relevant for consumer-oriented online businesses. The emphasis of e-vendors gaining trust from consumers highlights the potential value of conducting an empirical synthesis of the documented findings on the antecedents and consequences of online trust.

To summarize the findings involving online trust, numerous review articles have been published (e.g., Beatty, Reay, Dick, & Miller, 2011; Beldad et al., 2010; Chen & Dhillon, 2003; Grabner-Krauter & Kaluscha, 2003; Salo & Karjaluo, 2007; Wang & Emurian, 2005). These articles examine the nature of online trust and summarize the relationships with its antecedents and consequences. Since various studies have reported mixed findings with respect to statistical significance, direction, and magnitude of trust-related relationships, conducting a meta-analysis is appropriate at this juncture to establish generality. In addition, while meta-analyses on trust have been conducted in offline settings, such as trust in leadership (Dirks & Ferrin, 2002), trust in marketing

channels (Geyskens, Steenkamp, & Kumar, 1998), and trust in salespersons (Swan, Bowers, & Richardson, 1999), no quantitative summary of the evidence or any meta-analysis has been published to date on online trust.

1.2. PURPOSE OF THIS RESEARCH

Consolidating the findings across studies using meta-analysis is insightful for three reasons. First, it provides the opportunity to assess the general strength and consistency of relationships involving online trust. Second, meta-analysis can identify moderating variables that account for the variance in the relationships. This analysis would demonstrate which, if any, methodological choices influence the relationships involving online trust. Finally, since findings have shown that relationships within structural models have been mixed, a structural model of common effects involving online trust would resolve some of the inconsistencies. Researchers have previously offered various competing models to describe online trust and its respective antecedents and consequences. Yet, conflicting results emerge in terms of significance, direction, and magnitude. For example, perceived size of a e-vendor had a significant positive effect on online trust in one study (e.g., Jarvenpaa, Trackinsky, & Vitale, 2000), but an insignificant effect in other studies (e.g., Teo & Liu, 2007). In some studies, perceived risk precedes online trust (Corritore, Kracher, & Wiedenbeck, 2003); in others online trust precedes perceived risk (Pavlou, 2003), or a non-recursive relationship exists between online trust and perceived risk (Chang & Chen, 2008).

The purpose of this research is to advance knowledge of the trust concept in online business-to-consumer (B2C) e-commerce by applying a meta-analysis to findings involving online trust and providing new insights based on the results. To accomplish this purpose, the definition of trust and the nature of trust in online settings are first discussed.

This is followed by a discussion of the antecedents, consequences, and potential moderators of online trust as well as formal hypotheses. The methodology discussion includes the search strategy, inclusion/exclusion criteria, details about the meta-analysis analysis procedure, and description of the research model. A meta-analysis of retrieved correlations harvested from prior studies provides a general assessment of the strength of pairwise relationships between online trust and its associated variables. Subsequently, assessment of the variability of pairwise relationships under different applied research and methodological conditions is undertaken. Finally, a pooled correlation matrix is fitted to the research model to estimate model coefficients. Discussion, limitations, and future research follow.

Chapter 2: Review of the Literature

2.1. TRUST CONSTRUCT

Trust has been studied in multiple disciplines such as psychology, sociology, and economics. Briefly stated, the psychology literature focuses on trust at the individual level. Trust is studied by looking at personal characteristics such as developmental experiences, personality, and cultural background to explain why trust declines or increases (Mayer, Davis, & Schoorman, 1995). Sociology views trust as an institutional phenomenon, which is not only confined to interpersonal relations but also extends to relations between a person and an organization for access to material and non-material goods (Lewicki & Bunker, 1996). Rooted in social exchange theory, trust is a product of people's dependency on others, since individuals possess needs that require the service of others (Kipnis, 1996). The economics literature examines trust from a rational-choice perspective, where trust involves calculating the cost and benefits of a certain course of action based on available information in order to maximize utility (Sztompka, 1999). Since researchers from diverse areas have examined trust, it has been defined in numerous ways. Moreover, it is recognized in the literature that there is no universally accepted definition of trust (Rousseau, Sitkin, Burt, & Camerer, 1998).

According to the definition provided by the Merriam-Webster's (2015) dictionary, trust is an "assured reliance on the character, ability, strength, or truth of someone or something" and "one in which confidence is placed." Scholarly definitions have been offered that closely resemble the definition in Merriam-Webster (2015). Rotter (1967, p. 651), one of the early trust theorists, defined it to be "an expectancy held by individuals or groups that the word, promise, verbal, or written statement of another can be relied on." Similarly, another highly cited definition by Moorman, Zaltman, and Deshpande

(1992, p. 315) suggests trust is a "willingness to rely on an exchange partner in whom one has confidence."

Trust has traditionally been associated with a set of beliefs. A large stream of research on trust incorporates specific concepts such as integrity, ability, and benevolence as part of the definition (Doney & Cannon, 1997; Ganesan, 1994; Mayer et al., 1995). Integrity refers to moral and ethical principles that are deemed acceptable. Ability is related to skills and competencies in a contextual relation to a particular individual. In the psychology literature, integrity and ability are attributes of cognitive trust, which are "rational reasons why the object of trust merits trust" (Lewis & Weigert, 1985, p. 972). Benevolence is associated with the goodwill one party has toward another party. Benevolence is related to affective trust, reflecting concerns about another party's welfare (McAllister, 1995). Lewis and Weigert (1985) asserted that cognitive forms of trust are typical at the macro level in large settings or societies, while affective forms of trust are suited for close relationships with other parties.

It is now generally accepted that uncertainty and risk are components of trust (Mayer et al., 1995). One of the definitions proffered by Mayer et al. (1995) proposed that trust is the willingness of a party to be vulnerable to the actions of another party, based on the expectation that the other will perform a particular action. Vulnerability is when an individual may incur harm; and uncertainty and risk have the potential to lead to vulnerable feelings as well (Friedman, Kahn, & Howe, 2000). According to Beldad et al. (2010), when uncertainty is detected in all forms of exchanges and transactions for an individual, an overall perception of risk creeps underneath. According to Doney, Cannon, and Mullen (1998), trust would only surface in an environment of uncertainty of risk;

otherwise, trust is not a precondition in situations since an individual can act with absolute certainty.

2.2. NATURE OF ONLINE TRUST

Across the literature, there is general agreement that trust is critical in e-commerce in that it plays a major role for consumers as to whether to accept e-commerce (Gefen, Karahanna, & Straub, 2003a). Online trust is regarded as reliance on a specific firm by its stakeholders with respect to the firm's business activities in the electronic medium, more importantly, its website (Shankar, Urban, & Sultan, 2002). The definition of online trust encompasses the following: (1) expectations of what the website can deliver; (2) how credible the website's information is; and (3) how much confidence the website commands (Bart, Shankar, Sultan, & Urban, 2005). Online trust is also conceptualized as consumers' willingness to accept vulnerability in an online transaction based on their expectations with respect to future behaviors of online stores (Kimery & McCord, 2002). A more recent definition states that online trust is the consumer's subjective belief that a selling party or entity will fulfill its transactional obligations as the consumer understands them (Kim, 2012). As such, Tan and Thoen (2001) proposed a generic model of trust with two facets of trust related to the online context: trust in the other party and trust in the controlling mechanisms that ensure a successful transaction. This model indicates that the object of online trust generally not only involves interaction with a website, but also pertains to trusting the Internet technology behind the website.

While prior literature has dealt mostly with online trust in an e-vendor, there are also discussions about trust in the controlling mechanism to ensure successful e-commerce transactions (McCole, Ramsey, & Williams, 2010; Tan & Thoen, 2001). In

other words, it is trust in the Internet. Trust in the Internet relates to consumers' perceptions that the Internet supports the tasks it is supposed to, in addition to the reliability, flexibility, accessibility, and timeliness of the Internet (Lee & Turban, 2001; Eastlick, Lotz, & Warrington, 2006). Once consumers deem the technical competence and performance level of the Internet and performance level to be trustworthy, they are able to trust the e-vendor (Corbitt, Thanasankit, & Yi, 2003). Hence, trust in the Internet is an essential precursor to trust in the e-vendor.

The dominant theme in capturing online trust is evaluating trust in particular websites. Three attributes arguably compose the main elements of online trust: integrity, ability, and benevolence (Lee & Turban, 2001). Integrity in an online context is the consumer's belief that the website will be honest and adhere to an acceptable set of principles. On the other hand, ability relates to the specific skills and competencies that the website needs to perform its prescribed duties. Finally, benevolence is the extent to which a website is concerned with the consumer's welfare, rather than a utilitarian approach of merely maximizing profit. Thus, online trust is based on the website's integrity, ability, and benevolence, and the consumer's understanding of the underlying attributes that govern the website.

Trust is an essential element in any commercial transaction, whether it is offline (in a retail store) or online (through a retail website). Yet, trust is considered more important in online commerce than offline because of the risk associated with shopping online (Walczuch & Lundgren, 2004). In offline retail settings, the object of trust for consumers is only the salesperson, the store, and the organization the salesperson represents (Doney & Cannon, 1997). However, in e-commerce, the object of trust is the Internet, the accessed website, and the company behind the website (Shankar et al.,

2002). A website could be viewed as the medium for all parties involved in e-commerce (e.g., organization, technology behind the website) to build trust, extending the salesperson metaphor as suggested by Jarvenpaa and colleagues (2000).

Trust is a critical component in overcoming uncertainty (Luhmann, 1979). Sellers attempt to build trust to reduce levels of uncertainty. For consumers, the assurance of online trust helps mitigate the vulnerabilities related to their online activities in the e-commerce space. When faced with incomplete information, consumers will rely on cues to determine trust in the other party (Blau, 1964). Consumers rely on intrinsic factors (i.e., disposition to trust) or extrinsic factors (i.e., company size) to convince themselves that they are not suffering a loss when making a transaction with a relatively unknown party. In offline settings, Doney and Cannon (1997) suggested that consumers evaluate the salesperson's expertise, likeability, and similarity to themselves. Consequently, these traits play a major role in establishing trust in offline settings. On the other hand, in online settings, where the organization is represented by its website, e-vendors have layered the website with features such as quality information, attractive designs, and privacy assurances to increase trustworthiness. In addition, e-commerce transactions involve evaluating the entity that operates the website, such as the perceived size and perceived reputation of the entity. Hence, consumer behavior in online settings engenders consumers to conduct more decision-making processes to establish trust compared to offline settings. Wilson, Straus, and McEvily (2006) noted that trust levels are lower in information systems contexts than in face-to-face situations. However, with constant interaction in the electronic realm, trust levels in an information systems context increase and become comparable to those in face-to-face situations.

Unlike offline retail settings, the major disadvantage for consumers shopping online is that they are not able to interact directly with a salesperson or to test the product in person, and payments are conducted electronically (Lee & Turban, 2001). Moreover, buyers do not acquire access to the product immediately after purchase. In addition, delivery also elongates the process, which in turn increases time uncertainty. Overall, it is difficult for consumers to determine if their online activity is secure because the environment is not monitored as thoroughly as transactions in the offline world. In addition, consumers are also susceptible to exploitation, mandatorily sharing their personal information and financial information in online activities. Hence, Beldad et al. (2010, p. 860) stated that the "inevitability of risks may necessitate the cultivation of trust if one really intends to engage in online exchanges and savor their potential benefits." For that matter, to promote a sense of trustworthiness and alleviate overall risk, e-vendors are increasingly relying on social media, agents and virtual reality technologies, economic-incentive mechanisms, government involvement, and videoconferencing.

Trust facilitates increased purchasing to the extent that it reduces uncertainty and perceived risks of purchasing (Morgan & Hunt, 1994). Kimery and McCord (2002) proposed that perceived risk is a function of trust between a buyer and seller. Once trust is established, a consumer feels comfortable providing personal information, purchasing a product or service, and making the payment. However, online trust can easily be broken due to identity theft, online fraud, shipping mistakes, or broken links on a website. Hence, in an online context, trust would require multiple interactions with a website provider, and the services have to be exceptional over an extended period of time (Kim, Xu, & Koh, 2004). Whether it is offline or online, when consumers make repeated purchases and the end-result is positive, trust is likely established and increased,

consequently leading to a long-term customer relationship (Ganesan, 1994). According to Reichheld and Scheffer (2000), price is not the determinant of purchases, trust is.

Empirical studies have investigated a diverse range of factors and cues that map into online trust. The antecedents and consequences are classified into five summary categories as suggested by Chen and Dhillon (2003) and Beldad et al. (2010): (1) individual differences, (2) risk-based variables, (3) vendor-specific variables, (4) website-related variables, and (5) consumer outcomes. While the identified concepts have multiple study effects, other existing relationships are also found throughout the literature. Each area is briefly discussed followed by hypotheses.

2.3. INDIVIDUAL DIFFERENCES

Individual differences encompass demographic and dispositional variables. Disposition to trust is a frequently studied antecedent to online trust (McKnight, Choudhury, & Kacmar, 2002). However, excluding disposition to trust, relatively few individual difference factors have been studied in relation to online trust.

2.3.1. Disposition to trust

Dispositional trust relates to individual differences in the propensity to trust other parties as a result of lifelong experience, personality types, and cultural background (Fukuyama, 1995; Mayer et al., 1995). Some consumers have a tendency to trust, whereas others are suspicious. Disposition to trust relates to the specific psychology of an individual. McKnight et al. (2002) classified disposition to trust into faith in humanity and trusting stance. Faith in humanity reflects a person's specific belief that others are competent, benevolent, and honest. Trusting stance refers to a person's belief that one will obtain better outcomes by dealing with people as though they are well meaning and

reliable. In an e-commerce context, consumers vary in the level of trust they place in the e-vendor. When consumers possess inadequate knowledge about an e-vendor because of no prior interaction, disposition to trust is shown to be a factor in the formation of online trust (Gefen, 2000).

Traditionally, disposition to trust has been treated as an antecedent to online trust, and it has demonstrated a modest and positive relationship (Gefen, 2000; Kim, Ferrin, & Rao, 2008). However, results also have suggested that online trust has no significant relationship with disposition to trust (Koufaris & Hampton-Sosa, 2004; Wu, Hu, & Wu, 2010). In the explanation by Koufaris and Hampton-Sosa (2004), trust is purely formed by perceptions of a website, while inherent levels of trust cannot contribute to trust in the website because consumers do not have sufficient information about the website. Based on empirical evidence favoring a positive relationship, the following hypothesis is proposed:

H1: Increased disposition to trust is related to increased online trust.

2.4. RISK-BASED VARIABLES

Risk-based variables relate to the impersonal and perceived structures that are in place to enable a consumer to act in anticipation of a future endeavor (Shapiro, 1987). The variables typically involved are perceived risk, perceived privacy, privacy concerns, perceived security, perceived control, situational normality, and perceived similarity. While perceived control, situational normality, privacy concerns, and perceived similarity (McKnight, Cummings, & Chervany, 1998; Gefen et al., 2003a; Walczuch & Lundgren, 2004) are occasionally used as predictors of online trust, researchers have repeatedly found that perceived risk, perceived privacy, and perceived security have important

relationships with online trust (Corbitt et al., 2003; Jarvenpaa et al., 2000; Jiang, Jones, & Javie, 2008). Each of the latter is discussed.

2.4.1. Perceived risk

Mitchell (1999) claimed that perceived risk is important to explain consumers' behavior because their intentions are to avoid mistakes rather than maximize utility. Consumers have perceptions of risk within a transaction generated from the uncertainty in the environment. Perceived risk must be present for trust to possibly be needed, and thus is a necessary (but not sufficient) precursor to trust because absolute certainty would mitigate the need for trust itself (Lewis & Weigert, 1985). In online transactions, perceived risk pertains to issues such as financial information leak, personal information leak, uncertainty in product performance, and technological failure in the system.

The literature on the relationship between perceived risk and online trust consists of three tracks. First, perceived risk is considered an antecedent to online trust (Corbitt et al., 2003). The common assertion is that an increased perceived risk has a strong negative influence on trust in the online shopping experience. In the second track, online trust precedes risk (Pavlou, 2003) and the relationship is negatively related. The final track is modeled by a reciprocal relationship. Chang and Chen (2008) applied a non-recursive relationship between online trust and perceived risk in the e-commerce context and showed that one negatively affected the other. Mitchell (1999) stated that perceived risk and trust must co-exist where perceived risk is necessary for trust to be established and the consequences of trust building results in reducing perceived risk. Despite the divergent views on the direction of the relationship, it has shown a consistently strong and negative association (e.g., Jarvenpaa et al., 2000; Pavlou, 2003). Therefore, this study hypothesizes that:

H2: Increased perceived risk is related to decreased online trust.

2.4.2. Security and privacy

Consumers face difficulty judging if a website is trustworthy; hence, there is a strong motive to show that a website is secure and their privacy is not breached. Security and privacy violations are identified as a common concern among consumers (Jiang et al., 2008). To compensate for these issues, e-vendors have visually displayed Web assurance seals, such as BBB and TrustE, signaling that their website is dependable and transactions through their respective website are safe. For that matter, studies have shown that using third-party seals is an effective way to develop and maintain consumers' trust (Gefen et al., 2003a; Jiang et al., 2008). In addition to seals, assurance properties such as displaying online privacy statements raises consumers' confidence in the e-vendor, which in turn also raises the level of trust in the e-vendor (Pan & Zinkhan, 2006).

In addition to utilizing security and privacy in a visual context, scholars have frequently relied on measuring these variables as a psychological state preceding online trust. The first variable is perceived security, which refers to the perception that technical guarantees involving legal requirements and good practices related to privacy will be met (Casaló, Flavián, & Guinalú, 2007). When security-based mechanisms providing protective measures for safeguarding individual information are ensured, the website bolsters consumers' confidence that the website can indeed be trusted. The second is perceived privacy, which relates to the perceptions that legal requirements and good practices exist to manage personal data (Casaló et al., 2007). Studies have shown that privacy is a key driver of online trust (Bart et al., 2005). Privacy is especially accentuated where there are higher levels of sharing personal information. Hence, privacy plays a vital role in determining online trust. From these studies, psychological assurances

(perceived security and perceived privacy) show a strong and positive relationship with trust. Thus, the hypotheses are that:

H3: Increased perceived security is related to increased online trust.

H4: Increased perceived privacy is related to increased online trust.

2.5. VENDOR-SPECIFIC VARIABLES

Doney and Cannon (1997) suggested that company size, reputation, number of years in the business, and brand strength have a significant influence on consumers' trust toward the company. The majority of studies have focused on perceived size, perceived reputation, and familiarity with the e-vendor in relation to online trust (Jarvenpaa et al., 2000; Teo & Liu, 2007). Each is discussed.

2.5.1. Perceived size

Perceived size refers to the overall perception of the size of a vendor and its market share position (Doney & Cannon, 1997). A large-size vendor enhances the perception of trust in the entity because it can be relied on to meet its promises and provide excellent service because of its vast resources (Doney & Cannon, 1997). Additionally, when the service does not meet the expectations of a customer, a large-size vendor is assumed to compensate customers accordingly. It is in the best interest of a large-size vendor to fulfill its promises to consumers because the downside risk of behaving in an untrustworthy manner outweighs the benefits (Jarvenpaa et al., 2000). Hence, a large-size vendor is likely to possess both the expertise and the necessary support system to engender trust. In particular, with a heterogeneous team (e.g., marketing, engineering departments) to build a website, a large-size vendor is more likely to have a well-developed website that encourages purchase transactions (Teo & Liu,

2007). Therefore, it can be assumed that perceived size has a significant effect on online trust. Conflicting results emerge when perceived size is used as an antecedent to online trust. Some studies have shown that perceived size exerted a positive and significant effect on online trust (e.g., Jarvenpaa et al., 2000), whereas other studies supported an insignificant relationship (e.g., Teo & Liu, 2007). Prevailing models show a modest and positive relationship between online trust and perceived size of e-vendor (e.g., Jarvenpaa et al., 2000; Koufaris & Hampton-Sosa, 2004). Hence, it follows that:

H5: Increased perceived size is related to increased online trust.

2.5.2. Perceived reputation

Reputation is a conceptual term formed by consumers to determine whether a retail store is honest, concerned about its customers, and has the ability to execute its promises (Doney & Cannon, 1997). A vendor's reputation is viewed as a valuable intangible asset that is acquired from long-term investment in resources, efforts, and attention to customer relationships (Doney & Cannon, 1997). A retail store with a good reputation spawns consumer trust by fulfilling its commitments that are promised to them (Casaló, Flavián, & Guinalíu, 2008). Otherwise, failure to fulfill the promises would have a severely negative impact on the store's reputation (Herbig, Milewicz, & Golden, 1994). Hence, a vendor with a positive reputation would not jeopardize its reputation by taking opportunistic actions. In the e-commerce literature, perceived reputation has consistently shown a strong and positive influence on trust (e.g., Koufaris & Hampton-Sosa, 2004; Teo & Liu, 2007). Particularly, when a consumer has no prior interaction with a website, reputation plays an important role in placing trust in the e-vendor (Koufaris & Hampton-Sosa, 2004; Casaló et al., 2008). Therefore,

H6: Increased perceived reputation is related to increased online trust.

2.5.3. Familiarity

Familiarity is an understanding based on previous interactions, experiences, and learning with an entity (Luhmann, 1979). Familiarity reduces social complexity by developing an understanding of the present situation (Luhmann, 1979). On the other hand, trust reduces social complexity by assumptions regarding the future behavior of the other party. Thus, familiarity builds the current environment in which trust in the other party can take place (Luhmann, 1979). For example, consumers are likely to be familiar with a website through either word-of-mouth or visiting the site. Then, familiarity will breed trust in the e-vendor's website because of expectations that the website will perform as it did the last time it was visited (Yoon, 2002). Gefen (2000) found that familiarity is an antecedent to online trust with a modest and positive relationship. (e.g., Gefen, 2000). It follows that:

H7: Increased familiarity is related to increased online trust.

2.6. WEBSITE-RELATED VARIABLES

Characteristics of the website and the perceptions engendered by the website convey a sense of trust to the consumer (Chen & Dhillon, 2003). Commonly studied variables include perceived ease of use, perceived usefulness, website quality, and design quality. Each is discussed.

2.6.1. Perceived ease of use (PEOU) and perceived usefulness (PU)

A Web store that is perceived to be easy to operate and useful is likely to be accepted as information technology. While perceived ease of use (PEOU) in an online context refers to the ability to navigate through the website free of effort, perceived usefulness (PU) is related to performance, effectiveness, and productivity in using the

website (Pavlou, 2003). In accordance with the Technology Acceptance Model (TAM; Davis, 1989), PEOU affects PU (e.g., Pavlou, 2003). The association between trust and the two concepts of PEOU and PU are found in numerous empirical articles. Despite disagreements as to whether trust is an antecedent (Pavlou, 2003) or a consequence (Yaobin & Tao, 2007) to PEOU and PU, the relationships have all shown a modest to strong positive effect (e.g., Pavlou, 2003). The hypotheses are as follows:

H8: Increased PEOU is related to increased online trust.

H9: Increased PU is related to increased online trust.

2.6.2. Website quality

The essential determinants of perceived website quality consist of a balanced stream of system quality, information quality, and service quality (Brown & Jayakody, 2009; DeLone & McLean, 2004; Wang, 2008). System quality refers to the technical and functional characteristics of an information system pertaining to reliability, flexibility, accessibility, and timeliness (Aladwani & Palvia, 2002; Palmer, 2002). Information quality pertains to the content of the information displayed by the system and is measured in terms of the website's completeness, accuracy, format, and currency (Aladwani & Palvia, 2002; Webb & Webb, 2004). Service quality is the user's subjective evaluation of the interaction quality with a provider and how well the service needs have been met (Parasuraman, Zeithaml, & Berry, 1988). Consumers will appreciate an e-vendor's effort in delivering a high-quality website, a sign that a website is capable of displaying integrity and trustworthiness (Brown & Jayakody, 2009). The three dimensions of website quality tend to be strongly and positively related to online trust (Brown & Jayakody, 2009; Sun, 2010). Thus,

H10: Increased system quality is related to increased online trust.

H11: Increased information quality is related to increased online trust.

H12: Increased service quality is related to increased online trust.

2.6.3. Design quality

Design quality entails the perception of the balance, emotional appeal, aesthetics, and uniformity of the website's overall visual look (Garrett, 2003). These elements are a function of the website's colors, photographs, shapes, font, or social presence. A visually appealing website demonstrates the e-vendor's capability and professionalism, which would engender online trust (Bart et al., 2005). There are mixed results with respect to the relationship between design quality and online trust. Some studies have shown that design quality has a significant effect on online trust (Zhang, Fang, Wei, Ramsey, McCole, & Chen, 2011), whereas others showed a non-significant relationship (Cyr, 2008). Using the predominant evidence, it is posited that design quality will result in online trust for the consumer. Therefore,

H13: Increased design quality is related to increased online trust.

2.7. CONSUMER OUTCOMES

In an e-commerce context, trust is consistently shown to have a positive relationship with satisfaction, attitude, and behavioral intentions. Each construct and its relationship to online trust is discussed briefly.

2.7.1. Satisfaction

Satisfaction is a customer affective state formed by evaluations and attitude from the interaction with another party (Shankar, Smith, & Rangaswamy, 2003). Within transactional settings, customer satisfaction is not the result of one transaction. Rather, it is an evaluation of the history of the relationship between parties based on the ability to

fulfill the customer's needs, expectations, and desires in relation to a provided product or service (Casaló et al., 2008).

In an e-commerce context, the question of whether satisfaction is an antecedent (Horppu, Kuivalainen, Tarkiainen, & Ellonen, 2008) or a consequence (Harris & Goode, 2004) to trust is debatable. From the literature, the majority of researchers place trust as an antecedent to satisfaction. The underlying reason posited by Flavián, Guinalú, and Gurrea (2006) is that online trust develops customer satisfaction based on previous encounters with the website. A series of positive encounters will demonstrate that a customer had reinforced his or her trust in the e-vendor and consequently was led to a satisfactory purchase experience. General conclusions suggest that there is a significant and positive relationship between the two constructs (e.g., Flavián et al., 2006; Yoon, 2002). Thus, the hypothesis is that:

H14: Increased online trust is related to increased satisfaction.

2.7.2. Attitude

A major component of the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975) and the Theory of Planned Behavior (TPB; Ajzen, 1991) is attitude, a learned disposition to respond in a favorable or unfavorable manner with respect to a given object. Both theories state that behavioral intention is molded by an individual's attitude, and attitude is formed after a person's beliefs. The literature states that when an e-vendor has trustworthy characteristics (i.e., ability, benevolence, integrity), consumers are more likely to form positive attitudes toward a particular e-vendor. Existing empirical studies suggest that trust has a significant and positive influence on attitude toward a website (e.g., Chen & Dibb, 2010; Jarvenpaa et al., 2000). In that regard,

H15: Increased online trust is related to a favorable attitude.

2.7.3. Behavioral intention

Behavioral intention also originates from the TRA and TPB (Ajzen, 1991; Fishbein & Ajzen, 1975). Behavioral intention entails an indication of an individual's volitional commitment to perform a given behavior (Fishbein & Ajzen, 1975). It has been applied in an e-commerce context where trust positively impacts behavioral intention (Chen & Dibb, 2010; Gefen, 2000). The reasoning is that trust enhances behavioral intention by reducing uncertainties about the system and related processes. Online trust assures website visitors that they are able to maintain a new or stable relationship with the e-vendor, while also providing evidence that the system will not break down or lose its value in the future (Chen & Dibb, 2010). Thus, the establishment of online trust makes visitors want to use a particular website.

Studies have generally concluded that online trust has a strong relationship with behavioral intention (e.g., Chen & Dibb, 2010). The behavioral intention construct captures the consumer's willingness to interact with an e-vendor in the future, and consumers are likely to recommend the website to others. In this scenario, behavioral intention has been measured in a variety of contexts, encompassing "intentions to purchase," "intentions to transact," "intentions to use the website," "intentions to re-use the website," and "loyalty intentions." Subsequently, a hypothesis is offered for each type of behavioral intention. Thus,

H16: Increased online trust is related to increased purchase intentions.

H17: Increased online trust is related to increased repeat purchase intentions.

H18: Increased online trust is related to increased intentions to use a website.

H19: Increased online trust is related to increased loyalty intentions.

2.8. POTENTIAL MODERATORS

Research on trust has been analyzed based on multiple forms of trust and methodological contexts. Study characteristics are coded as potential moderator variables to account for variance in effect sizes. Selected moderators have previously been applied in various meta-analysis articles (Brown & Peterson, 1993; Brown & Stayman, 1992; Gilboa, Shirom, Fried, & Cooper, 2008; Petter & McLean, 2009; Szymanski & Henard, 2001) or are newly developed. Seven possible moderators are briefly discussed.

2.8.1. Sample type

Researchers have traditionally used samples of students, despite the doubts related to extrapolating student-based findings into the general population (Peterson, 2001). Walczuch and Lundgren (2004) advocated the use of students for e-commerce research since they are active on the Internet for commercial transactions. However, in an e-commerce context, students might have insufficient income and limited consumption experience compared to the ordinary consumer (Szymanski & Henard, 2001). These conditions suggest that there might be differences between students and nonstudents in terms of placing trust in e-vendors. Prior meta-analyses have shown that using student samples leads to higher correlations among variables on average (Brown & Stayman, 1992; Szymanski & Henard, 2001). Thus, it follows that:

H20: Using student samples compared to consumer samples yields larger effects for pairwise relationships involving online trust.

2.8.2. Sample culture

For this review, Hofstede's (1980) classification of individualism/collectivism is applied to describe forms of the relationship between individuals and their respective

cultures. Stating it succinctly, at one end of the continuum are typically Western individualistic cultures, which emphasize the self, with individual members referring to themselves as more independent, self-contained, and distinct (Markus & Kitayama, 1991). At the other end of the continuum are collectivistic cultures that are characterized as being more interdependent, with the locus of members' identification being with a group (Markus & Kitayama, 1991). Prior research using cultural dimensions in an e-commerce context has shown that differences exist between the two cultures in online shopping approach (Gefen & Heart, 2006; Jarvenpaa, Tractinsky, & Saarinen, 1999). It can be reasoned that whether a sample comes from an individualistic or a collectivistic culture can influence the variation in pairwise relationships involving online trust. As evidence, Yamagishi and Yamagishi (1994) suggested that individuals from collectivistic societies tend to be less trusting and more risk-averse than people from individualistic cultures. In addition, Teo and Liu (2007) argued that e-commerce is generally more established and mature in individualistic cultures; therefore consumers from individualistic cultures will tend to have more positive appraisals of online interactions than consumers from collectivistic cultures. Therefore,

H21: Using samples from individualistic cultures compared to collectivistic cultures yields larger effects for pairwise relationships involving online trust.

2.8.3. Publication year

Gilboa et al. (2008) posed publication year as an important moderator whereby magnitudes of the relationship can shift because individuals have become aware of the situated context. Logically, in an online shopping environment, the e-commerce market has matured and stabilized, and consumers are more comfortable with making transactions based on their years of experience. Lee and Turban (2001) conducted a

survey in 1999 with 405 undergraduates, 95 percent of whom were Internet users but had minimal Internet shopping experience. By 2007, students already had an average of four years of online shopping experience and purchased close to eight items online on a yearly basis (Cyr, Hassanein, Head, & Ivanov, 2007). Hence, magnitudes of the relationships involving online trust have likely shifted over time in a positive way for existing positive and negative relationships. For this study, the moderating variable is dichotomous: papers published from 1999 to 2006 and papers published from 2007 to 2014. The first identified paper was published in 1999 and the most recent paper was from 2014; hence, 2006/2007 is set as the distinguishing year. It must be noted the influence of time period is best captured by coding actual year of the survey. However, it was not possible to include it because numerous primary research articles did not report the survey data collection period. Hence, time period is approximated by publication year. Nonetheless, the hypothesis is that:

H22: Papers published from 2007 to 2014 compared to papers published from 1999 to 2006 yield larger effects for pairwise relationships involving online trust.

2.8.4. Methodological approach

A potential factor that could contribute to varying magnitudes in effect sizes across studies is whether the study used a survey or an experimental approach. Surveys tend to be candid and can provide valid responses to real-life online purchasing contexts; yet they have less flexibility with respect to controlling survey participants regarding levels of the variables being studied (Bryman, 2012). Experiments, meanwhile, can control the levels of the variables to which a participant is assigned, yet, they offer less realism because they rely on artificial stimuli (i.e., a created website for a study). These different methodological conditions can potentially be an important element in producing

differences in the online trust effects reported in the literature. A past meta-analysis conducted by Szymanski and Henard (2001) has shown that using surveys yields higher correlations than using experiments. Following this evidence, it is hypothesized that:

H23: Surveys compared to experiments yield larger effects for pairwise relationships involving online trust.

2.8.5. Website type

For their research agenda, researchers have used test websites that are novel (e.g., created website or relatively unknown site) or familiar (e.g., Amazon or eBay). For novel websites, consumers do not know what to expect and predict, resulting in their placing less trust in the website. For familiar websites, if consumers' prior interactions with a website were favorable, they are more likely to be satisfied with their experience and trust the website when they encounter the website the next time (Gefen et al., 2003a; Pavlou, 2003). In addition, a well-known website can potentially have a more positive reputation based on word-of-mouth and ratings from the offline and online communities (Jøsang, Ismail, & Boyd, 2007). Empirical research has shown that consumers are more likely to trust websites that are familiar and reputable (e.g., Jarvenpaa et al., 2000; Koufaris & Hampton-Sosa, 2004). Hence, it follows that:

H24: Familiar websites compared to unfamiliar websites yield larger effects for pairwise relationships involving online trust.

2.8.6. Number of items for trust construct

In a meta-analysis of salesperson job satisfaction (Brown & Peterson, 1993), the effects of role constructs on job satisfaction were greater for studies that used a larger number of items. In studies employed in the present research, researchers have deployed

three items (Kim et al., 2008) to 15 items (Chen & Dibb, 2010) to measure online trust. In line with the results produced by Brown and Peterson (1993), it can be reasoned that using a larger number of items to measure online trust will produce stronger relationships due to likely higher reliabilities. For this moderating variables test, research using fewer than or equal to five items and research that uses more than five items were distinguished (approximately five items was the average number of items in scales measuring online trust). Hence,

H25: Using more than five items to measure online trust compared to using five or fewer items yields larger effects for pairwise relationships involving online trust.

2.8.7. Mixed items for trust construct

There is confusion as to how to conceptualize trust on a scale (Shankar et al., 2002). Largely, researchers have applied two different streams to measure trust. First, studies have conceptualized trust in terms of interpersonal trust, reflecting a general belief of trustworthiness, ability, confidence, commitment, reliability, benevolence, integrity, goodwill, and predictability towards another party. Interpersonal trust in an e-commerce context refers to the trust toward the e-vendor or the e-vendor's website (McKnight & Chervany, 2002). A plethora of studies have measured trust using the first stream (e.g., Jarvenpaa et al., 2000). These are standard items typically employed across empirical research. A second stream is incorporating risk-based trust, beliefs that the website will not act in an opportunistic way (McKnight & Chervany, 2002), in addition to interpersonal trust (i.e., integrity, benevolence, ability) to measure trust. In this agenda, risk-based items are asked and the item is reverse-coded. For example, "this e-vendor would act in an opportunistic way" is a negative-worded item for the online trust scale that would be reverse-coded. Risk-based items are incorporated along with standard items

to measure trust. In other words, these constitute mixed items. It is uncertain how including mixed items influence the study effects. Hence, the following research question is offered:

RQ1: What is the moderating effect of using standard items compared to using mixed items for the trust construct on the strength of pairwise relationships involving online trust?

Chapter 3: Methods

3.1. DATA COLLECTION

For this study, meta-analysis was used to statistically synthesize prior research studies. There are numerous sources that detail meta-analysis procedures, including Rosenthal (1995), Hedges and Olkin (1995), Hunter and Schmidt (2004), and Saxton (2006).

The recommended procedures for conducting a meta-analysis were followed. Several labor-intensive retrieval strategies were used to identify the complete set of relevant published and unpublished studies. Similar strategies were used in Brown and Peterson (1993), Brown and Stayman (1992), Gilboa et al. (2008), Petter and McLean (2009), and Szymanski and Henard (2001) to identify studies. For the meta-analysis on online trust, an initial search of articles was conducted in Google Scholar using terms *trust*, *website*, *e-commerce*, *Internet*, and *online*, or a combination of these terms. The next step was to search for articles within the ACM, EBSCO, CiteseerX, JSTOR, Emerald, ISI-Web of Knowledge, IEEE Xplore, SpringerLink, and ScienceDirect databases using the same terms. These databases were selected because they have a high density of communication, information systems, and marketing articles in which trust-related articles would likely be found. In addition, prominent academic journals whereby quantitative articles are mainly published were searched. Those journals were *Behaviour & Information Technology*, *Computers in Human Behavior*, *Decision Support Systems*, *Electronic Commerce Research and Applications*, *Expert Systems with Applications*, *Information & Management*, *Information Systems Journal*, *Information Systems Research*, *International Journal of Electronic Commerce*, *International Journal of Information Management*, *Internet Research*, *Journal of Electronic Commerce Research*,

Journal of Management Information Systems, Journal of the Association for Information Science and Technology, Managing Service Quality, MIS Quarterly, Omega, Online Information Review, and Total Quality Management. In addition, studies were discovered through scanning review papers and references from the retrieved articles. Finally, studies were also retrieved from conference and dissertation databases. For conference proceedings, articles were searched by examining established information systems conferences, including INFORMS, International Conference on Information Systems (ICIS), Pacific Asia Conference on Information Systems (PAIC), and the Hawaii International Conference on Systems Sciences (HICSS). Dissertations were searched in ProQuest Dissertations & Theses Full Text.

Using unpublished work allows addressing the file-drawer problem since journals are likely to publish only statistically significant results and thus contain effect sizes larger than those that do not have significant results (Rosenthal, 1995). Although there is the possibility of overlooking potential studies, the data collection procedure involving attempting to collect a complete set of studies - whether published or unpublished. In the end, a manual search yielded studies that came from top-tier journals, non top-tier journals, conference proceedings, and unpublished dissertations. All articles published in the selected journals over the period of 1999 to 2014 were thoroughly examined to check if empirical studies included online trust and its correlates as measured variables. The accumulated values represent zero-order correlations involving online trust and its respective correlates. In addition to these values, the aforementioned potential moderators based on methodological characteristics were coded into the database.

3.2. INCLUSION/EXCLUSION CRITERIA

The literature search resulted in a list of 231 empirical papers based on the keywords. In the next stage, abstracts, methods, and results sections were perused to identify relevant studies. As long as trust was measured empirically and was correlated with one or more measures in an e-commerce context, the study was included in the meta-analysis database. Specifically, a thorough investigation was undertaken to check if zero-order correlations and sample sizes were reported.

Among the empirical papers, some studies that examined online trust were excluded from the analyses. (1) Some were excluded because they used the same dataset as another selected study (e.g., Gefen, Karahanna, & Straub, 2003b; Gefen & Straub, 2003). (2) Some measured only trust in the Internet (e.g., Pan & Chiou, 2011). (3) Some measured only trust in the e-vendor's brand (e.g., Ha, 2004). (4) Some focused on business-to-business e-commerce and consumer-to-consumer e-commerce, instead of business-to-consumer e-commerce (e.g., Pavlou, 2002). (5) Some did not report the necessary statistics and only contained results from multivariate models (e.g., Chen & Barnes, 2007). During this stage, a substantial number of papers ($n=111$) was excluded for one or more of the reasons. In the end, 120 papers, with 97 journal articles, 14 conference papers, and 9 dissertations, reporting results for 150 independent studies, provided the data for the meta-analysis. The 97 journal articles originated from 50 distinct journals. Analysis was conducted on relationships involving online trust and its correlates for which at least two study effects were found. In other words, at least two effect sizes involving trust and a correlate were necessary to summarize the relationship. Out of 126 different variables, 55 conceptually distinct antecedents and consequences of online trust were included in the analysis. The sample sizes ranged from 80 to 6,831

($M=377.60$, $SD=48.97$). In the reference section, the 120 papers are marked by an asterisk.

3.3. ANALYSIS PROCEDURE

All analyses for each pairwise relationship followed the procedure for correlation coefficients suggested by Hedges and Olkin (1985). The effect size metric sought from the relationships was the zero-order correlation, " r ". Studies that did not report correlations were examined to determine if there were other statistics that could be converted into r . Student's t and F ratios with one degree of freedom in the numerator were converted to r by means of formulae suggested by Hunter and Schmidt (2004):

$$r = \sqrt{\frac{t^2}{t^2 + N - 2}}$$
$$r = \sqrt{\frac{F}{F + N - 2}}$$

In other cases, standardized beta coefficients were converted to r by means of procedures outlined by Peterson and Brown (2005).

The Hedges and Olkin (1985) method contends that correlations overestimate the true effect size and thus necessitates the r s be corrected for bias via Fisher's z -transformation. Then, the z -transformed study effects are immediately converted back to correlation coefficients. The meta-analytic assessment of effect sizes using the Hedges and Olkin (1985) method is frequently used (e.g., Brown & Peterson, 1993; Brown and Stayman, 1992).

Since reliability estimates might have varied across studies, measurement errors were corrected (Hunter & Schmidt, 2004). Cronbach alphas, and in cases where alphas

were not reported, composite reliabilites, from each study were used in the correction formula. The classic formula for attenuation correction is:

$$r_c = \frac{r_{xy}}{\sqrt{r_{xx}} \sqrt{r_{yy}}}$$

where r_c is the effect size corrected for measurement error, r_{xy} is the observed correlation between two variables, and r_{xx} and r_{yy} are reliability estimates for the respective variables. When reliability estimates were not identified, the weighted mean reliability for the measure was used as a substitute. Table 3.1 contains a summary of the reported reliabilities. It can be observed from Table 3.1 that the weighted online trust reliability estimate is .87 from 130 studies. In other words, 20 out of 150 studies did not report a reliability estimate for online trust and the weighted reliability estimate had to be substituted into the correction formula.

To check for the nature of the relationship between the two variables, the 95 percent confidence intervals and the 90 percent credibility intervals were computed. While confidence intervals provide an interval estimate of the corrected weighted mean correlations ($\bar{\rho}$), credibility intervals refers to the distribution of the corrected weighted mean correlations (ρ) (Hunter & Schmidt, 2004). The credibility interval involves using the corrected standard deviation (as opposed to the standard error for the confidence interval) around the corrected weighted mean correlation. Calculating the confidence interval allows determination of the statistical significance of the findings, and intervals that do not include zero suggest the relationship is significant. If the credibility interval is "sufficiently large" or excludes zero, it indicates the possibility of moderators (Whitener, 1990).

Table 3.1

Weighted Mean Reliability Estimates of All Variables

Measures	<i>k</i>	<i>Rxx</i>	<i>N</i>
Trust	130	.87	51,188
Perceived security	32	.88	19,555
Disposition toward trust	28	.87	9,714
Purchase intentions	27	.87	7,407
Satisfaction	24	.87	9,341
Perceived risk	21	.86	9,057
Loyalty	19	.84	6,422
Perceived reputation	19	.88	7,595
System quality	18	.85	12,616
Attitudes toward website	17	.90	8,531
Information quality	16	.81	5,544
Intentions to use the website	16	.89	10,995
Perceived usefulness	13	.89	4,601
Perceived privacy	12	.87	9,932
Design quality	11	.81	4,014
General website quality	10	.84	3,481
Repeat purchase intentions	9	.92	3,093
Familiarity	9	.83	8,653
Perceived ease of use	8	.89	1,351
Perceived size	7	.82	4,600
Service quality	6	.91	1,232
Affective commitment	6	.84	1,543
Perceived value	6	.88	2,727
Usability	5	.88	1,254

(continued)

Table 3.1 (continued)

Measures	<i>k</i>	<i>Rxx</i>	<i>N</i>
Experience	4	.82	7,717
Social presence	4	.87	1,450
Multi-channel integration	4	.76	3,737
Privacy concern	4	.79	1,491
Website brand equity	4	.84	7,908
Offline trust	4	.87	1,331
Trust in Internet shopping	4	.80	1,359
Intentions to provide personal information	4	.88	1,723
Positive word-of-mouth	4	.91	1,365
Distributive justice	3	.83	857
Procedural justice	3	.86	857
Interactional justice	3	.91	857
Actual use	3	.80	1,391
Brand trust	3	.92	1,711
Third-party seal	3	.87	873
Sanctions effectiveness	3	.86	1,099
Order fulfillment	3	.91	7,551
Entertainment experience	3	.71	7,200
Customization	2	.82	396
Enjoyment	2	.95	436
Intentions to retrieve privileged information	2	.87	459
Transaction cost	2	.70	524
System trust	2	.77	346
Situational normality	2	.91	445
Interactivity	2	.94	317

(continued)

Table 3.1 (continued)

Measures	<i>k</i>	<i>R_{xx}</i>	<i>N</i>
Responsiveness	2	.90	544
Supporting organization	2	.87	619
Ego involvement	1	.92	456
Opportunistic behavior	1	.77	233
Negative referral	1	.98	246
Price premium	1	.82	475
Customer service	1	.89	184

Note. *k*=number of samples providing reliability values; *N*=total number of individuals in the *k* samples; *R_{xx}*=weighted mean reliability estimate of each variable across the *k* samples.

The homogeneity statistic Q was computed to evaluate the significance of the variance in effect sizes. The Q statistic is computed as suggested by Hedges and Olkin (1985). The formula for the Q statistic is

$$Q = \sum (n_i - 3)(z_i - \bar{z})^2$$

where \bar{z} indicates the weighted z -transformed mean correlation. Q is distributed as a chi-square statistic with k (number of studies) minus one degree of freedom. A significant Q statistic supports the existence of moderators because the residual variance is not homogenous (Hunter & Schmidt, 2004). In other words, an additional variable is creating variability and affecting the effect size statistic. For this study, the preference is to use the Q statistic to assess heterogeneity in the variances since it provides a balance between Type I error rates and statistical power (Cortina, 2003), and it is unclear what is "sufficiently large" from the credibility interval (Lee & Ashforth, 1996).

In cases where heterogeneous relationships existed and at least eleven study effects were available, moderator analysis was introduced to explain the variance in effect sizes. Eleven study effects were deemed to be necessary to make a meaningful comparison for subgroups. Comparison of the study effects was conducted on the subgroups that contained the corrected weighted mean correlations on the basis of the moderators and the pairwise relationships. It must be noted that the outliers were not removed to achieve a high degree of homogeneity, as recommended by Hedges and Olkin (1985). Instead, the data were analyzed in totality to maintain a sufficient number of correlations per comparison. Furthermore, although the presence of multiple moderating variables warrants analyses to determine the influence of moderator variables on effect sizes (Hedges & Olkin, 1985), based on the few studies in some of the comparisons, it was not deemed to be appropriate to conduct analyses in those instances.

The final analysis involves testing the robustness of the findings. In this case, the fail-safe N statistic was computed for each of the pairwise relationships (Lipsey & Wilson, 2001). This testing was necessary due to the fact that numerous journals tend to discourage publishing non-significant results. This implies that the effect sizes included in the meta-analysis are biased upwards because the identified studies mostly include significant results. A fail-safe N statistic can test to determine the number of studies with a correlation of zero between two variables is necessary to reduce the effect size to a trivial result. In this study, Orwin's (1983) formula for fail-safe N based on the effect sizes was used.

3.4. STRUCTURAL MODEL

To holistically examine the relationships between online trust and its respective antecedents and consequences, structural equation modeling was applied. Data were obtained by creating a matrix containing the mean observed correlations for all of the pairwise relationships among the constructs in the model. Since studies often involved different number of variables depending on the research agenda, an incomplete data approach as suggested by Viswesvaran and Ones (1995) was used for building the pooled correlation matrix. This approach takes into account studies with at least one pairwise correlation to be included as part of the pooled correlation matrix, and does not restrict the analysis to studies that contain all possible pairwise relationships. The mean correlations among constructs were included in the pooled correlation matrix and the harmonic mean ($n=470$) was used as the sample size. Following the lead of Brown and Peterson (1993), the diagonal elements represent the weighted mean Cronbach Alpha

coefficients. Table 3.2 shows the mean correlations among the constructs, number of studies, and the cumulative sample size in the off-diagonal elements.

A pooled correlation matrix was initially produced consisting of all variables of interest. The second step was to apply structural equation modeling to the correlation matrix. The study proposes a research model (see Figure 3.1) based on previous theories and research findings that is verified by the empirical research data gathered in the context of online trust. For a construct to be part of the research model, multiple study effects relating to every other construct were required. The model incorporated antecedents such as disposition to trust, perceived reputation, information quality, perceived security, and perceived ease of use, and consequences such as behavioral intention (purchase intentions, repeat purchase intentions, intentions to use, and loyalty intentions were all grouped together to form one construct), attitude, perceived risk, satisfaction, and perceived usefulness. It was not possible to include perceived privacy, system quality, and service quality, as these constructs did not map into every other construct, despite that fact that these were found to be important antecedents of online trust. Given the fact that the hypotheses were formed after collecting the effect sizes from various sources and then identifying the commonly-mapped relationships, the following hypotheses are proposed in this section:

H26: Increased perceived security is related to increased online trust.

H27: Increased perceived reputation is related to increased online trust.

H28: Increased perceived reputation is related to decreased perceived risk.

H29: Increased disposition to trust is related to increased online trust.

H30: Increased information quality is related to increased online trust.

H31: Increased information quality is related to increased satisfaction.

Table 3.2

Mean Correlations among Constructs in the Model

Construct	1	2	3	4	5	6	7	8	9	10	11
1. Trust	.88	27, 18740	19, 7524	22, 8180	15, 5838	19, 5196	22, 7046	18, 8059	29, 9788	17, 8214	78, 32169
2. Perceived security	.49	.88	11, 5834	6, 4471	7, 3486	3, 500	3, 721	5, 4205	6, 2206	6, 5178	21, 15056
3. Perceived reputation	.51	.43	.88	5, 4205	3, 1234	2, 258	2, 258	9, 4914	6, 1813	6, 4188	15, 6392
4. Disposition to trust	.29	.31	.27	.87	2, 675	3, 428	3, 428	10, 6139	1, 182	5, 3901	15, 6042
5. Information quality	.49	.45	.56	.20	.85	1, 278	3, 890	1, 468	6, 1783	2, 730	10, 3384
6. PEOU	.47	.45	.58	.24	.53	.88	18, 5012	3, 445	3, 442	7, 2155	19, 5196
7. PU	.51	.51	.59	.21	.49	.62	.89	3, 445	4, 1441	7, 2155	21, 6029

(continued)

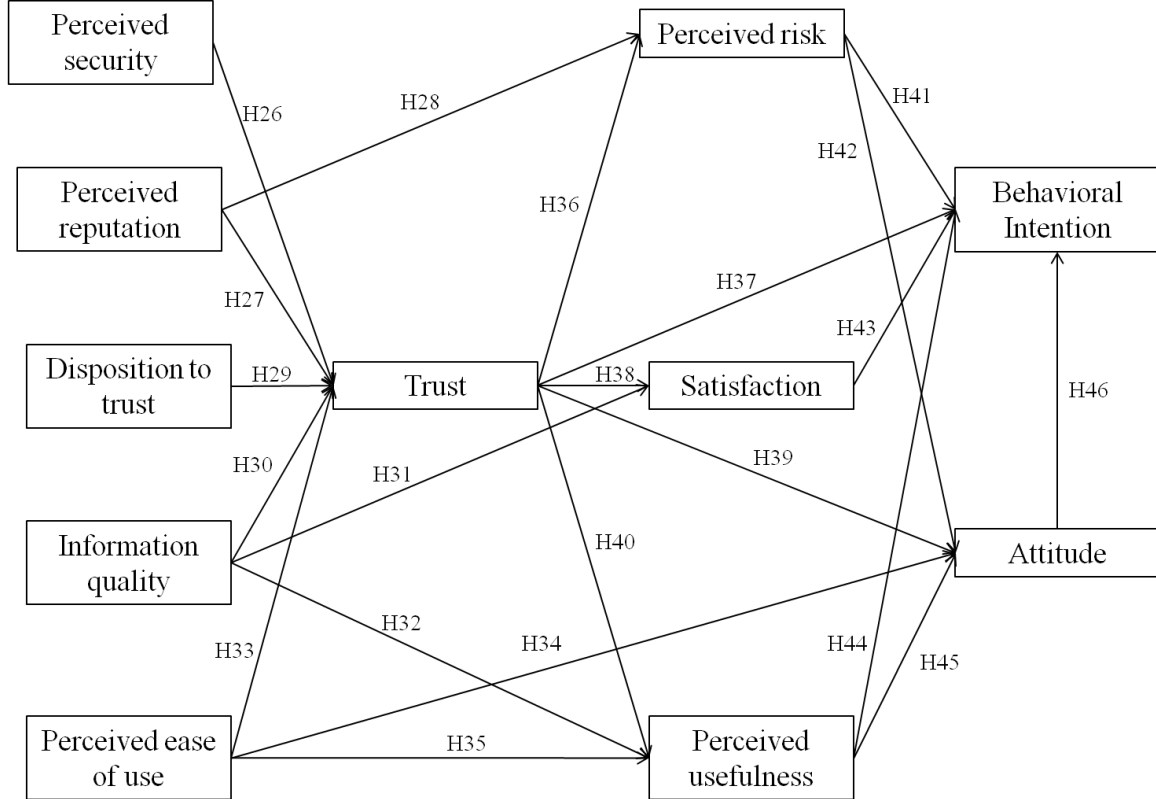
Table 3.2 (continued)

Construct	1	2	3	4	5	6	7	8	9	10	11
8. Perceived risk	-.40	-.54	-.50	-.18	-.43	-.42	-.54	.88	2, 258	8, 4539	15, 6379
9. Satisfaction	.51	.52	.53	.25	.58	.53	.55	-.39	.86	2, 518	25, 7428
10. Attitude	.53	.57	.56	.24	.58	.54	.64	-.55	.55	.89	15, 6959
11. Behavioral intention	.49	.46	.51	.24	.49	.47	.58	-.51	.62	.61	.88

Note. off-diagonals in the lower section are the mean correlations; off-diagonals in the upper section are the number of independent samples (k) followed by the cumulative sample size (N); diagonals are the weighted mean Cronbach Alpha coefficients.

Figure 3.1

Research Model



- H32: Increased information quality is related to increased perceived usefulness.
- H33: Increased perceived ease of use is related to increased online trust.
- H34: Increased perceived ease of use is related to increased attitude.
- H35: Increased perceived ease of use is related to increased perceived usefulness.
- H36: Increased online trust is related to decreased perceived risk.
- H37: Increased online trust is related to increased behavioral intention.
- H38: Increased online trust is related to increased satisfaction.
- H39: Increased online trust is related to increased attitude.
- H40: Increased online trust is related to increased perceived usefulness.
- H41: Increased perceived risk is related to decreased behavioral intention.
- H42: Increased perceived risk is related to decreased attitude.
- H43: Increased satisfaction is related to increased behavioral intention.
- H44: Increased perceived usefulness is related to increased behavioral intention.
- H45: Increased perceived usefulness is related to increased attitude.
- H46: Increased attitude is related to increased behavioral intention.

Multiple model fit indices were used to examine the structural model. For example, the comparative fit index (CFI) is an index of overall model fit, with values equal or greater than .90 considered to be acceptable (Hu & Bentler, 1999). Smaller values for the standardized root-mean square residual (SRMR) also indicate an adequate fit, with an acceptance threshold value equal to or less than .08 (Hu & Bentler, 1999). Additional model fit indices include the root mean squared error of approximation (RMSEA) and the non-normed fit index (NNFI). Acceptable cut-off values are .10 for RMSEA and .90 for NNFI. Chi-square tests, Akaike's Information Criterion (AIC), and Bayesian Information Criterion (BIC) were used to evaluate the goodness-of-fit for

competing models. A non-significant chi-square statistic indicates a good fit, while smaller values of AIC and BIC indicate better fit. If the comparison of all fit indices with their corresponding recommended values provide evidence of a good model fit, the path coefficients of the structural model are investigated.

Properties of the structural paths including standardized path coefficients and R^2 for each equation in the research model are presented. The analysis also involves estimating the direct, indirect, and total effects from the structural model. A direct effect indicates the coefficient linking one construct to another construct in the structural model. An indirect effect reflects the influence of a construct on another construct through one or more intervening variables in the model. A total effect for a given construct is the sum of the direct and indirect effects. For the analyses, Comprehensive Meta-analysis version 2.0 was used to evaluate the main effects and moderating effects, while AMOS 22.0 was used for the meta-analytic structural equation modeling.

Chapter 4: Results

4.1. META-ANALYSIS OF ANTECEDENTS OF ONLINE TRUST

Table 4.1 shows the meta-analytic results for relationships between online trust and its antecedents. Table 4.1 contains hypothesized relationships that are frequently examined, with relatively large number of *ks* ($k \geq 9$). It also contains non-hypothesized relationships that are less studied, with relatively small number of *ks* ($k < 9$). By providing the results of the less studied relationships, the results provide a general picture of most of the trust-related relationships. To make the interpretation feasible, an individually corrected weighted mean correlation (r_c) larger than .50 is considered strong, .30-.50 is considered moderate, and .10-.29 is considered small, and anything smaller than .10 is insubstantial or trivial. There is plenty of debate regarding the guidelines to interpret the magnitudes of the correlation coefficients (Hemphill, 2003). Meta-analysis papers tend to rely on the mentioned guideline to interpret the strength of the corrected weighted mean correlations (Bowling, Hendricks, & Wagner, 2008; Fan & Chen, 2001; Riggle, Edmondson, & Hansen, 2009). With respect to the hypothesized relationships, confidence intervals and credibility intervals indicated that the weighted mean correlations corrected for attenuation excluded zero for the relationships, supporting the hypotheses. The resulting weighted mean correlations corrected for attenuation yielded positive relationships between online trust and disposition to trust (supporting H1), perceived security (supporting H3), perceived privacy (supporting H4), perceived size (supporting H5), perceived reputation (supporting H6), familiarity (supporting H7), system quality (supporting H10), information quality (supporting H11), service quality (supporting H12), and design quality (supporting H13).

Table 4.1

Meta-analysis of Hypothesized Antecedents of Online Trust

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>
						Lower	Upper	Lower	Upper		
<i>Individual differences</i>											
Disposition to trust	28	9714	.28	.31	.03	.30	.32	.25	.37	181.63**	884
Internet experience	7	8,442	.28	.32	.06	.28	.36	.20	.44	78.40**	229
Entertainment experience	3	7,200	.32	.41	.13	.26	.56	.16	.66	33.36**	131
<i>Risk-based variables</i>											
Perceived security	32	20,062	.51	.58	.08	.55	.61	.42	.74	3861.85**	2,246
Perceived privacy	13	10,121	.55	.65	.06	.62	.68	.53	.77	272.59**	1,098
Third-party seal	7	1,513	.16	.18	.05	.14	.22	.08	.28	21.71**	121
Privacy Concern	5	1,680	-.29	-.37	.06	-.42	-.32	-.49	-.25	27.65**	204
Distributive justice	3	857	.58	.68	.03	.65	.71	.62	.74	13.58**	275
Interactional justice	3	857	.7	.78	.10	.67	.89	.58	.98	18.03**	370
Procedural justice	3	857	.59	.68	.15	.51	.85	.39	.97	36.94**	275
Sanctions effectiveness	3	1,099	.44	.49	.10	.38	.60	.29	.69	24.18**	165

(continued)

Table 4.1 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>
						Lower	Upper	Lower	Upper		
Opportunistic behavior	2	472	-.56	-.69	.41	-1.00	-.12	-1.00	.11	80.90**	192
<i>Vendor-specific variables</i>											
Perceived reputation	26	9,267	.52	.59	.05	.57	.61	.49	.69	674.31**	1,873
Perceived size	10	5,343	.32	.39	.08	.34	.44	.23	.55	300.98**	413
Familiarity	9	8,653	.30	.35	.04	.32	.38	.27	.43	53.59**	327
Positive WOM	7	2,360	.4	.43	.11	.35	.51	.21	.65	158.84**	326
Brand equity	4	7,908	.37	.43	.26	.18	.68	-.08	.94	507.02**	186
Multi-channel integration	4	3,737	.21	.25	.09	.16	.34	.07	.43	96.18**	99
Offline trust	4	1,331	.57	.63	.13	.50	.76	.38	.88	62.28**	320
Brand trust	3	1,711	.50	.55	.16	.37	.73	.24	.86	80.48**	194
Negative referrals	3	1,141	-.54	-.56	.08	-.65	-.47	-.72	-.40	14.67**	205
Order fulfillment	3	7551	.58	.63	.31	.28	.98	.02	1.00	413.07**	240

(continued)

Table 4.1 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>
						Lower	Upper	Lower	Upper		
Customer service	2	356	.56	.65	.49	-.03	1.00	-.31	1.00	89.00**	169
Supporting organization	2	619	.33	.38	.17	.14	.62	.05	.71	18.39**	80
<i>Website-related variables</i>											
System quality	19	12,908	.47	.54	.05	.52	.56	.44	.64	436.68**	1,200
Information quality	18	6,161	.43	.51	.06	.47	.53	.39	.62	386.83**	1,021
Design quality	14	4,725	.40	.47	.11	.41	.53	.29	.65	674.35**	731
Service quality	12	3,320	.61	.69	.06	.66	.72	.57	.81	126.23**	1,131
Usability	5	1,254	.52	.59	.03	.56	.62	.53	.65	21.35**	360
Social presence	4	1,450	.53	.61	.13	.48	.74	.36	.86	46.94**	303
Customization	2	396	.26	.31	.13	.13	.49	.06	.56	6.25*	63
Interactivity	2	317	.34	.37	.13	.19	.55	.12	.62	4.65*	77
Responsiveness	2	544	.53	.57	.41	.01	1.00	-.23	1.00	81.96**	136

(continued)

Table 4.1 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>
						Lower	Upper	Lower	Upper		
Situational normality	2	445	.56	.63	.08	.52	.74	.47	.79	3.26	160
System trust	2	346	.33	.49	.37	-.02	1.00	-.24	1.00	33.77**	110
Enjoyment	2	436	.39	.43	.13	.25	.61	.18	.68	5.93*	93
Ego involvement	2	456	.23	.26	.03	.22	.30	.20	.32	.31	51

Note. WOM=word-of-mouth; *k*=number of samples; *N*=total sample size; *r*=weighted mean correlation; *r_c*= weighted mean correlation corrected for measurement unreliability; *SD*=standard deviation of *r_c*; 95% CI=lower and upper limits of 95% confidence interval; 90% CV=lower and upper limits of 90% credibility interval; *Q* statistic=homogeneity statistic; fail-safe *N*=number of studies averaging null results that would be needed to reduce the sample-weighted mean *r* to .01.

p* <.05; *p*<.01.

The most strongly related antecedent of online trust was service quality ($r_c=.69$, $N=3,320$), followed by perceived privacy ($r_c=.65$, $N=10,121$), perceived reputation ($r_c=.59$, $N=9,267$), and usability ($r_c=.59$, $N=1,254$). Despite having only a limited number of effect sizes available ($k<5$), several antecedents of online trust had at least a weighted mean correlation corrected for attenuation larger than $|.60|$. These strongly related antecedents included distributive justice ($r_c=.68$, $N=857$), interactional justice ($r_c=.78$, $N=857$), procedural justice ($r_c=.68$, $N=857$), opportunistic behavior ($r_c=-.69$, $N=472$), offline trust ($r_c=.63$, $N=1,331$), order fulfillment ($r_c=.63$, $N=7,551$), customer service ($r_c=.65$, $N=356$), social presence ($r_c=.61$, $N=1,450$), and situational normality ($r_c=.63$, $N=445$). Other notable antecedents of online trust with strong relationships were perceived security ($r_c=.58$, $N=20,062$), system quality ($r_c=.54$, $N=12,908$), and information quality ($r_c=.51$, $N=6,161$). Disposition to trust ($r_c=.31$, $N=9,714$), perceived size ($r_c=.39$, $N=5,343$), familiarity ($r_c=.35$, $N=8,653$), positive word-of-mouth ($r_c=.43$, $N=2,360$), and design quality ($r_c=.47$, $N=4,725$) were moderately related to online trust.

The majority of Q -statistics (ranging from 4.65 for interactivity-online trust to 3861.85 for perceived security-online trust) were significant. A significant Q -statistic indicates that the effect size distribution is heterogeneous and some characteristics other than subject-level sampling and measurement errors contribute to the overall variance (Lipsey & Wilson, 2001). Moreover, the credibility intervals were wide, implying that the correlations were not homogeneous. The presence of moderators is evident.

The fail-safe N indicates that the weighted mean correlation corrected for attenuation differs significantly from zero to the extent that 51-2,246 studies would be needed to bring the respective estimates down to a level not considered to be statistically significant. Hence, a substantial number of new, unpublished, or unretrieved non-

significant studies would be required to exist to lower the significance to a trivial level. The effort to include a high proportion of unpublished dissertations and conference papers makes it unlikely that a large number of null effects exists that were not captured in the database.

4.2. META-ANALYSIS OF ANTECEDENTS/CONSEQUENCES OF ONLINE TRUST

Table 4.2 presents the examined constructs that were hypothesized as either antecedents to or consequences of online trust. Similar to meta-analysis of antecedents of online trust, hypothesized relationships are frequently examined ($k \geq 9$), while non-hypothesized relationships are less examined ($k < 9$). Indeed, there is some degree of reciprocal causation between trust and these constructs. Resolving this structural path is not a priority in this section, as it is covered in the structural modeling section. With respect to the hypothesized relationships, all confidence intervals and credibility intervals indicated that the weighted mean correlations corrected for attenuation excluded zero for the relationships, supporting the hypotheses. The resulting weighted mean correlations corrected for attenuation yielded positive relationships between online trust and PEOU (supporting H8), PU (supporting H9), and satisfaction (supporting H14). Moreover, the mean correlation corrected for attenuation between online trust and perceived risk was negative and did not contain zero in its confidence interval and credibility interval (supporting H2). In terms of strength of the relationship, trust in Internet shopping was moderately related to online trust ($r_c = .36$, $N = 1,764$). Perceived risk exhibited a strong relationship with online trust ($r_c = -.55$, $N = 10,276$). For TAM constructs, PU ($r_c = .59$, $N = 5,199$) and PEOU ($r_c = .50$, $N = 1,651$) were strongly related to online trust. Both satisfaction ($r_c = .65$, $N = 10,072$) and perceived value ($r_c = .67$, $N = 2,727$) were strongly related to online trust.

Table 4.2

Meta-analysis of Hypothesized Antecedents/Consequences of Online Trust

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>
						Lower	Upper	Lower	Upper		
<i>Risk-based variables</i>											
Perceived risk (7A, 18C)	25	10,276	-.41	-.55	.14	-.60	-.50	-.78	-.32	4549.33**	1,671
Trust in Internet shopping (2A, 3C)	5	1,764	.26	.36	.19	.19	.53	.05	.67	217.14**	187
Transaction cost (1A, 1C)	2	524	-.33	-.43	.04	-.49	-.37	-.51	-.35	.24	97
<i>Website-related variables</i>											
Perceived usefulness (3A, 12C)	15	5,199	.53	.59	.08	.55	.63	.46	.72	403.4**	1,081
General website quality (9A, 1C)	10	3,481	.46	.58	.15	.49	.67	.29	.87	659.46**	701
Perceived ease of use (7A, 2C)	9	1,651	.44	.50	.09	.44	.56	.35	.65	117.23**	510
<i>Consumer outcomes</i>											
Satisfaction (17A, 11C)	28	10,072	.53	.65	.14	.60	.70	.42	.88	5249.89**	2,366
Perceived value (4A, 2C)	6	2,727	.53	.67	.23	.49	.85	.29	1.00	623.14**	535

Note. A=antecedents, C=consequences; k =number of samples; N =total sample size; r =weighted mean correlation; r_c = weighted mean correlation corrected for measurement unreliability; SD=standard deviation of r_c ; 95% CI=lower and upper limits of 95% confidence interval; 90% CV=lower and upper limits of 90% credibility interval; Q statistic=homogeneity statistic; fail-safe N =number of studies averaging null results that would be needed to reduce the sample-weighted mean r to .01.

* $p < .05$; ** $p < .01$.

The significant Q -statistics (ranging from 117.23 for PEOU-online trust to 5249.89 for satisfaction-online trust) showed that the variances are not homogeneous, suggesting the presence of moderators. Moreover, the credibility intervals were wide. The large fail-safe N (ranging from 97 to 2,366) suggests that it is not likely that the results will change due to missing studies.

4.3. META-ANALYSIS OF CONSEQUENCES OF ONLINE TRUST

Table 4.3 shows the meta-analytic results based on the relationships between online trust and its consequences. Similar to the main effects analysis in the antecedents and antecedents/consequences section, hypothesized relationships are frequently examined ($k \geq 9$), while non-hypothesized relationships are less examined ($k < 9$). The results supported the hypotheses as the confidence intervals and the credibility intervals for the weighted mean correlations corrected for attenuation excluded zero. The resulting weighted mean correlations corrected for attenuation yielded positive relationships between online trust and purchase intentions (supporting H16), repeat purchase intentions (supporting H17), intentions to use website (supporting H18), and loyalty intentions (supporting H19). Attitudes toward the website ($r_c = .64$, $N = 10,083$) and intentions to use the website ($r_c = .64$, $N = 11,715$) were the most strongly related variables to online trust. Purchase intentions ($r_c = .58$, $N = 9,780$), loyalty intentions ($r_c = .56$, $N = 6,422$), repeat purchase intentions ($r_c = .58$, $N = 3,418$), and affective commitment ($r_c = .58$, $N = 1,543$) all yielded similar results, and they were strongly related to online trust. Finally, intentions to provide personal information ($r_c = .43$, $N = 2,090$) had a moderate relationship with online trust.

In general, the Q -statistics (ranging from 66.38 for online trust-affective commitment to 5443.32 for online trust-intentions to use website) were significant and

Table 4.3

Meta-analysis of Hypothesized Consequences of Online Trust

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>
						Lower	Upper	Lower	Upper		
<i>Consumer outcomes</i>											
Purchase intentions	34	9,780	.51	.58	.05	.56	.60	.50	.66	930.17**	2,386
Attitudes toward website	22	10,083	.55	.64	.07	.61	.67	.52	.76	1041.83**	1,810
Loyalty intentions	19	6,422	.46	.56	.07	.53	.59	.44	.68	591.84**	1,256
Intentions to use website	18	11,715	.55	.64	.20	.55	.73	.31	.97	5443.32**	1,481
Repeat purchase intentions	10	3,418	.53	.58	.08	.53	.63	.45	.71	165.61**	701
Affective commitment	6	1,543	.49	.58	.09	.51	.65	.43	.73	66.38**	421
Intentions to provide personal information	6	2,090	.38	.43	.09	.36	.50	.28	.58	90.93**	279
Use website	3	1,391	.36	.45	.21	.21	.69	.10	.80	90.30**	148
Intentions to retrieve information	2	459	.53	.61	.04	.55	.67	.54	.68	1.65	151
Price premium	2	895	.41	.47	.04	.41	.53	.40	.54	1.87	104

Note. k =number of samples; N =total sample size; r =weighted mean correlation; r_c = weighted mean correlation corrected for measurement unreliability; SD =standard deviation of r_c ; 95% CI =lower and upper limits of 95% confidence interval; 90% CV =lower and upper limits of 90% credibility interval; Q statistic=homogeneity statistic; fail-safe N =number of studies averaging null results that would be needed to reduce the sample-weighted mean r to .01.

* $p < .05$; ** $p < .01$.

the credibility intervals were wide, suggesting the presence of moderators. The large fail-safe N_s (ranging from 104 to 2,386) suggest that there is a minimal chance that the results will change due to missing studies.

4.4. POTENTIAL MODERATORS

Tables 4.1-4.3 show that the Q -statistic tests for homogeneity were significant, and the credibility intervals were wide. The results indicated that the meta-correlations were not homogeneous, suggesting the presence of moderators. In the following section, analyses of possible moderators is reported. Purchase intentions and repeat purchase intentions were grouped into one variable to maximize the number of k_s and to test solely the effect of moderators on the relationship between online trust and "purchase intentions." Moderator analyses were conducted on the relationships for which at least eleven study effects were available.

4.4.1. Sample type

Table 4.4 depicts the results of the moderator analysis by sample type. Hypothesis H20 predicted that stronger relationships would result when studies were conducted with student samples rather than with consumer samples. The results showed statistically significant differences between students and consumers in seven of the fifteen relationships examined. The remaining eight relationships did not produce significant differences. However, contrary to predictions of hypothesis H20, the relationship between online trust and its related constructs were generally stronger among consumers than among students. This pattern was demonstrated in several relationships involving online trust: disposition to trust ($r_c=.34$ for consumers versus $r_c=.30$ for students); perceived security ($r_c=.62$ for consumers versus $r_c=.51$ for students); perceived reputation ($r_c=.63$

Table 4.4

Moderator Analysis by Sample Type

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Disposition to trust												
Consumers	10	6,445	.30	.34	.04	.32	.36	.26	.42	105.92**	351	3.00**
Students	18	3,269	.26	.30	.03	.29	.31	.24	.36	62.99**	548	
Perceived risk												
Consumers	14	7,719	-.39	-.44	.05	-.47	-.41	-.52	-.36	268.34**	699	2.31*
Students	11	2,557	-.42	-.67	.37	-.89	-.45	-1.00	-.06	3503.94**	1,003	
Perceived security												
Consumers	19	16,840	.55	.62	.11	.57	.67	.40	.84	3348.73**	1,482	2.68*
Students	13	3,222	.43	.51	.12	.44	.58	.27	.75	507.39**	757	
Perceived privacy												
Consumers	6	8,210	.59	.67	.03	.65	.69	.61	.73	17.19**	535	.79
Students	7	1,911	.51	.62	.15	.51	.73	.33	.91	252.71**	546	
Perceived reputation												
Consumers	14	6,790	.56	.63	.06	.60	.66	.51	.75	296.33**	1,121	3.14**

(continued)

Table 4.4 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Students	12	2,477	.45	.53	.10	.47	.59	.33	.73	264.86**	738	
Perceived usefulness												
Consumers	6	3,318	.51	.57	.12	.47	.67	.37	.77	224.65**	410	.55
Students	9	1,881	.53	.60	.09	.54	.66	.45	.75	134.41**	666	
System quality												
Consumers	15	11,725	.49	.56	.05	.53	.59	.46	.66	298.98**	998	2.09
Students	4	1,183	.39	.48	.12	.36	.60	.24	.72	51.32**	214	
Information quality												
Consumers	9	3,488	.46	.53	.09	.47	.59	.35	.71	221.35**	553	1.49
Students	9	2,673	.40	.47	.08	.42	.52	.31	.63	143.86**	470	
Service quality												
Consumers	7	2,178	.59	.66	.09	.59	.73	.48	.84	115.49**	607	1.42
Students	5	1,142	.64	.72	.03	.69	.75	.66	.78	4.33	513	
Design quality												
Consumers	7	2,782	.38	.47	.10	.40	.54	.31	.63	141.15**	365	.11

(continued)

Table 4.4 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Students	7	1,943	.40	.48	.20	.33	.63	.15	.81	220.87**	376	
Satisfaction												
Consumers	20	8,489	.57	.70	.17	.63	.77	.42	.98	4765.02**	1,940	3.28**
Students	8	1,583	.42	.48	.13	.39	.57	.27	.69	180.78**	429	
Attitudes toward website												
Consumers	12	7,048	.63	.70	.08	.65	.75	.57	.83	510.64**	1,164	3.91**
Students	10	3,035	.45	.55	.10	.49	.61	.39	.71	265.19**	648	
Purchase intentions + repeat purchase intentions												
Consumers	24	8,143	.55	.61	.04	.59	.63	.54	.68	417.78**	1,823	3.23**
Students	20	5,055	.47	.55	.08	.51	.59	.42	.68	551.54**	1,297	
Intentions to use website												
Consumers	7	8,687	.56	.68	.35	.42	.94	.10	1.00	2808.65**	642	.63
Students	11	3,028	.52	.61	.10	.55	.67	.45	.77	286.63**	835	
Loyalty intentions												
Consumers	13	4,715	.47	.59	.10	.54	.64	.43	.75	549.70**	936	1.76
Students	6	1,707	.44	.51	.07	.45	.57	.39	.63	41.59**	349	

Note. k =number of samples; N =total sample size; r =weighted mean correlation; r_c = weighted mean correlation corrected for measurement unreliability; SD=standard deviation of r_c ; 95% CI=lower and upper limits of 95% confidence interval; 90% CV=lower and upper limits of 90% credibility interval; Q statistic=homogeneity statistic; fail-safe N =number of studies averaging null results that would be needed to reduce the sample-weighted mean r to .01; t = t -statistic testing for difference for mean correlations.

* $p < .05$; ** $p < .01$.

for consumers versus $r_c=.53$ for students); satisfaction ($r_c=.70$ for consumers versus $r_c=.48$ for students); purchase intentions ($r_c=.61$ for consumers versus $r_c=.55$ for students); and attitude ($r_c=.70$ for consumers versus $r_c=.55$ for students). However, the online trust-perceived risk effect size was significantly larger among students ($r_c=-.67$) than among consumers ($r_c=-.44$). In general, it can be concluded that Hypothesis 20 is not supported. It is difficult to find a discernible pattern on whether using students or consumers as a sample produces stronger relationships involving online trust. In this sample type moderating test, the results generally favor consumers to produce larger correlations than students.

4.4.2. Sample culture

The second moderating test involves assessing the possible moderating effect of potential cross-cultural differences. The hypothesis is that using samples from individualistic cultures compared to collectivistic cultures would yield larger effects for pairwise relationships involving online trust (H21). Contrary to the hypothesis, as shown in Table 4.5, the results generally indicated no significant difference in the majority of the relationships involving online trust in a cultural context (eleven out of fifteen relationships). For the remaining four relationships with significant differences, results showed stronger disposition to trust-online trust ($r_c=.33$ for collectivism versus $r_c=.30$ for individualism), design quality-online trust ($r_c=.62$ for collectivism versus $r_c=.44$ for individualism), online trust-purchase intentions ($r_c=.63$ for collectivism versus $r_c=.52$ for individualism), and online trust-attitudes toward websites ($r_c=.70$ for collectivism versus $r_c=.58$ for individualism) relationships in studies that used samples from collectivistic cultures compared to those from individualistic cultures. It can be concluded that Hypothesis 21 is not confirmed.

Table 4.5

Moderator Analysis by Sample Culture

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Disposition to trust												
collectivism	10	4,910	.29	.33	.04	.31	.35	.25	.41	74.38**	339	2.22*
individualism	17	4,586	.26	.30	.03	.29	.31	.24	.36	83.48**	517	
Perceived risk												
collectivism	10	5,430	-.40	-.63	.30	-.82	-.44	-1.00	-.14	4068.58**	821	1.44
individualism	14	4,628	-.42	-.51	.08	-.55	-.47	-.64	-.38	385.88**	844	
Perceived security												
collectivism	13	6,513	.54	.62	.12	.55	.69	.38	.86	1093.79**	1,014	1.58
individualism	17	11,853	.48	.55	.12	.49	.61	.31	.79	1917.44**	1,102	
Perceived privacy												
collectivism	3	759	.51	.54	.23	.28	.80	.09	.99	79.52**	189	1.94
individualism	9	8,822	.58	.69	.06	.65	.73	.57	.81	127.97**	848	
Perceived reputation												
collectivism	10	5,163	.52	.58	.09	.52	.64	.40	.76	338.31**	701	.32

(continued)

Table 4.5 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
individualism	16	4,104	.51	.59	.07	.56	.62	.45	.73	300.19**	1,153	
Perceived usefulness												
collectivism	5	3,133	.55	.60	.11	.50	.70	.42	.78	134.47**	370	.31
individualism	10	2,066	.51	.68	.12	.51	.65	.38	.78	260.79**	701	
System quality												
collectivism	11	3,542	.47	.53	.07	.49	.57	.39	.67	176.42**	676	1.15
individualism	6	8,092	.49	.58	.11	.49	.67	.36	.80	174.12**	421	
Information quality												
collectivism	8	2,467	.40	.46	.10	.39	.53	.26	.66	183.33**	406	2.10
individualism	8	2,420	.48	.56	.09	.50	.62	.38	.74	153.64**	532	
Service quality												
collectivism	5	1,553	.65	.72	.03	.69	.75	.66	.78	5.34	513	1.28
individualism	7	1,767	.59	.66	.10	.59	.73	.46	.86	106.88**	607	
Design quality												
collectivism	5	1,508	.53	.62	.09	.54	.70	.47	.77	49.32**	390	2.45*

(continued)

Table 4.5 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
individualism	6	1,403	.37	.44	.12	.34	.54	.24	.64	103.26**	287	
Satisfaction												
collectivism	11	4,031	.53	.62	.12	.55	.69	.42	.82	519.98**	858	.66
individualism	16	5,684	.53	.67	.23	.56	.78	.29	1.00	4194.45**	1,428	
Attitudes toward website												
collectivism	10	5,570	.60	.70	.09	.64	.76	.55	.85	351.65**	970	2.76*
individualism	12	4,513	.51	.58	.11	.52	.64	.40	.76	551.99**	842	
Purchase intentions + repeat purchase intentions												
collectivism	21	7,472	.57	.63	.05	.61	.65	.55	.71	502.74**	1,682	6.51**
individualism	22	5,508	.46	.52	.06	.49	.55	.42	.62	458.49**	1,317	
Intentions to use website												
collectivism	5	1,540	.53	.61	.12	.50	.72	.41	.81	80.32**	379	.25
individualism	13	10,175	.54	.64	.25	.50	.78	.23	1.00	4475.44**	1,069	
Loyalty intentions												
collectivism	6	1,574	.45	.55	.08	.49	.61	.42	.68	51.89**	389	.59
individualism	11	4,373	.47	.58	.11	.51	.65	.40	.76	522.61**	772	

Note. k =number of samples; N =total sample size; r =weighted mean correlation; r_c = weighted mean correlation corrected for measurement unreliability; SD=standard deviation of r_c ; 95% CI=lower and upper limits of 95% confidence interval; 90% CV=lower and upper limits of 90% credibility interval; Q statistic=homogeneity statistic; fail-safe N =number of studies averaging null results that would be needed to reduce the sample-weighted mean r to .01; t = t -statistic testing for difference for mean correlations.

* $p < .05$; ** $p < .01$.

4.4.3. Publication year

As for H22, studies conducted after 2006 (≥ 2007) were hypothesized to produce stronger effect sizes involving online trust than studies conducted prior to 2007 (< 2007). According to Table 4.6, no consistent pattern was found based on the moderating effect of publication year. The results showed no significant differences between studies conducted prior to 2007 and studies conducted after 2007 in eight of the fifteen relationships examined. The mean correlations of perceived privacy ($r_c = .79$ for < 2007 versus $r_c = .59$ for ≥ 2007), system quality ($r_c = .64$ for < 2007 versus $r_c = .50$ for ≥ 2007), and information quality ($r_c = .64$ for < 2007 versus $r_c = .45$ for ≥ 2007) in relation to online trust were significantly larger in studies conducted prior to 2007 than studies conducted after 2007. On the other hand, the mean correlations for perceived security ($r_c = .66$ for ≥ 2007 versus $r_c = .38$ for < 2007), service quality ($r_c = .73$ for ≥ 2007 versus $r_c = .53$ for < 2007), attitudes toward website ($r_c = .68$ for ≥ 2007 versus $r_c = .53$ for < 2007), and purchase intentions ($r_c = .61$ for ≥ 2007 versus $r_c = .50$ for < 2007) in relation to online trust were significantly larger in studies conducted after 2007 than studies conducted prior to 2007. In sum, the results partially support the hypothesis.

4.4.4. Methodological approach

According to hypothesis H23, larger effect sizes were expected for studies using surveys compared to those using experiments. The results partially confirm that survey-based studies yielded larger mean correlations than experiment-based studies (Table 4.7). There were significant differences in the mean correlations between survey-based studies and experiment-based studies in seven out of fourteen relationships. The remaining seven relationships all show that survey-based studies produced larger effect sizes. The mean

Table 4.6

Moderator Analysis by Publication Year

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Disposition to trust												
< 2007	12	3,203	.26	.31	.04	.29	.33	.23	.39	51.45**	379	.15
≥ 2007	16	6,511	.28	.31	.03	.30	.32	.25	.37	110.25**	505	
Perceived risk												
< 2007	13	3,721	-.39	-.49	.09	-.54	-.44	-.64	-.34	336.61**	743	1.82
≥ 2007	12	6,555	-.42	-.62	.24	-.76	-.48	-1.00	-.23	4113.69**	960	
Perceived security												
< 2007	10	9,519	.33	.38	.08	.33	.43	.22	.54	278.50**	400	9.18**
≥ 2007	22	10,543	.57	.66	.08	.63	.69	.50	.82	1428.43**	1910	
Perceived privacy												
< 2007	3	7,232	.62	.79	.20	.56	1.00	.40	1.00	89.20**	383	2.71*
≥ 2007	10	2,889	.51	.59	.08	.54	.64	.43	.75	166.52**	720	

(continued)

Table 4.6 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Perceived reputation												
< 2007	7	1,686	.49	.54	.09	.47	.61	.36	.72	69.39**	442	1.97
≥ 2007	19	7,581	.52	.60	.06	.57	.63	.48	.72	562.87**	1406	
Perceived usefulness												
< 2007	8	2,685	.57	.63	.11	.55	.71	.45	.81	213.05**	640	1.83
≥ 2007	7	2,514	.47	.53	.10	.46	.60	.37	.69	150.05**	430	
System quality												
< 2007	5	8,316	.58	.64	.05	.60	.68	.54	.74	32.68**	411	4.08**
≥ 2007	14	4,592	.42	.50	.07	.46	.54	.36	.64	263.37**	794	
Information quality												
< 2007	4	1,485	.57	.64	.03	.61	.67	.58	.70	.78	329	4.57**
≥ 2007	14	4,676	.38	.45	.08	.41	.49	.29	.61	343.23**	691	

(continued)

Table 4.6 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Service quality												
< 2007	3	1,103	.47	.53	.19	.31	.75	.16	.90	71.01**	184	3.25**
≥ 2007	9	2,217	.65	.73	.04	.70	.76	.65	.81	25.27**	952	
Design quality												
< 2007	5	1,512	.46	.53	.11	.43	.63	.35	.71	76.44**	307	1.11
≥ 2007	9	3,213	.35	.44	.16	.34	.54	.18	.70	577.58**	431	
Satisfaction												
< 2007	10	2,597	.46	.55	.15	.46	.64	.30	.80	519.07**	648	2.00
≥ 2007	18	7,475	.57	.69	.19	.60	.78	.38	1.00	4594.13**	1,697	
Attitudes toward website												
< 2007	8	2,116	.46	.53	.14	.43	.63	.30	.76	298.00**	492	3.38**
≥ 2007	14	7,967	.60	.68	.07	.64	.72	.56	.80	597.06**	1,284	

(continued)

Table 4.6 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Purchase + repeat purchase intentions												
< 2007	13	3,275	.43	.50	.05	.47	.53	.42	.58	108.67**	737	6.66**
≥ 2007	31	9,923	.54	.61	.05	.59	.63	.53	.69	782.55**	2,355	
Intentions to use website												
< 2007	9	9,466	.60	.71	.29	.52	.90	.23	1.00	3476.06**	898	1.58
≥ 2007	9	2,249	.46	.55	.09	.49	.61	.40	.70	145.59**	583	
Loyalty intentions												
< 2007	4	1,033	.53	.70	.33	.38	1.00	.16	1.00	342.55**	388	2.07
≥ 2007	15	5,389	.44	.53	.05	.50	.56	.45	.61	184.93**	922	

Note. *k*=number of samples; *N*=total sample size; *r*=weighted mean correlation; *r_c*= weighted mean correlation corrected for measurement unreliability; *SD*=standard deviation of *r_c*; 95% CI=lower and upper limits of 95% confidence interval; 90% CV=lower and upper limits of 90% credibility interval; *Q* statistic=homogeneity statistic; fail-safe *N*=number of studies

averaging null results that would be needed to reduce the sample-weighted mean r to .01; t - t -statistic testing for difference for mean correlations.

* $p < .05$; ** $p < .01$.

Table 4.7

Moderator Analysis by Methodological Approach

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Disposition to trust												
Survey	16	7,780	.28	.32	.03	.31	.33	.26	.38	130.94**	524	1.51
Experiment	12	1,934	.27	.30	.04	.28	.32	.22	.38	45.77**	365	
Perceived risk												
Survey	22	9,825	-.39	-.54	.15	-.60	-.48	-.79	-.29	4523.29**	1,433	1.11
Experiment	3	451	-.55	-.64	.10	-.75	-.53	-.80	-.48	9.01**	252	
Perceived security												
Survey	29	19,607	.53	.60	.09	.57	.63	.42	.78	3793.17**	2,146	4.79**
Experiment	3	455	.24	.31	.19	.09	.53	.00	.68	30.42**	94	
Perceived privacy												
Survey	10	9,617	.54	.62	.06	.58	.66	.50	.74	161.11**	780	1.27
Experiment	3	504	.56	.73	.28	.41	1.00	.18	1.00	73.49**	317	
Perceived reputation												
Survey	20	8,366	.54	.61	.05	.59	.63	.51	.71	526.69**	1,519	3.77**

(continued)

Table 4.7 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Experiment	6	901	.41	.48	.13	.38	.58	.23	.73	74.63**	322	
Perceived usefulness												
Survey	11	4,670	.56	.63	.09	.58	.68	.48	.78	354.48**	881	2.64*
Experiment	4	529	.41	.47	.14	.33	.61	.24	.70	28.32**	208	
System quality												
Survey	15	11,885	.52	.60	.04	.58	.62	.52	.68	224.41**	1,110	14.79**
Experiment	4	1,023	.23	.28	.03	.25	.31	.22	.34	1.66	112	
Information quality												
Survey	11	4,281	.51	.59	.06	.55	.63	.47	.71	172.23**	792	6.68**
Experiment	7	1,880	.28	.34	.10	.27	.41	.14	.54	105.59**	246	
Design quality												
Survey	8	3,220	.42	.51	.17	.39	.63	.23	.79	582.53**	466	1.13
Experiment	6	1,505	.35	.42	.11	.33	.51	.24	.60	89.67**	271	
Satisfaction												
Survey	25	9,598	.54	.67	.15	.61	.73	.42	.92	5156.39**	2,231	2.19*

(continued)

Table 4.7 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Experiment	3	474	.41	.47	.14	.31	.63	.24	.70	18.85**	156	
Attitudes toward website												
Survey	18	9,017	.56	.65	.08	.61	.69	.52	.78	875.57**	1,521	1.13
Experiment	4	1,066	.50	.59	.16	.43	.75	.33	.85	75.27**	288	
Purchase + repeat purchase intentions												
Survey	30	10,007	.55	.61	.04	.60	.62	.54	.68	592.75**	2,279	5.24**
Experiment	14	3,191	.43	.50	.10	.45	.55	.34	.66	381.10**	794	
Intentions to use website												
Survey	14	10,837	.53	.63	.24	.50	.76	.24	1.00	4971.93**	1,121	.30
Experiment	4	878	.54	.57	.20	.37	.77	.24	.90	91.80**	273	
Loyalty intentions												
Survey	15	5,666	.47	.59	.09	.54	.64	.44	.74	567.09**	1,081	1.93
Experiment	4	756	.42	.49	.10	.39	.59	.33	.65	21.04**	220	

Note. *k*=number of samples; *N*=total sample size; *r*=weighted mean correlation; *r_c*= weighted mean correlation corrected for measurement unreliability; *SD*=standard deviation of *r_c*; 95% CI=lower and upper limits of 95% confidence interval; 90%

CV=lower and upper limits of 90% credibility interval; Q statistic=homogeneity statistic; fail-safe N =number of studies averaging null results that would be needed to reduce the sample-weighted mean r to .01; t = t -statistic testing for difference for mean correlations.

* $p < .05$; ** $p < .01$.

correlations of perceived security ($r_c=.60$ for survey versus $r_c=.31$ for experiment), perceived reputation ($r_c=.61$ for survey versus $r_c=.41$ for experiment), perceived usefulness ($r_c=.63$ for survey versus $r_c=.47$ for experiment), system quality ($r_c=.60$ for survey versus $r_c=.28$ for experiment), information quality ($r_c=.59$ for survey versus $r_c=.34$ for experiment), satisfaction ($r_c=.67$ for survey versus $r_c=.47$ for experiment), and purchase intentions ($r_c=.61$ for survey versus $r_c=.50$ for experiment) in relation to online trust were significantly larger for survey-based studies than experiment-based studies, thus, providing support for the hypothesis.

4.4.5. Website type

Hypothesis H24 predicted larger effect sizes in studies that used familiar websites than those that used unfamiliar websites. According to Table 4.8, the hypothesis was partially supported. Seven out of fourteen relationships resulted in larger mean correlations for familiar websites compared to unfamiliar websites. These cases included disposition to trust-online trust ($r_c=.35$ for familiar versus $r_c=.30$ for unfamiliar), perceived security-online trust ($r_c=.66$ for familiar versus $r_c=.35$ for unfamiliar), system quality-online trust ($r_c=.61$ for familiar versus $r_c=.40$ for unfamiliar), information quality-online trust ($r_c=.61$ for familiar versus $r_c=.33$ for unfamiliar), design quality-online trust ($r_c=.59$ for familiar versus $r_c=.39$ for unfamiliar), and online trust-attitude towards website ($r_c=.69$ for familiar versus $r_c=.46$ for unfamiliar). Moreover, for the relationship between perceived risk and online trust, studies using unfamiliar websites produced a significantly larger mean correlation than those using familiar websites ($r_c=-.44$ for familiar versus $r_c=-.56$ for unfamiliar). Seven relationships showed that there was no significant difference in the mean correlations between familiar websites and unfamiliar

Table 4.8

Moderator Analysis by Website Type

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Disposition to trust												
Familiar	14	6,400	.31	.35	.03	.33	.37	.29	.41	81.39**	509	3.06**
Unfamiliar	10	1,735	.25	.30	.05	.27	.33	.20	.40	42.26**	304	
Perceived risk												
Familiar	13	6,503	-.39	-.44	.05	-.47	-.41	-.52	-.36	182.22**	649	2.39*
Unfamiliar	6	1,043	-.43	-.56	.17	-.70	-.42	-.84	-.28	139.77**	411	
Perceived security												
Familiar	23	10,891	.57	.66	.08	.63	.69	.50	.82	1459.19**	1,997	8.23**
Unfamiliar	7	8,459	.32	.35	.11	.27	.43	.13	.57	217.95**	254	
Perceived privacy												
Familiar	8	2,129	.53	.60	.09	.54	.66	.42	.78	123.28**	592	2.16
Unfamiliar	3	7,232	.62	.78	.20	.55	1.00	.39	1.00	89.20**	370	
Perceived reputation												
Familiar	18	7,789	.52	.59	.05	.57	.61	.49	.69	363.05**	1,297	.26

(continued)

Table 4.8 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Unfamiliar	5	859	.51	.58	.14	.46	.70	.31	.85	65.29**	350	
Perceived usefulness												
Familiar	10	4,150	.50	.57	.08	.52	.62	.44	.70	228.68**	683	.10
Unfamiliar	3	728	.54	.58	.31	.23	.93	.07	1.00	124.39**	210	
System quality												
Familiar	11	4,435	.54	.61	.06	.57	.65	.49	.73	134.65**	835	4.38**
Unfamiliar	6	8,015	.35	.40	.14	.29	.51	.13	.67	245.52**	255	
Information quality												
Familiar	10	4,382	.54	.61	.06	.57	.65	.49	.73	137.49**	759	7.07**
Unfamiliar	6	1,391	.28	.33	.10	.25	.41	.13	.53	70.65**	203.75	
Design quality												
Familiar	8	3,005	.50	.59	.08	.53	.65	.46	.72	108.39**	576	3.31**
Unfamiliar	5	1,180	.32	.39	.14	.27	.51	.16	.62	86.43**	206	
Satisfaction												
Familiar	22	8,719	.56	.69	.17	.62	.76	.41	.97	4927.14**	2,075	1.34

(continued)

Table 4.8 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Unfamiliar	2	371	.48	.52	.20	.24	.80	.19	.85	15.06**	119	
Attitude towards website												
Familiar	13	7,571	.62	.69	.08	.65	.73	.56	.82	538.19**	1,226	5.39**
Unfamiliar	7	1,864	.39	.46	.11	.38	.54	.28	.64	138.09**	355	
Purchase + repeat purchase intentions												
Familiar	27	8,931	.51	.57	.03	.56	.58	.52	.62	310.55**	1,846	1.45
Unfamiliar	14	3,654	.47	.54	.10	.49	.59	.38	.70	432.06**	884	
Intentions to use website												
Familiar	10	2,859	.51	.59	.09	.53	.65	.44	.74	208.46**	720	1.59
Unfamiliar	5	8,011	.66	.78	.37	.46	1.00	.17	1.00	1483.68**	618	
Loyalty intentions												
Familiar	13	5,005	.48	.58	.10	.53	.63	.42	.74	553.95**	912	1.57
Unfamiliar	4	756	.42	.49	.10	.39	.59	.33	.65	21.04**	220	

Note. *k*=number of samples; *N*=total sample size; *r*=weighted mean correlation; *r_c*= weighted mean correlation corrected for measurement unreliability; *SD*=standard deviation of *r_c*; 95% CI=lower and upper limits of 95% confidence interval; 90%

CV=lower and upper limits of 90% credibility interval; Q statistic=homogeneity statistic; fail-safe N =number of studies averaging null results that would be needed to reduce the sample-weighted mean r to .01; t = t -statistic testing for difference for mean correlations.

* $p < .05$; ** $p < .01$.

websites. In all, it can be generally said that using familiar websites as the methodological choice yields relatively larger effect sizes involving online trust.

4.4.6. Number of items for trust construct

As for hypothesis H25, larger mean correlations were predicted when the trust construct was captured by more items. For that purpose, two categories were created distinguishing between studies using fewer than or equal to five items to measure trust and studies that used more than five items to measure trust. As shown in Table 4.9, there were generally no significant differences in the mean correlations across the two categories. On a few occasions, such as perceived privacy ($r_c=.77$ for >5 versus $r_c=.55$ for ≤ 5) and loyalty intentions ($r_c=.70$ for >5 versus $r_c=.51$ for ≤ 5) in relation to trust, using >5 items compared to ≤ 5 items yielded stronger relationships. In other occasions, such as disposition to trust ($r_c=.28$ for >5 versus $r_c=.32$ for ≤ 5) and service quality ($r_c=.51$ for >5 versus $r_c=.73$ for ≤ 5) in relation to trust, using ≤ 5 compared to >5 yielded stronger relationships. Overall, there was no discernible pattern based on number of items in influencing the effect size magnitudes. Hence, it can be reasonably stated that hypothesis H25 is generally not supported. However, it must be noted that the number of items for capturing trust levels makes a difference in the effect sizes.

4.4.7. Mixed items for trust construct

To capture online trust, scholars have relied on two streams. In one stream, trust includes a traditional set of items by incorporating specific beliefs such as ability, benevolence, integrity, and general trustworthiness. In this research, this constitutes standard items. In the other stream, online trust is measured by using specific beliefs in addition to risk-based items to form a trust scale that is composed of mixed items. Mixed

Table 4.9

Moderator Analysis by Number of Items for Trust Construct

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Disposition to trust												
> 5 items	7	1,572	.25	.28	.03	.26	.30	.22	.34	5.82	197	3.02**
≤ 5 items	19	7,146	.28	.32	.03	.31	.33	.26	.38	160.81**	622	
Perceived risk												
> 5 items	5	1,520	-.37	-.49	.21	-.67	-.31	-.84	-.14	236.38**	286	.96
≤ 5 items	18	7,632	-.42	-.58	.18	-.66	-.50	-.88	-.28	4246.36**	1,299	
Perceived security												
> 5 items	9	3,917	.55	.62	.15	.52	.72	.33	.91	646.73**	702	1.29
≤ 5 items	21	15,149	.48	.56	.10	.52	.60	.36	.76	2676.79**	1,398	
Perceived privacy												
> 5 items	5	1,238	.65	.77	.10	.68	.86	.57	.97	46.60**	598	4.39**
≤ 5 items	8	8,883	.48	.55	.08	.49	.61	.39	.71	159.06**	518	
Perceived reputation												
> 5 items	7	2,073	.47	.55	.09	.48	.62	.37	.73	94.92**	453	.29

(continued)

Table 4.9 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
≤ 5 items	17	6,198	.50	.56	.07	.53	.59	.42	.70	425.23**	1,132	
Perceived usefulness												
> 5 items	4	2,251	.65	.70	.14	.56	.84	.47	.93	130.28**	388	2.06
≤ 5 items	10	2,648	.50	.58	.08	.53	.63	.45	.71	147.10**	701	
System quality												
> 5 items	4	1,667	.53	.58	.15	.43	.73	.29	.87	116.98**	280	1.07
≤ 5 items	15	11,241	.45	.53	.06	.50	.56	.41	.65	309.79**	922	
Information quality												
> 5 items	6	1,935	.43	.49	.09	.42	.56	.31	.67	50.07**	331	.44
≤ 5 items	12	4,226	.43	.51	.09	.46	.56	.33	.69	332.95**	699	
Service quality												
> 5 items	3	1,005	.44	.51	.16	.33	.69	.20	.82	49.33**	174	4.32**
≤ 5 items	9	2,315	.66	.73	.03	.71	.75	.67	.79	22.41**	952	
Design quality												
> 5 items	2	679	.49	.54	.03	.50	.58	.49	.59	.69	126	.97

(continued)

Table 4.9 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
≤ 5 items	11	3,670	.35	.44	.14	.36	.52	.21	.67	637.78**	527	
Satisfaction												
> 5 items	8	2,698	.52	.63	.16	.52	.74	.37	.89	451.47**	640	.26
≤ 5 items	20	7,374	.54	.65	.19	.57	.73	.34	.96	4721.95**	1,690	
Attitude towards website												
> 5 items	9	3,901	.52	.59	.12	.51	.67	.39	.79	458.87**	648	.85
≤ 5 items	11	5,156	.54	.63	.09	.58	.68	.48	.78	445.13**	881	
Purchase + repeat purchase intentions												
> 5 items	15	6,306	.51	.57	.06	.54	.60	.47	.67	383.04**	1,025	1.17
≤ 5 items	29	6,892	.51	.59	.05	.57	.61	.51	.67	627.49**	2,090	
Intentions to use website												
> 5 items	6	2,113	.53	.63	.13	.53	.73	.42	.84	156.24**	480	.34
≤ 5 items	11	9,302	.57	.67	.27	.51	.83	.23	1.00	3373.86**	981	
Loyalty intentions												
> 5 items	5	1,750	.56	.70	.23	.50	.90	.32	1.00	324.61**	485	2.96**
≤ 5 items	14	4,672	.42	.51	.06	.48	.54	.41	.61	189.12**	816	

Note. k =number of samples; N =total sample size; r =weighted mean correlation; r_c = weighted mean correlation corrected for measurement unreliability; SD=standard deviation of r_c ; 95% CI=lower and upper limits of 95% confidence interval; 90% CV=lower and upper limits of 90% credibility interval; Q statistic=homogeneity statistic; fail-safe N =number of studies averaging null results that would be needed to reduce the sample-weighted mean r to .01; t = t -statistic testing for difference for mean correlations.

* $p < .05$; ** $p < .01$.

items is a combination of positive-worded items and negative-worded items. Mixed items as a moderator variable has never been used in prior meta-analysis studies, and a research question (RQ1) was posed to determine the possible moderating effect. As Table 4.10 shows, in five relationships, using standard items produced larger correlations than using mixed items. These relationships included disposition to trust-online trust ($r_c=.30$ for standard items versus $r_c=.19$ for mixed items), system quality-online trust ($r_c=.56$ for standard items versus $r_c=.44$ for mixed items), information quality-online trust ($r_c=.52$ for standard items versus $r_c=.30$ for mixed items), service quality-online trust ($r_c=.73$ for standard items versus $r_c=.52$ for mixed items), and attitude toward website ($r_c=.64$ for standard items versus $r_c=.46$ for mixed items). However, for the perceived security-online trust relationship, using mixed items yielded larger correlations than using standard items ($r_c=.49$ for standard items versus $r_c=.74$ for mixed items). In the remaining eight relationships, there were no significant differences in the mean correlations between using standard items and mixed items.

4.5. STRUCTURAL MODEL

In the second stage of the meta-analytic procedure, the mean correlation matrix (Table 3.2) is fitted to the research model proposed in Figure 3.1. The harmonic mean ($n=470$) of all the effect sizes was used as the sample size.

4.5.1. Model fit

As depicted in Table 4.11, the results of the research model show that some of the fit indices barely met the criteria for model fit (CFI=.91, NNFI=.90, SRMR=.08), while others fell short of the recommended threshold value. The chi-square test for the model was significant, $\chi^2(24)=339.62$, $p<.01$, indicating poor fit, and the RMSEA did not

Table 4.10

Moderator Analysis by Mixed Items for Trust Construct

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Disposition to trust												
Standard	18	3,895	.26	.30	.03	.29	.31	.24	.36	60.45**	548	4.92**
Mixed	2	1,311	.15	.19	.03	.15	.23	.13	.25	.32	36	
Perceived risk												
Standard	15	4,249	-.40	-.58	.26	-.71	-.45	-1.00	-.15	4080.07**	1,082	.28
Mixed	4	1,806	-.39	-.54	.22	-.76	-.32	-.90	-.18	238.87**	260	
Perceived security												
Standard	19	14,119	.41	.49	.09	.45	.53	.31	.67	1896.65**	1,049	4.56**
Mixed	5	1,069	.66	.74	.17	.59	.89	.41	1.00	127.86**	545	
Perceived privacy												
Standard	7	8,669	.57	.64	.07	.59	.69	.50	.78	114.90**	576	.71
Mixed	4	692	.56	.70	.21	.49	.91	.29	1.00	84.47**	388	
Perceived reputation												
Standard	16	4,517	.44	.49	.05	.47	.51	.39	.59	217.19**	883	1.49

(continued)

Table 4.10 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Mixed	2	409	.46	.57	.21	.28	.86	.16	.98	16.23**	136	
Perceived usefulness												
Standard	10	3,208	.56	.62	.08	.57	.67	.49	.75	158.88**	780	.42
Mixed	4	1,691	.52	.59	.20	.39	.79	.26	.92	148.82**	288	
System quality												
Standard	16	12,012	.49	.56	.05	.54	.58	.46	.66	295.82**	1,065	2.74*
Mixed	3	896	.34	.44	.15	.27	.61	.15	.73	37.82**	143	
Information quality												
Standard	16	5,474	.45	.52	.06	.49	.55	.40	.64	325.52**	958	4.40**
Mixed	2	687	.26	.30	.13	.12	.48	.05	.55	9.65**	60	
Service quality												
Standard	9	2,656	.65	.73	.03	.71	.75	.67	.79	25.29**	952	3.91**
Mixed	4	664	.44	.52	.17	.33	.71	.19	.85	34.89**	179	
Satisfaction												
Standard	21	6,831	.50	.59	.08	.56	.62	.46	.72	939.98**	1,513	2.01

(continued)

Table 4.10 (continued)

Measures	<i>k</i>	<i>N</i>	<i>r</i>	<i>r_c</i>	<i>SD</i>	95% CI		90% CV		<i>Q</i> statistic	fail-safe <i>N</i>	<i>t</i>
						Lower	Upper	Lower	Upper			
Mixed	7	3,241	.60	.79	.21	.63	.95	.44	1.00	3804.49**	894	
Attitude towards website												
Standard	11	4,130	.54	.64	.11	.57	.71	.46	.82	500.70**	905	3.51**
Mixed	6	2,032	.39	.46	.08	.40	.52	.33	.59	70.17**	304	
Purchase + repeat purchase intentions												
Standard	36	11,071	.52	.58	.04	.57	.59	.51	.65	925.37**	2,527	.42
Mixed	5	1,704	.50	.57	.10	.48	.66	.41	.73	67.13**	341	
Intentions to use website												
Standard	12	10,062	.51	.60	.27	.45	.75	.16	1.00	4665.66**	888	.78
Mixed	6	1,653	.59	.69	.11	.60	.78	.51	.87	89.95**	565	
Loyalty intentions												
Standard	13	3,921	.43	.52	.05	.49	.55	.44	.60	130.61**	778	2.01
Mixed	5	1,784	.52	.67	.27	.43	.91	.23	1.00	457.42**	446	

Note. *k*=number of samples; *N*=total sample size; *r*=weighted mean correlation; *r_c*= weighted mean correlation corrected for measurement unreliability; *SD*=standard deviation of *r_c*; 95% CI=lower and upper limits of 95% confidence interval; 90%

CV=lower and upper limits of 90% credibility interval; Q statistic=homogeneity statistic; fail-safe N =number of studies averaging null results that would be needed to reduce the sample-weighted mean r to .01; t = t -statistic testing for difference for mean correlations.

* $p < .05$; ** $p < .01$.

Table 4.11

Model Fit Indices for Competing Directions

Model fit indices	Recommended value	Research model	PU→ trust	Satisfaction→ trust	Perceived risk→ trust	Trust→ PEOU
χ^2		339.62**	389.44**	411.89**	357.72**	482.61**
CFI	.90	.91	.89	.88	.90	.86
NNFI	.90	.90	.88	.87	.90	.86
SRMR	.08	.07	.09	.10	.08	.11
RMSEA	.10	.17	.18	.19	.17	.19
AIC		423.62	473.44	495.89	441.72	558.61
BIC		598.03	647.86	670.30	616.13	716.42

Note. CFI=comparative fit index; NNFI=non-normed fit index; SRMR=standardized root-mean square residual; RMSEA=root mean squared error of approximation; AIC=Akaike's Information Criterion; BIC=Bayesian Information Criterion.

* $p < .05$; ** $p < .01$.

indicate a good model fit (RMSEA=.17). Despite the borderline fit of the data to the research model, the individual relationships can provide meaningful results.

In the research model, online trust mapped into PU, satisfaction, and perceived risk. However, scholars have offered competing models where PU, satisfaction, and perceived risk were antecedents to online trust. Hence, the research model is compared to alternative models by adjusting the paths. The direct effect of PU on online trust, the direct effect of satisfaction on online trust, the direct effect of perceived risk on online trust, and the direct effect of online trust on PEOU are evaluated. Table 4.11 shows that each alternative model can be ruled out because the fit was worse than the proposed model. For example, the alternative models' fit indices did not tend to meet the recommended threshold values, and AICs and BICs increased for the alternative models. In sum, allowing online trust to be an antecedent to PU, satisfaction, and perceived risk, and PEOU to be antecedent to online trust is more desirable using an empirically-driven approach. Structural relationships are without a doubt important and ubiquitous in explaining acceptance of e-commerce. A primary contribution of this research is that alternative models involving online trust were tested via meta-analytic structural equation modeling. It is hoped that these results resolve some of the inconsistent arguments regarding the directions involving the antecedent and consequence of online trust.

4.5.2. Hypotheses testing

Table 4.12 shows the results of the research model (Figure 3.1) based on maximum likelihood estimation. Figure 4.1 provides a graphical display of the path

Table 4.12

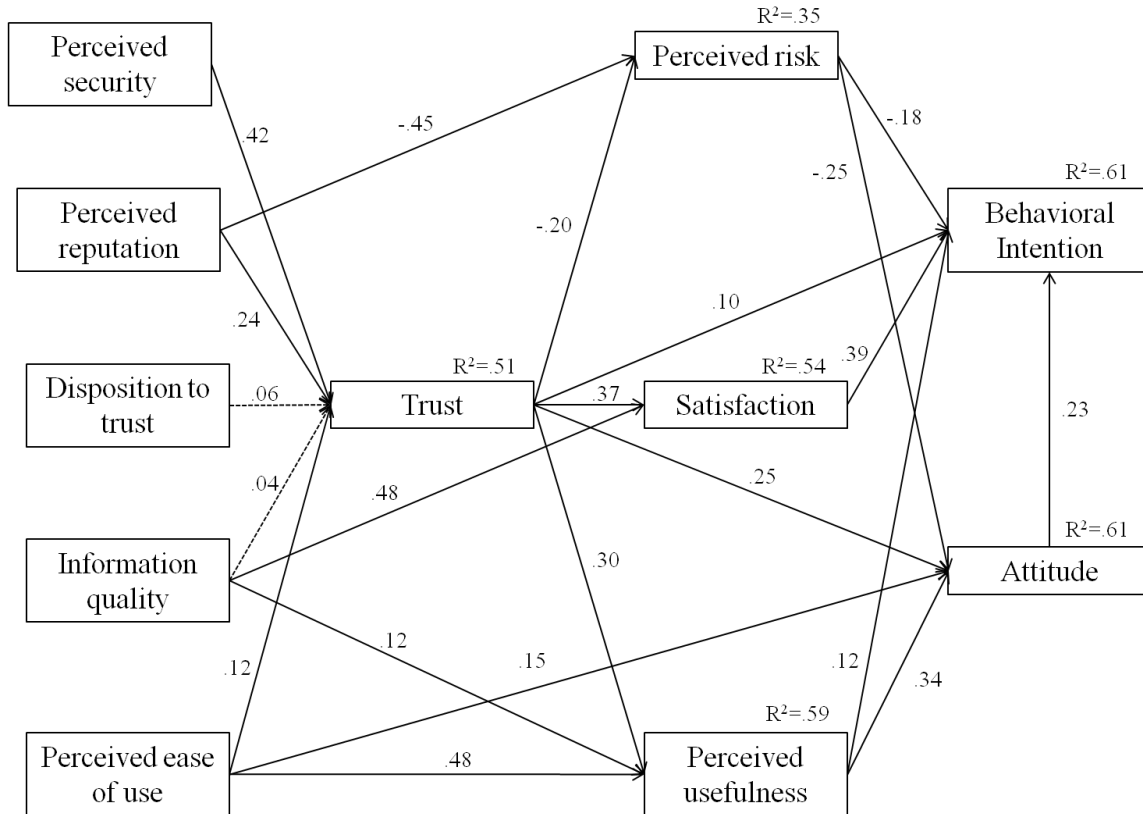
Research Model Hypotheses Testing Results

Hypotheses	Path	β	Results
H26	Perceived security→Trust	.42**	Supported
H27	Perceived reputation→Trust	.24**	Supported
H28	Perceived reputation→Perceived risk	-.45**	Supported
H29	Disposition to trust→Trust	.06	Not supported
H30	Information quality→Trust	.04	Not supported
H31	Information quality→Satisfaction	.48**	Supported
H32	Information quality→PU	.12**	Supported
H33	PEOU→Trust	.12**	Supported
H34	PEOU→Attitude	.15**	Supported
H35	PEOU→PU	.48**	Supported
H36	Trust→Perceived risk	-.20**	Supported
H37	Trust→Behavioral intention	.10*	Supported
H38	Trust→Satisfaction	.37**	Supported
H39	Trust→Attitude	.25**	Supported
H40	Trust→PU	.30**	Supported
H41	Perceived risk→Behavioral intention	-.18**	Supported
H42	Perceived risk→Attitude	-.25**	Supported
H43	Satisfaction→Behavioral intention	.39**	Supported
H44	PU→Behavioral intention	.12**	Supported
H45	PU→Attitude	.34**	Supported
H46	Attitude→Behavioral intention	.23**	Supported

* $p < .05$; ** $p < .01$.

Figure 4.1

Path Coefficients of the Research Model



Note. Solid-line indicates significant path at .05 level; Dotted-line indicates non-significant path.

coefficients. The results indicated that perceived security had a significant direct effect on online trust ($\beta=.42, p<.01$), supporting H26. Perceived reputation had a positive effect on online trust ($\beta=.24, p<.01$) and a negative effect on perceived risk ($\beta=-.45, p<.01$), supporting H27 and H28. However, H29 and H30 were not supported as disposition to trust ($\beta=.06, p>.05$) and information quality ($\beta=.04, p>.05$) did not exert a significant effect on online trust. Information quality, rather, led to higher levels of satisfaction ($\beta=.48, p<.01$) and PU ($\beta=.12, p<.01$), supporting H31 and H32. PEOU had a direct effect on online trust ($\beta=.12, p<.01$), attitude ($\beta=.15, p<.01$), and PU ($\beta=.48, p<.01$), supporting H33, H34, and H35.

Online trust had a significant effect on perceived risk ($\beta=-.20, p<.01$), behavioral intention ($\beta=.10, p<.05$), satisfaction ($\beta=.37, p<.01$), attitude ($\beta=.25, p<.01$), and PU ($\beta=.30, p<.01$), supporting H36, H37, H38, H39, and H40.

Among the relationships excluding online trust, perceived risk had a negative effect on behavioral intention ($\beta=-.18, p<.01$) and attitude ($\beta=-.25, p<.01$). Satisfaction ($\beta=.39, p<.01$), PU ($\beta=.12, p<.01$), and attitude ($\beta=.23, p<.01$) had a positive effect on behavioral intentions. PU exerted a positive effect on attitude ($\beta=.34, p<.01$). It must be noted that removing the two non-significant paths from the model did not improve the model fit indices.

Table 4.13 shows the standardized direct effects, indirect effects, and total effects associated with each of the eleven constructs. The path to behavioral intention is most strongly determined by online trust and satisfaction with a total effect of .39. A noticeable finding is that satisfaction exerted its effect on behavioral intention directly (direct effect=.39), whereas trust exerted its effect on behavioral intention mainly by an indirect effect through perceived risk, satisfaction, PU, and attitude (direct effect=.10, indirect

Table 4.13

Direct, Indirect, and Total Effects of the Research Model

Outcome	Determinant	Standardized estimates		
		Direct	Indirect	Total
Behavioral intention $R^2=.61$	Trust	.10	.29	.39
	Attitude	.23	-	.23
	PU	.12	.07	.19
	Satisfaction	.39	-	.39
	Perceived risk	-.18	-.05	-.23
	Disposition to trust	-	.02	.02
	Information quality	-	.22	.22
	Perceived security	-	.16	.16
	Perceived reputation	-	.20	.20
	PEOU	-	.17	.17
Attitude $R^2=.61$	Trust	.25	.16	.41
	PU	.34	-	.34
	Perceived risk	-.25	-	-.25
	Disposition to trust	-	.02	.02
	Information quality	-	.06	.06
	Perceived security	-	.17	.17
	Perceived reputation	-	.21	.21
	PEOU	.14	.22	.36
Satisfaction $R^2=.54$	Trust	.37	-	.37
	Disposition to trust		.02	.02
	Information quality	.48	.01	.49
	Perceived security	-	.15	.15
	Perceived reputation	-	.09	.09

(continued)

Table 4.13 (continued)

Outcome	Determinant	Standardized estimates		
		Direct	Indirect	Total
Perceived risk $R^2=.35$	PEOU	-	.04	.04
	Trust	-.20	-	-.20
	Disposition to trust	-	-.01	-.01
	Information quality	-	-.01	-.01
	Perceived security	-	-.08	-.08
	Perceived reputation	-.45	-.05	-.50
	PEOU	-	-.02	-.02
PU $R^2=.59$	Trust	.30	-	.30
	Disposition to trust	-	.02	.02
	Information quality	.12	.01	.13
	Perceived security	-	.13	.13
	Perceived reputation	-	.07	.07
	PEOU	.48	.04	.52
Trust $R^2=.51$	Disposition to trust	.06	-	.06
	Information quality	.04	-	.04
	Perceived security	.42	-	.42
	Perceived reputation	.24	-	.24
	PEOU	.12	-	.12

effect=.29). Information quality (total effect=.22), perceived security (total effect=.16), perceived reputation (total effect=.20), and PEOU (total effect=.17) had a modest indirect effect on behavioral intention through the intervening variables. Disposition to trust had close to a null effect on behavioral intention (total effect=.02). Together, these determinants accounted for approximately 61% of the variance in behavioral intention.

For attitude, the most prominent determinant was online trust with a total effect of .41. This is followed by PEOU, PU, perceived risk, perceived reputation, and perceived security in terms of strength. PU (total effect=.34) and perceived risk (total effect=-.25) had an effect on attitude directly. On the other hand, perceived reputation (total effect=.21) and perceived security (total effect=.17) had an effect on attitude indirectly. The path from PEOU to attitude contained a direct effect of .14 and indirect effect of .22. Disposition to trust (total effect=.02) and information quality (total effect=.06) had a small effects on attitude. The variance explained for attitude by the exogenous variables was $R^2=.61$.

For satisfaction, the strongest determinant was information quality, with a total effect of .49, which can be mostly attributed to the direct effect. This is followed by online trust with a direct effect of .37 and perceived security with an indirect effect of .15 on satisfaction. Disposition to trust (total effect=.02), perceived reputation (total effect=.09), and PEOU (total effect=.04) had little effect on satisfaction. Together, these exogenous variables contributed to 54% of the variance in satisfaction.

For perceived risk, perceived reputation had the strongest effect, with a direct negative effect of -.45 and indirect negative effect of -.05. Online trust had a direct negative effect of -.20 on perceived risk. Disposition to trust (total effect=-.01), information quality (total effect=-.01), perceived security (total effect=-.08), and PEOU

(total effect=-.02) showed minimal effect on perceived risk. This indicates that perceived reputation and online trust explained most of the variance in perceived risk ($R^2=.35$).

For PU, the most dominant determinant was PEOU with a total effect of .52. This is followed by online trust, information quality, and perceived security with a total effect of .30, .13, and .13, respectively. Disposition to trust (total effect=.02) and perceived reputation (total effect=.07) had small effects on PU. Together, the exogenous variables explained 59% of the variance in PU.

For online trust, only direct effects are allowed according to the model. Among the antecedents of online trust, perceived security exerted the strongest effect (total effect=.42). This is followed by modest effects of perceived reputation (total effect=.24) and PEOU (total effect=.12), and small effects of disposition to trust (total effect=.06) and information quality (total effect=.04). These exogenous variables contributed to 51% of the variance in online trust.

Chapter 5: Discussion and Conclusions

5.1. SUMMARY OF FINDINGS

The goal of this research was to conduct a meta-analytic review of 15 years of research devoted to the antecedents and consequences of online trust. After thoroughly scanning 231 papers, 120 were included in the analysis. Among the 120, 97 were journal articles, 14 were conference articles, and 9 were dissertations. In total, the data included 150 independent studies that provided correlations between online trust and 55 conceptually distinct constructs. Considerable heterogeneity was found across studies for nearly all of the antecedent and outcome variables, and the moderator tests provided some guidance in explaining some of the heterogeneity. A meta-analytic structural equation model was created to estimate average path coefficients across a body of studies. In brief, this research addresses several issues and inconsistencies across studies on online trust and its related constructs, resolving many unanswered questions and posing new issues that deserve future research attention.

5.1.1. Meta-analysis of main effects

A conceptual analysis of theoretical models and hypotheses underpinning studies on antecedents and consequences of online trust highlighted five distinct research categories of researched variables, namely, (1) individual differences, (2) risk-based variables, (3) vendor-specific variables, (4) website-related variables, and (5) consumer outcomes. In the next subsection, each area is discussed. The interpretation of relationships is limited to those with at least five effect sizes because they provide a higher likelihood of detecting population effects.

5.1.1.1. Individual differences

In the individual differences area, only disposition to trust was commonly studied as an antecedent to online trust. Disposition to trust had a moderately positive relationship with online trust, confirming previous findings (e.g., Gefen et al., 2003b). McKnight et al. (1998) noted that disposition to trust highly matters in the formation of initial trust for potential customers due to the lack of specific trust-establishing cues and familiarity with the e-vendor. However, disposition to trust becomes less important in building trust once consumers have experience with an e-vendor (Gefen et al. 2003b). The majority of the studies included in this meta-analysis have relied on using familiar websites; hence, it is not surprising that disposition to trust had a moderate relationship with online trust.

5.1.1.2. Risk-based variables

Risk-based variables can be ordered in the following way in terms of the strength of the relationship with online trust: (1) perceived privacy, (2) perceived security, (3) perceived risk, (4) privacy concern, and (5) third-party seal. Perceived privacy, perceived security, and perceived risk were strongly related to online trust. Privacy concern was moderately related to online trust. The relationship between third-party seals and online trust was small. Comparable magnitudes for the relationships between risk-based variables and online trust were commonly found in the literature (Bart et al., 2005; Hsu, 2008; San-Martín & Camarero, 2012; Teo & Liu, 2007). A notable finding is that perceived privacy emerged as the second-strongest determining factor in relation to online trust after service quality. This echoes current research findings in that researchers now regard privacy protection to be of utmost importance for e-commerce use (Antoniou & Batten, 2011).

In retrospect, the large effect sizes of perceived privacy-online trust, perceived security-online trust and online trust-perceived risk make sense because of the uncertainties involved in social exchange relationships (Blau, 1964). When an e-commerce website fulfills privacy and security promises, consumers' immediate response is to exhibit trust in a website (Casaló et al., 2007). Otherwise, when an e-commerce website fails to meet these expectations, perceived risk inevitably arises, and it is not always possible to guarantee reciprocal trust. Based on these results, what needs to be taken into account is that building trust depends largely on which e-vendors offer psychological attachments such as perceived privacy, perceived security, and perceived risk, and to a lesser extent on actions such as website-layered privacy policies and third-party seals. This implies that privacy- and security-related subjective experiences are more likely to affect consumers' reactions than objective experiences, especially in terms of individual beliefs like online trust. In essence, without meeting privacy concerns and security issues, consumers will not trust an e-vendor, which in turn influences their decision to not visit or shop at a particular website.

5.1.1.3. Vendor-specific variables

For vendor-specific variables, a large and positive mean correlation was found for the perceived reputation-online trust relationship, whereas moderate and positive mean correlations were found for the perceived size-online trust, familiarity-online trust, and positive word-of-mouth-online trust relationships. Despite perceived size, familiarity, and word-of-mouth accounting for substantial variance in online trust in selected studies (Gefen, 2000; Jarvenpaa et al., 2000; Kuan & Bock, 2007), and the importance of capturing these three antecedents of online trust (Beldad et al., 2010; Urban, Amyx, &

Lorenzon, 2009), the collective findings indicate that they are not as dominant as the documented evidence suggests in terms of their magnitudes.

In contrast, the results suggest that placing greater emphasis on modeling perceived reputation among the vendor-specific variables yields an ample effect on online trust. This finding supports the positions advanced by Cialdini (1993) and Doney and Cannon (1997), among others, who contend that reputation provides an indication that consumers acknowledge vendors' intangible assets, such as resources, efforts, and customer relationships that required long-term investments. At the same time, e-vendors would want to ensure that every facet of their online presence is designed to create and maintain consumers' beliefs that they would not act opportunistically (Reichheld & Schefter, 2000). Therefore, in accordance with the literature, the results reveal that reputation is a powerful predictor of online trust.

5.1.1.4. Website-related variables

The meta-analysis results indicated that online trust is strongly related to numerous website-related variables. Among all the factors mapping into online trust, service quality possessed the strongest relationship. Results of this study bolster the idea that excellence in service is a core element for achieving success in the highly competitive e-commerce market (Carrillat, Jaramillo, & Mulki, 2009). This study also found large mean correlations for system quality, information quality, usability, PU, general website quality, and PEOU. This suggests that the main factors in the DeLone and McLean Information Systems Success model (Petter & McLean, 2009), namely, system quality, information quality, and service quality, are not only important determinants for satisfaction and behavioral intentions, but also play equally vital roles in developing online trust.

For the Technology Acceptance Model constructs, despite the fact that PU and PEOU both mapped strongly into online trust, PU was considered to be more important than PEOU, aligning with past research (Pavlou, 2003). Consumers are likely to trust an e-vendor if they believe that using the website increases their performance and efficiency, and the visiting or buying is free of effort (Gefen & Straub, 2003). However, the results imply that, in establishing online trust, consumers will not tolerate the lack of needed functionality, but they will be able to compensate for the difficulties of using a website to a certain extent as long as the functions provide benefits to them.

5.1.1.5. Consumer outcomes

The results indicated that consumer outcome variables were strongly related to online trust. Mean correlations exceeding .60 were observed for satisfaction, perceived value, and attitude in relation to online trust. Among the wide range of behavioral intention variables, the strongest correlated outcome variables exceeding the .50 threshold mark were intentions to use the website, followed by purchase intentions, repeat purchase intentions, affective commitment, and loyalty. Perhaps due to privacy concerns, the relationship between online trust and intentions to provide personal information was tempered and resulted in a moderately positive relationship with online trust.

Described as "two stepping stones" (Kim, Ferrin, & Rao, 2009), trust and satisfaction are indeed closely tied to each other, albeit being different variables. Selnes (1998) stated consumers' decisions regarding if a relationship should be established, if a relationship should be continued, and if a relationship should be enhanced is triggered by the balancing act of trust and satisfaction shown to the seller. Rooted in confirmation/disconfirmation theory (Oliver, 1980; Sing & Sirdeshmukh, 2000), trust and

satisfaction depend on the relationship between consumers' initial expectations and the results obtained. In this research context, if a consumer feels that the e-vendor delivered the required levels of integrity, benevolence, and competence, then he/she will feel satisfied. In sum, it is not surprising that a very strong relationship was identified between online trust and satisfaction.

Caution must be taken in interpreting the behavioral intention variables (i.e., purchase intentions, loyalty, intentions to use website, repeat purchase intentions) since this study directly adopted the outcome variable term from the primary research article. Although behavioral intention variables used different items to represent the construct in many cases, in some cases, the actual items overlapped across the different variables. For instance, the item, "I would like to purchase from this website" could be part of different behavioral intention variables. For the combined set of these behavioral intention variables, the relationship was strong ($r_c=.59$, $N=32,169$) with online trust. No matter how behavioral intention is defined, online trust is the prime mechanism consumers would utilize to reduce the complexities of the transaction settings, and thus influence their decision to use particular e-vendors (Becerra & Korgaonkar, 2011). Results of this study reinforce the notion that online trust is a necessary and powerful element in the transaction decision-making process.

5.1.2. Potential moderators

Since a substantial amount of heterogeneity was found for the effect sizes, moderator tests were conducted to explain some of the heterogeneity. The following moderator variables were coded: (1) student sample, (2) sample culture, (3) publication year, (4) methodological approach, (5) website type, (6) number of items for trust

construct, and (7) mixed items for trust construct. In the next subsections, moderator test results are discussed.

5.1.2.1. Sample type

Results indicated that using student samples affected the relationships involving online trust. In general, the relationship between online and its related constructs were stronger for consumers than students. This pattern was displayed in terms of disposition to trust, perceived security, perceived reputation, satisfaction, purchase intentions, and attitude in relation to online trust. This contradicts prior meta-analysis studies, which report that student-based findings display larger effect sizes (Brown & Stayman, 1992; Szymanski & Henard, 2001). However, the results corroborate the findings of Pavlou (2003) in that when the author modeled trust in e-commerce, he showed that the standardized effects of factors mapping into trust were stronger when the subjects were consumers compared to students. Based on the statistics that students browse more websites to find products/services and are more wary of security and privacy concerns than consumers (Ahuja, Gupta, & Raman, 2003), students will not likely stick with one website, implying that they show less trust to avoid the opportunistic behaviors undertaken by specific e-vendors. That likely explains why the online trust-perceived risk relationship was significantly stronger among students than among consumers. These findings, in brief, suggest that the student-consumer biases outlined in Peterson (2001) are relevant in the online trust context.

5.1.2.2. Sample culture

The moderating test results showed that mean correlation differences caused by sample culture were significant in only four relationships, while the remaining eleven

relationships failed to show significance. Hence, the general impact of culture on the relationship between online trust and its related construct is not supported. These results are congruent with the meta-analysis results of Zhang, Zhu, and Liu (2012), who found that culture was a non-relevant factor in mobile commerce settings. Schepers and Wetzels (2007) also discovered that it was hard to find discernible patterns for effect size differences based on cultural distinctions in information systems settings. However, it is clear from the results that disposition to trust, design quality, purchase intentions, and attitude in relation to online trust are of greater importance in collectivistic cultures rather than in individualistic cultures. Future research should attempt to investigate why statistical significance was found in the four pairs of relationships.

5.1.2.3. Publication year

Publication year was found to partially moderate some of the relationships involving online trust. Mean correlations of online trust with perceived privacy, system quality, and information quality were significantly larger in studies conducted prior to 2007 (<2007) than studies conducted after 2007 (≥ 2007). On the other hand, perceived security, service quality, attitude, and purchase intentions in relation to online trust were significantly larger in studies conducted after 2007 than studies conducted prior to 2007. The results showed that the magnitudes have increased over time for the two outcome variables, attitude and purchase intentions. It can be implied that years of advancement in Internet technology and improvements in e-commerce platforms, especially after experiencing the dot.com bubble and various market crashes, have gradually increased individuals' trust toward well-performing e-vendors, making it more likely for them to form positive attitudinal and behavioral reactions.

Gilboa et al. (2008) offered a different explanation for the fluctuation in effect sizes across time, and it was that studies over the years have become more rigorous methodologically (i.e., reducing common method variance), which could have influenced past linkages involving online trust. What remains elusive is why perceived privacy, system quality, and information quality in relation to online trust yielded smaller correlations for studies conducted after 2007. It can only be conjectured that fewer studies ($k < 6$) were conducted prior to 2007 and that the effect sizes were inflated.

5.1.2.4. Methodological approach

Methodological approach appeared to have systematic moderating effects on observed effect sizes. The online trust effects were greater in general in studies that used surveys than in studies that used experiments. These patterns were observed for the relationships involving trust with perceived security, perceived reputation, perceived usefulness, system quality, information quality, and purchase intentions. Five other relationships did not produce significant differences. This result corroborates Grabe, Ward, & Hyde (2008) and disputes Holstrom's (2004) prior moderator tests that involved methodological approaches. Although experiments are able to offer more conclusive evidence - compared to surveys - with respect to trust effects by controlling for other factors, they include a level of artificiality that limits their external validity (Grabe et al., 2008). Studies in this meta-analysis that employed experiments tended to rely on created/unknown websites that were not realistic. Naturally, these websites would contain website features (i.e., perceived security, information quality) that are relatively underdeveloped, making it difficult to place trust in the website. Therefore, it is not surprising that trust levels would be lower in these circumstances.

5.1.2.5. Website type

The website type moderating test involved distinguishing between studies that utilized familiar websites versus unfamiliar websites. The results indicated that website type partially moderates the effect sizes. The obtained mean correlations were larger in magnitude for six of the pairwise relationships involving online trust, including disposition to trust, perceived security, system quality, information quality, design quality, and attitude towards website. Moreover, it was detected that the perceived risk-online trust relationship was stronger when study conditions involved unfamiliar websites. According to the literature, consumers return to familiar websites because of favorable experiences, and when it is more likely that the e-vendor would honor its obligations in the future (Kim et al., 2008). Consequently, to the extent that a consumer is familiar with the website and its various features, there is a higher probability of obtaining a sense of trustworthiness. Furthermore, a familiar website would reduce uncertainty and complexity because a consumer already expects and understands the interaction process from past experience (Gefen, 2000; Luhmann, 1979). Therefore, using a familiar website alleviates consumers' perceived risk and builds online trust.

5.1.2.6. Number of items for trust construct

In general, there were no significant differences based on the number of items for the trust construct. However, the moderator test demonstrated that number of items can make a difference for the trust effects. It was shown that when using more than five items (>5) compared to using five items or fewer (≤ 5), the relationships were stronger when online trust mapped into perceived privacy and loyalty. On the other hand, when using ≤ 5 items compared to using >5 items, the relationships were stronger when online trust mapped into disposition to trust and service quality. The mean correlations for the

pairwise relationships varied to a statistically significant degree depending on the number of items, a conclusion also drawn by Szymanski and Henard (2001). According to the literature on the stipulations of using more versus fewer items, more items increase reliability, convergent validity, and discriminant validity, which allows specificity to conclusions (Brown & Peterson, 1993; Yi, 1990), whereas fewer items eliminate item redundancy (Gosling, Rentfrow, & Swann, 2003; Robins, Hendin, & Trzesniewski, 2001). In sum, researchers should look at the tradeoffs between longer- and shorter-scales when capturing trust.

5.1.2.7. Mixed items for trust construct

The use of mixed items for trust construct produced differential effects on some of the pairwise relationships. According to the results, using standard items compared to using mixed items yielded larger mean correlations when online trust was determined to be related to disposition to trust, system quality, information quality, service quality, and attitude. Yet, a larger mean correlation was uncovered for the perceived security-online trust relationship when mixed items were used.

The matter of whether to rely on mixed items is an ongoing debate. Proponents argue that using mixed items eliminates the possibility of response bias such as acquiescence (Churchill, 1979). Critics state that the mixture of items muddles the scale's internal consistency and dimensionality (Falthzik & Jolson, 1974). Moreover, Wong, Rindfleisch, and Burroughs (2003) showed that mixed items lose their intentional meaning when translated into another language. However, most scholars appear to be under the assumption that mixed items are not problematic in general (Wong et al., 2003). The results illustrated that using mixed items compared to standard items can produce different outcomes, and great caution must be taken to avoid their measurement

problems. Based on the two moderators, including "number of items for trust construct" and "mixed items for trust construct," the findings suggest that choosing items for the trust construct can affect pairwise relationships. Therefore, despite past efforts in identifying the best measures of trust (Bhattacharjee, 2002; Delgado-Ballester, Munuera-Aleman, & Yague-Guillen, 2003; McKnight et al., 2002), the process needs extra rounds of refinement for the appropriate context and pursuing this line of inquiry in the future is encouraged.

5.1.3. Structural model

The results of the meta-analytic structural equation modeling analysis support the postulated research model. Tests were conducted assessing the fit of the research model to four alternative models with slightly different paths. Based on model fit indices, paths involving online trust→PU, online trust→satisfaction, online trust→perceive risk, and PEOU→online trust yielded better fits than PU→online trust, satisfaction→online trust, perceived risk→online trust, and online trust→PEOU. These issues regarding path directions have been frequently argued over (Chang & Chen, 2008; Pavlou, 2003). The structural model results supports prevalent theory in that online trust is positioned as an antecedent to PU and perceived risk and an consequence to PEOU (see Table 4.11). Although satisfaction is commonly documented to be an antecedent to online trust (17 antecedents and 11 consequences in the main effect analysis), the data-driven approach favors satisfaction as a consequence of online trust.

According to the results, perceived security, perceived reputation, and PEOU had a significant direct effect on online trust, explaining 51% of the variance. Disposition to trust did not have a significant effect on trust, which disagrees with prior meta-analysis studies on trust (Colquitt, Scott, & LePine, 2007). Interestingly, information quality did

not have a substantial relationship with online trust; rather, it had a significant direct effect on satisfaction and perceived usefulness. This shows that when information quality is mapped into several meaningful and relevant outcomes, the importance of online trust lessens. Nevertheless, the results are consistent with various review articles in that online trust is influenced by a variety of sources (e.g., Beldad et al., 2010).

An interesting finding is that the direct effect of online trust on behavioral intentions was much weaker than that found in all previous empirical investigations (e.g., Bock, Lee, Kuan, & Kim, 2012). The analysis based on the aggregated effects suggests that online trust has a direct effect on behavioral intention, and more substantially, it has an indirect effect on behavioral intention, mediated by perceived risk, satisfaction, PU, and attitude. This indicates that, although the presence of a direct effect of online trust on behavioral intention is suggested, the path mainly involves an indirect effect in which various mechanisms work jointly. Together, online trust, perceived risk, satisfaction, PU, and attitude accounted for 61% of the variance in behavioral intention.

From this analysis, attitude plays a prominent role in the e-commerce transaction environment. Online trust, PEOU, PU, and perceived risk had a significant direct effect on attitude, accounting for 61% of variance in attitude. Although attitude was a core component of the Theory of Reasoned Action (Fishbein & Ajzen, 1975), later studies have dropped the attitude construct due to its weak role as a mediator between various external variables and behavioral intention (Venkatesh & Davis, 2000). This set of findings is notable in that empirical scholars modeling online trust often focus on behavioral consequences of trust and are interested in the direct "bottom line" of trust. For example, extensive application of the Technology Acceptance Model (Davis, 1989) revealed that attitude played a modest role, as long as the system is perceived to be easy

and useful. However, when the use of technology is voluntary, such as using e-vendor websites, attitude is shown to be a significant predictor of behavioral intention (Pavlou & Fygenson, 2006). Moreover, Mathieson (1991) suggested that removing attitude does not significantly lower the predicted capability in information systems-related models. The research model also shows that the option of including attitude should not be overlooked, especially since trust has a stronger direct effect on attitude than on behavioral intention.

5.2. PRACTICAL CONTRIBUTIONS

The high costs associated with increasing a client base are forcing e-vendors to seek ways to acquire and retain customers. Trust has been identified as a decisive factor in achieving these goals. One benefit of this meta-analysis for managers is realizing what factors should be the focus of their attention when designing, implementing, and managing strategies to increase online trust. Above all, this meta-analysis shows that service quality and perceived privacy are the most critical factors in generating online trust. Therefore, the focus should be on providing a consumer experience that ensures excellent services and privacy protections, which increases the level of consumer trust. Furthermore, a recommendation would be to undertake a detailed analysis of the needs of consumers, with the goal of building an adequate strategy and assigning the resources to meet the objectives of satisfying service quality and privacy protection. For that matter, e-vendors should attempt to survey consumers on service quality and perceived privacy to gain a better understanding of their needs.

In light of the risk-based variables results, continuing research is needed to find practical ways to reduce perceived risk and privacy concerns, and increase perceived security and perceived privacy. For instance, including accreditation by reputable institutions and participation in privacy certification programs can be a beneficial way to

alleviate concerns (Head & Hassanein, 2002). Above all, privacy statements need to be easy to comprehend and noticeable. Featherman and Pavlou (2003) suggested a succinct and well-presented privacy policy such as "we will never sell your private information." From the main effects analysis, the inclusion of third-party seals, such as TrustE, BBBOnline, and WebTrust, had only a minor relationship with online trust. To attain a higher level of trust, educating the general public on third-party seals needs to be carried out. In sum, e-vendors should devote significant attention to developing safety standards and systems equipped with features to ensure that account information is secured and the transactions process operates without setbacks, as these factors can enhance online trust.

Among the vendor-specific variables, the standout antecedent of online trust was perceived reputation, which had a strong relationship with online trust. When a website has a professional look, functions properly, and is reliable in terms of security, its perceived reputation will automatically increase through positive word-of-mouth (Litvin, Goldsmith, & Pan, 2008). In addition, even if they are less known, e-vendors may increase their perceived reputation through advertising and publicity (Teo & Liu, 2007). Finally, managers can improve the e-vendor's image by establishing relationships with institutions that work on environmental rights or human rights (Casaló, Flavián, & Guinalú, 2011), or donate money to charity as a sign of social responsibility (Dean, 2003).

Based on the findings generated from the website-related variables analysis, managers should also emphasize improving the quality of the website. For example, the website should increase comprehension of the contents and tasks that are required and offer a more professional atmosphere to consumers. Given the theoretical and empirical support for integrating trust with TAM constructs -- PU and PEOU -- the usefulness and

the easiness of the interaction process matters in conjunction with online trust. Pavlou (2003) noted that online trust allows consumers to become vulnerable to the e-vendor and it reduces the consumers' need to monitor every detail of the e-vendor's actions, making the online transaction useful and free of effort. Because of the lack of face-to-face contact in the e-commerce space, only e-vendors that design websites matching consumer needs and wants will survive and prosper.

These managerial suggestions apply equally to e-vendors in product- and service-categories. E-vendors should employ several trust-building mechanisms by fostering positive satisfaction, attitude, and behavioral intention and reduce the perceived risk to ultimately achieve the goal of actual transaction behavior.

Finally, the moderator analyses suggested that the coded study characteristics impact the different relationships involving online trust. Hence, managers must consider how they may enhance trust and its related factors by considering the different conditions, and plan and develop strategies accordingly.

5.3. LIMITATIONS AND FUTURE RESEARCH

This meta-analysis is not without limitations. First, as in any meta-analysis, there is the possible bias of incorporating studies with significant rather than null findings. If bias does exist in relationships involving online trust, then the findings may potentially overstate the true relationships. To overcome these issues, a substantial number of conference articles and unpublished doctoral dissertations were included to mitigate potential bias. Also, the fail-safe *N*-statistics indicate that, in general, publication bias is not likely to influence the robust main effects findings. The overall effects would still be significant even if the analysis had included a substantial number of null-result studies, should they exist.

Second, several studies were excluded because they did not report the zero-order correlation matrices or did not offer statistics that could be converted into correlations. This is a frequently cited problem in meta-analysis, and Hunter & Schmidt (2004) strongly urged that correlation matrices should be included in primary research articles.

Third, in the main effects analysis, effect sizes with small k s should be interpreted with caution and strong conclusions should not be drawn. Similarly, in the moderator analysis, many of the estimated relationships involved a small number of studies ($k=2$ or 3), limiting the power to reject the null hypothesis and posing a threat to the validity of the reported results (Hunter & Schmidt, 2004). Therefore, interpreting the moderator analysis results warrants caution.

Fourth, there is cause for concern given the data used for the meta-analytic structural equation modeling. Specifically, the model fitted a correlation matrix instead of a covariance matrix. Many scholars have cautioned about replacing the covariance matrix with the correlation matrix in primary research applications of structural equation modeling (Cheung & Chan, 2005). Particularly, the chi-square statistics and the standard errors of parameter estimation may be imprecise.

Fifth, a major problem associated with meta-analytic structural equation modeling that is still not resolved is the issue of determining the appropriate sample size. Using the harmonic mean, as in this analysis, remains an ad hoc decision. Since no statistical theory exists to determine the sample size, the predominant choice is to use the harmonic mean (Bamberg & Möser, 2007), but researchers have also used the arithmetic mean (Verhaeghen & Salthouse, 1997), median (Brown & Peterson, 1993), or the total sample size (Tett & Meyer, 1993). The selection of the sample size can result in different inferences, such as the Type I error of the chi-square test statistics, the goodness-of-fit

indices, the statistical power, and the standard errors of parameter estimates (Cheung & Chan, 2005).

Sixth, this review is hampered by the deployed constructs used across the empirical studies. A variety of constructs have been examined in small subsets in different studies. Constructs appeared to have been defined by scholars working in particular fields, for example, marketing and information systems, without specification of cross-domain mechanisms. Hence, there is some ambiguity as to how the items should be captured for online trust. For instance, there was considerable conceptual and item-content overlap across measures. In some occasions, the items for trust were used as a component for service quality, or vice versa. Sometimes, online trust was measured by facet (i.e., ability, benevolence, integrity) instead of a composite measure (this was not included as a moderating variable due to lack of studies employing online trust by facet). In all, there is a proliferation of items representing a few underlying constructs, making theoretical integration not easy. Hence, researchers should strive to use a rigorous psychometric development process to distill available constructs and items.

Seventh, the framework investigating main effects does not contain the full extent of antecedents and consequences of online trust. This analysis can provide a springboard for further study into the antecedents and consequences of online trust. For example, very few individual difference variables were examined, outside of disposition to trust, in conjunction with online trust.

Certain variables were excluded because only one effect size was found. As new empirical studies emerge, future meta-analyses will be able to incorporate these variables. Although excluded from the main effects analysis, possible candidates include gender (Kolsaker & Payne, 2002), transaction self-efficacy (Kim & Kim, 2005), personality

traits (Walczuch & Lundgren, 2004), perceived behavioral control (Hampton-Sosa & Koufaris, 2005), perceived market orientation (Corbitt et al., 2003), trust in online media (Cho, 2006), advertisement effects (Kim, Kim, & Park, 2010), warranty effects (San-Martín & Camarero, 2009), advice effects (San-Martín & Camarero, 2012), and presence of physical store (Meskaran, Abdullah, & Ghazali, 2010).

Finally, the degree of heterogeneity identified in this research indicates that there are likely to be additional moderators to be applied. Because of the small number of correlations that could be compared in the methodological context, additional moderating variables could not be added to the current moderator analyses. Future research that identifies variables that moderate these relationships could greatly improve understanding of how online trust is related to its antecedents and consequences.

In light of the limitations and research findings, the following future research directions are offered. Meta-analysis helps with identifying areas, in which few studies have been conducted, and whether it warrants more research. For instance, from this study, individual differences were rarely studied in the trust literature. Prior research has indicated that individual differences play a role in adopting technology (Agarwal & Prasad, 1999). Moreover, individual differences have played a large role in explaining technology adoption compared to institutional and technological factors (Lewis, Agarwal, & Sambamurthy, 2003). In that regard, investigating demographics is a future research avenue. In addition, it is informative to know if and how stable (e.g., personality) and dynamic (e.g., computer self-efficacy) individual differences influence the acceptance of e-commerce. In short, it is ultimately the individual factors that matter because the acceptance of e-commerce website use is an individual decision.

For the moderator tests, there was still significant heterogeneity in the effect sizes even after accounting for the moderators. This demands research to determine other moderators that can potentially influence trust effects (e.g., product- versus service-related websites).

In terms of the methodological approach moderating variable data analysis, there was a noticeable lack of experiments compared to surveys in evaluating trust relationships. More experiments could determine the straightforward cause and effect relationship between antecedents and online trust and between online trust and consequences. Moreover, interesting and unique findings involving online trust can be discovered through experiments. For instance, studies have tested the effects of photos (Riegelsberger, Sasse, & McCarthy, 2003), cookie disclosure (Miyazaki, 2008), social presence (Gefen & Straub, 2004), and internal privacy statements (Bahmanziari, Odom, & Ugrin, 2009).

This meta-analysis summarizes the results on the correlations involving trust relationships. The structural model results reflect the effects involving the correlations and but does not allow examining causal inferences. Hence, this necessitates future trust research to focus on the causal processes postulated by the research model. For that matter, a longitudinal study examining trust in various time stages could explain the causal process involving online trust. For example, a survey could be conducted before and after a transaction with the same participant to examine the fluctuating trust levels and purchase decisions.

Although a research model was proposed and tested, it does not necessarily mean that this study's model is "better" than alternative models. Thus, future research may consider alternative models of the relationships involving online trust and investigate how

these models complement or contradict each other. As an example, trust is rarely used as a moderator in a research model (Carter, Wright, Thatcher, & Klein, 2014). Trust could potentially be a moderator in the relationship between risk-based variables and behavioral intention. Given that trust emerges when risk is detected, risk and trust could have an interaction effect on behavioral intention.

5.4. CONCLUSIONS

The future of business-to-consumer e-commerce would be tenuous without online trust playing a strong role. Trust will continuously be a constant even though the Internet has evolved from early stages (Web 1.0) to the current stage (Web 4.0). Establishing consumer trust in the e-commerce presents a challenge for e-vendors and is a subject that generates increasing interest and importance. The present meta-analysis provides new information on the relationships involving online trust and its related antecedents and consequences. The information is particularly important for clarifying the conceptual ambiguities surrounding trust effects. The present research also taken a step toward explaining the wide variance in effect sizes among studies. The structural model results reveal that online trust plays an important role as a mediator. Overall, this meta-analysis can be of value because it can be used as a stepping stone for future studies on online trust. Moreover, these insights provide e-vendors with opportunities to improve the returns (trust) on their investments.

References

ARTICLES USED IN META-ANALYSIS ARE MARKED WITH AN ASTERISK

- Agarwal, R., & Prasad, J. (1999). Are individual differences germane to the acceptance of new information technologies?. *Decision Sciences*, 30(2), 361-391.
- Ahuja, M., Gupta, B., & Raman, P. (2003). An empirical investigation of online consumer purchasing behavior. *Communications of the ACM*, 46(12), 145-151.
- Antoniou, G., & Batten, L. (2011). E-commerce: Protecting purchaser privacy to enforce trust. *Electronic Commerce Research*, 11(4), 421-456.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Aladwani, A. M., & Palvia, P. C. (2002). Developing and validating an instrument for measuring user-perceived web quality. *Information & Management*, 39(6), 467-476.
- Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, 27(1), 14-25.
- *Bahmanziari, T., Odom, M. D., & Ugrin, J. C. (2009). An experimental evaluation of the effects of internal and external e-Assurance on initial trust formation in B2C e-commerce. *International Journal of Accounting Information Systems*, 10(3), 152-170.
- *Bart, Y., Shankar, V., Sultan, F., & Urban, G. L. (2005). Are the drivers and role of online trust the same for all web sites and consumers? A large-scale exploratory empirical study. *Journal of Marketing*, 69(4), 133-152.
- Beatty, P., Reay, I., Dick, S., & Miller, J. (2011). Consumer trust in e-commerce web sites: A meta-study. *ACM Computing Surveys*, 43(3), 1-46.

- *Becerra, E. P., & Korgaonkar, P. K. (2011). Effects of trust beliefs on consumers' online intentions. *European Journal of Marketing*, 45(6), 936-962.
- Beldad A., de Jong, M., & Steehouder, M. (2010). How shall I trust the faceless and the intangible? A literature review on the antecedents of online trust. *Computers in Human Behavior*, 26(5), 857-869.
- Bhattacharjee, A. (2002). Individual trust in online firms: Scale development and initial test. *Journal of Management Information Systems*, 19(1), 211-241.
- Blau, P. M. (1964). *Exchange and Power in Social Life*. New York, NY: John Wiley and Sons.
- *Bock, G. W., Lee, J., Kuan, H. H., & Kim, J. H. (2012). The progression of online trust in the multi-channel retailer context and the role of product uncertainty. *Decision Support Systems*, 53(1), 97-107.
- Bowling, N. A., Hendricks, E. A., & Wagner, S. H. (2008). Positive and negative affectivity and facet satisfaction: A meta-analysis. *Journal of Business and Psychology*, 23(3-4), 115-125.
- *Brown, I., & Jayakody, R. (2009). B2C e-commerce success: A test and validation of a revised conceptual model. *Electronic Journal of Information Systems Evaluation*, 12(2), 129-147.
- Brown, S. P., & Peterson, R. A. (1993). Antecedents and consequences of salesperson job satisfaction: Meta-analysis and assessment of causal effects. *Journal of Marketing Research*, 30(1), 63-77.
- Brown, S. P., & Stayman, D. M. (1992). Antecedents and consequences of attitude toward the ad: A meta-analysis. *Journal of Consumer Research*, 19(1), 34-51.
- Bryman, A. (2012). *Social Research Methods*. Oxford, UK: Oxford University Press.

- Carrillat, F. A., Jaramillo, F., & Mulki, J. P. (2009). Examining the impact of service quality: A meta-analysis of empirical evidence. *Journal of Marketing Theory and Practice*, 17(2), 95-110.
- Carter, M., Wright, R., Thatcher, J. B., & Klein, R. (2014). Understanding online customers' ties to merchants: The moderating influence of trust on the relationship between switching costs and e-loyalty. *European Journal of Information Systems*, 23(2), 185-204.
- *Casaló, L. V., Flavián, C., & Guinalú, M. (2007). The role of security, privacy, usability and reputation in the development of online banking. *Online Information Review*, 31(5), 583-603.
- Casaló, L. V., Flavián, C., & Guinalú, M. (2008). The role of perceived usability, reputation, satisfaction and consumer familiarity on the website loyalty formation process. *Computers in Human Behavior*, 24(2), 325-345.
- *Casaló, L. V., Flavián, C., & Guinalú, M. (2011). The generation of trust in the online services and product distribution: The case of Spanish electronic commerce. *Journal of Electronic Commerce Research*, 12(3), 199-213.
- *Chang, H. H., & Chen, S. W. (2008). The impact of online store environment cues on purchase intention: Trust and perceived risk as a mediator. *Online Information Review*, 32(6), 818-841.
- Chen, Y. H., & Barnes, S. (2007). Initial trust and online buyer behaviour. *Industrial Management & Data Systems*, 107(1), 21-36.
- Chen, S. C., & Dhillon, G. S. (2003). Interpreting dimensions of consumer trust in e-commerce. *Information Technology and Management*, 4(2/3), 303-318.

- *Chen, J., & Dibb, S. (2010). Consumer trust in the online retail context: Exploring the antecedents and consequences. *Psychology & Marketing*, 27(4), 323-346.
- Cheung, M. W. L., & Chan, W. (2005). Meta-analytic structural equation modeling: A two-stage approach. *Psychological methods*, 10(1), 40-64.
- *Cho, V. (2006). A study of the roles of trusts and risks in information-oriented online legal services using an integrated model. *Information & Management*, 43(4), 502-520.
- Churchill Jr, G. A. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16(1), 64-73.
- Cialdini, R. B. (1993). *Influence: Science and Practice*. New York, NY: Harper-Collins.
- Colquitt, J. A., Scott, B. A., & LePine, J. A. (2007). Trust, trustworthiness, and trust propensity: A meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology*, 92(4), 909-927.
- *Corbitt, B. J., Thanasankit, T., & Yi, H. (2003). Trust and e-commerce: A study of consumer perceptions. *Electronic Commerce Research and Applications*, 2(3), 203-215.
- Corritore, C. L., Kracher, B., & Wiedenbeck, S. (2003). On-line trust: Concepts, evolving themes, a model. *International Journal of Human-Computer Studies*, 58(6), 737-758.
- Cortina, J. M. (2003). Apples and oranges (and pears, oh my!): The search for moderators in meta-analysis. *Organizational Research Methods*, 6(4), 415-439.
- *Cyr, D. (2008). Modeling web site design across cultures: Relationships to trust, satisfaction, and e-loyalty. *Journal of Management Information Systems*, 24(4), 47-72.
- *Cyr, D., Hassanein, K., Head, M., & Ivanov, A. (2007). The role of social presence in establishing loyalty in e-Service environments. *Interacting with Computers*, 19(1), 43-56.

- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- Dean, D. H. (2003). Consumer perception of corporate donations effects of company reputation for social responsibility and type of donation. *Journal of Advertising*, 32(4), 91-102.
- Delgado-Ballester, E., Munuera-Aleman, J. L., & Yague-Guillen, M. J. (2003). Development and validation of a brand trust scale. *International Journal of Market Research*, 45(1), 35-54.
- DeLone, W. H., & McLean, E. R. (2004). Measuring e-commerce success: Applying the DeLone & McLean information systems success model. *International Journal of Electronic Commerce*, 9(1), 31-47.
- Dirks, K. T., & Ferrin, D. L. (2002). Trust in leadership: Meta-analytic findings and implications for research and practice. *Journal of Applied Psychology*, 87(4), 611-628.
- Doney, P. M., & Cannon, J. P. (1997). An examination of the nature of trust in buyer-seller relationships. *Journal of Marketing*, 61(2), 35-51.
- Doney, P. M., Cannon, J. P., & Mullen, M. R. (1998). Understanding the influence of national culture on the development of trust. *Academy of Management Review*, 23(3), 601-620.
- Eastlick, M. A., Lotz, S. L., & Warrington, P. (2006). Understanding online B-to-C relationships: an integrated model of privacy concerns, trust, and commitment. *Journal of Business Research*, 59(8), 877-886.
- Falzhzik, A. M., & Jolson, M. A. (1974). Statement polarity in attitude studies. *Journal of Marketing Research*, 11(1), 102-105.

- Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review*, 13(1), 1-22.
- Featherman, M. S., & Pavlou, P. A. (2003). Predicting e-services adoption: a perceived risk facets perspective. *International Journal of Human-Computer Studies*, 59(4), 451-474.
- Fishbein, M. & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.
- *Flavián, C., Guinalú, M., & Gurrea, R. (2006). The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information & Management*, 43(1), 1-14.
- Friedman, B., Khan Jr., P. H., & Howe, D. C. (2000). Trust online. *Communications of the ACM*, 43(12), 34-40.
- Fukuyama, F., (1995). *Trust: The Social Virtues and the Creation of Prosperity*. New York, NY: The Free Press.
- Ganesan, S. (1994). Determinants of long-term orientation in buyer-seller relationships. *Journal of Marketing*, 58(2), 1-19.
- Garrett, J. J. (2003). *The Elements of User experience: User-centered Design for the Web*. Indianapolis, IN: New Riders.
- *Gefen, D. (2000). E-commerce: The role of familiarity and trust. *Omega*, 28(6), 725-737.
- Gefen, D., & Heart, T. H. (2006). On the need to include national culture as a central issue in e-commerce trust beliefs. *Journal of Global Information Management*, 14(4), 1-30.

- *Gefen, D., Karahanna, E., & Straub, D. W. (2003a). Trust and TAM in online shopping: An integrated model. *MIS Quarterly*, 27(1), 51-90.
- *Gefen, D., Karahanna, E., & Straub, D. W. (2003b). Inexperience and experience with online stores: The importance of TAM and trust. *IEEE Transactions on Engineering Management*, 50(3), 307-321.
- Gefen, D., & Straub, D. W. (2003). Managing user trust in B2C e-services. *e-Service Journal*, 2(2), 7-24.
- *Gefen, D., & Straub, D. W. (2004). Consumer trust in B2C e-Commerce and the importance of social presence: Experiments in e-Products and e-Services. *Omega*, 32(6), 407-424.
- Geyskens, I., Steenkamp, J. B. E., & Kumar, N. (1998). Generalizations about trust in marketing channel relationships using meta-analysis. *International Journal of Research in Marketing*, 15, 223-248.
- Gilboa, S., Shirom, A., Fried, Y., & Cooper, C. (2008). A meta-analysis of work demand stressors and job performance: Examining main and moderating effects. *Personnel Psychology*, 61(2), 227-271.
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality*, 37(6), 504-528.
- Grabe, S., Ward, L. M., & Hyde, J. S. (2008). The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin*, 134(3), 460-476.
- Grabner-Krauter, S., & Kaluscha, E. A. (2003). Empirical research in on-line trust: A review and critical assessment. *International Journal of Human-Computer Studies*, 58(6), 783-812.

- Ha, H. Y. (2004). Factors influencing consumer perceptions of brand trust online. *Journal of Product & Brand Management*, 13(5), 329-342.
- *Hampton-Sosa, W., & Koufaris, M. (2005). The effect of web site perceptions on initial trust in the owner company. *International Journal of Electronic Commerce*, 10(1), 55-81.
- *Harris, L. C., & Goode, M. M. . (2004). The four levels of loyalty and the pivotal role of trust: A study of online service dynamics. *Journal of Retailing*, 80(2), 139–158.
- Head, M. M., & Hassanein, K. (2002). Trust in e-commerce: Evaluating the impact of third-party seals. *Quarterly Journal of Electronic Commerce*, 3(3), 307-325.
- Hedges, L. V., & Olkin, I. (1985). *Statistical Methods for Meta-Analysis*. Orlando, FL: Academic Press.
- Herbig, P., Milewicz, J., & Golden, J. (1994). A model of reputation building and destruction. *Journal of Business Research*, 31(1), 23-31.
- Hofstede, G. (1980). *Culture's Consequences: International Differences in Work-related Values*. Beverly Hills, CA: Sage.
- Holmstrom, A. J. (2004). The effects of the media on body image: A meta-analysis. *Journal of Broadcasting & Electronic Media*, 48(2), 196-217.
- *Horppu, M., Kuivalainen, O., Tarkiainen, A., & Ellonen, H. K. (2008). Online satisfaction, trust and loyalty, and the impact of the offline parent brand. *Journal of Product & Brand Management*, 17(6), 403-413.
- *Hsu, C. J. (2008, September). Dominant factors for online trust. *Paper presented at the 2008 International Conference on Cyberworld*, Hangzhou, CN: IEEE.

- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55.
- Hunter, J. E., & Schmidt, F. L. (2004). *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings*. Newbury Park, CA: Sage.
- Jarvenpaa, S. L., Tractinsky, N., & Saarinen, L. (1999). Consumer trust in an Internet store: A cross-cultural validation. *Journal of Computer Mediated Communication*, 5(2). Retrieved March 15, 2014, from <http://jcmc.indiana.edu/vol5/issue2/jarvenpaa.html>.
- *Jarvenpaa, S. L., Tractinsky, N., & Vitale, M. (2000). Consumer trust in an Internet store. *Information Technology and Management*, 1(1), 45-71.
- Jiang, P., Jones, D. B., & Javie, S. (2008). How third-party certification programs relate to consumer trust in online transactions: An exploratory study. *Psychology and Marketing*, 25(9), 839-858.
- Jøsang, A., Ismail, R., & Boyd, C. (2007). A survey of trust and reputation systems for online service provision. *Decision Support Systems*, 43(2), 618-644.
- *Kim, D. J. (2012). An investigation of the effect of online consumer trust on expectation, satisfaction, and post-expectation. *Information Systems and e-Business Management*, 10(2), 219-240.
- *Kim, M. J., Chung, N., & Lee, C. K. (2011). The effect of perceived trust on electronic commerce: Shopping online for tourism products and services in South Korea. *Tourism Management*, 32(2), 256-265.

- *Kim, D. J., Ferrin, D. L., & Rao, H. R. (2008). A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems, 44*(2), 544-564.
- Kim, D. J., Ferrin, D. L., & Rao, H. R. (2009). Trust and satisfaction, two stepping stones for successful e-commerce relationships: A longitudinal exploration. *Information Systems Research, 20*(2), 237-257.
- *Kim, Y., & Kim, D. J. (2005, January). A study of online transaction self-efficacy, consumer trust, and uncertainty reduction in electronic commerce transaction. *Paper presented at the 38th Annual Hawaii International Conference on System Sciences*, Hawaii, US. IEEE.
- *Kim, J. U., Kim, W. J., & Park, S. C. (2010). Consumer perceptions on web advertisements and motivation factors to purchase in the online shopping. *Computers in Human Behavior, 26*(5), 1208-1222.
- *Kim, H. W., Xu, Y., & Koh, J. (2004). A comparison of online trust building factors between potential customers and repeat customers. *Journal of the Association for Information Systems, 5*(10), 392-420.
- Kimery, K. M. and McCord, M. (2002). Third-party assurances: Mapping the road to trust in e-retailing. *Journal of Information Technology Theory and Application, 4*(2), 63-82.
- Kipnis, D. (1996). Trust and technology. In R. M. Kramer & T. R. Tyler (Eds.), *Trust in Organizations: Frontiers of Theory and Research* (pp. 39-50). Thousand Oaks, CA: Sage.
- Kolsaker, A., & Payne, C. (2002). Engendering trust in e-commerce: A study of gender-based concerns. *Marketing Intelligence & Planning, 20*(4), 206-214.

- *Koufaris, M., & Hampton-Sosa, W. (2004). The development of initial trust in an online company by new customers. *Information & Management*, 41(3), 377-397.
- *Kuan, H. H., & Bock, G. W. (2007). Trust transference in brick and click retailers: An investigation of the before-online-visit phase. *Information & Management*, 44(2), 175-187.
- Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81(2), 123-133.
- *Lee, M. K., & Turban, E. (2001). A trust model for consumer Internet shopping. *International Journal of Electronic Commerce*, 6(1), 75-92.
- Lewicki, R., & Bunker, B. (1996). Developing and maintaining trust in work relationships. In R. M. Kramer & T. R. Tyler (Eds.), *Trust in Organizations: Frontiers of Theory and Research* (pp. 114-139). Thousand Oaks, CA: Sage.
- Lewis, W., Agarwal, R., & Sambamurthy, V. (2003). Sources of influence on beliefs about information technology use: An empirical study of knowledge workers. *MIS Quarterly*, 27(4), 657-678.
- Lewis, J. D., & Weigert, A. (1985). Trust as a social reality. *Social Forces*, 63(4), 967-985.
- Litvin, S. W., Goldsmith, R. E., & Pan, B. (2008). Electronic word-of-mouth in hospitality and tourism management. *Tourism Management*, 29(3), 458-468.
- Lipsey, M. W., & Wilson, D. B. (2001). *Practical Meta-analysis*. Thousand Oaks, CA: Sage.
- Luhmann, N. (1979). *Trust and Power*. Chichester, UK: John Wiley and Sons.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98(2), 224-253.

- Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information Systems Research*, 2(3), 173-191.
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An integrative model of organization trust. *Academy of Management Review*, 20(3), 709–734.
- McAllister, D. J. (1995). Affect-and cognition-based trust as foundations for interpersonal cooperation in organizations. *Academy of Management Journal*, 38(1), 24-59.
- McCole, P., Ramsey, E., & Williams, J. (2010). Trust considerations on attitudes towards online purchasing: The moderating effect of privacy and security concerns. *Journal of Business Research*, 63(9), 1018-1024.
- McKnight, D. H., & Chervany, N. L. (2002). What trust means in e-commerce customer relationships: An interdisciplinary conceptual typology. *International Journal of Electronic Commerce*, 6(2), 35-60.
- McKnight, D. H., Choudhury, V., & Kacmar, C. (2002). Developing and validating trust measures for e-commerce: An integrative typology. *Information Systems Research*, 13(3), 334-359.
- McKnight, D. H., Cummings, L. L., & Chervany, N. L. (1998). Initial trust formation in new organizational relationships. *Academy of Management Review*, 23(3), 473-490.
- *Meskaran, F., Abdullah, R., & Ghazali, M. (2010). A conceptual framework of Iranian consumer trust in B2C electronic commerce. *Computer and Information Science*, 3(2), p126.
- Mitchell, V. W. (1999). Consumer perceived risk: Conceptualizations and models. *European Journal of Marketing*, 33(1/2), 163-195.

- *Miyazaki, A. D. (2008). Online privacy and the disclosure of cookie use: Effects on consumer trust and anticipated patronage. *Journal of Public Policy & Marketing*, 27(1), 19-33.
- Moorman, C., Zaltman, G., & Deshpande, R. (1992). Relationships between providers and users of market research: The dynamics of trust within and between organizations. *Journal of Marketing Research*, 29(3), 314-328.
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20-38.
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460-469.
- Orwin, R. G. (1983). A fail-safe N for effect size in meta-analysis. *Journal of Educational Statistics*, 8(2), 157-159.
- Palmer, J. W. (2002). Web site usability, design, and performance metrics. *Information Systems Research*, 13(2), 151-167.
- Pan, L. Y., & Chiou, J. S. (2011). How much can you trust online information? Cues for perceived trustworthiness of consumer-generated online information. *Journal of Interactive Marketing*, 25(2), 67-74.
- Pan, Y., & Zinkhan, G. M. (2006). Exploring the impact of online privacy disclosures on consumer trust. *Journal of Retailing*, 82(4), 331-338.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multi-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12-40.

- Pavlou, P. A. (2002). Institution-based trust in interorganizational exchange relationships: the role of online B2B marketplaces on trust formation. *The Journal of Strategic Information Systems*, 11(3), 215-243.
- *Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, 7(3), 101-134.
- *Pavlou, P. A., & Fygenson, M. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS Quarterly*, 30(1), 115-143.
- Peterson, R. A. (2001). On the use of college students in social science research: Insights from a second-order meta-analysis. *Journal of Consumer Research*, 28(3), 450-461.
- Petter, S., & McLean, E. R. (2009). A meta-analytic assessment of the DeLone and McLean IS success model: An examination of IS success at the individual level. *Information & Management*, 46(3), 159-166.
- Reichheld, F. F., & Schefter, P. (2000). E-loyalty: Your secret weapon on the web. *Harvard Business Review*, 78(July/August), 105-113.
- *Riegelsberger, J., Sasse, M. A., & McCarthy, J. D. (2003, April). Shiny happy people building trust?: Photos on e-commerce websites and consumer trust. *Paper presented at the SIGCHI Conference on Human Factors in Computing Systems*, Fort Lauderdale, FL. ACM.
- Riggle, R. J., Edmondson, D. R., & Hansen, J. D. (2009). A meta-analysis of the relationship between perceived organizational support and job outcomes: 20 years of research. *Journal of Business Research*, 62(10), 1027-1030.

- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin*, 27(2), 151-161.
- Rosenthal, R. (1995). Writing meta-analytic reviews. *Psychological Bulletin*, 118(2), 183-192.
- Rotter, J. B. (1967). A new scale for the measurement of interpersonal trust. *Journal of Personality*, 35(4), 651-665.
- Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of Management Review*, 23(3), 393-404.
- Salo, J., & Karjaluoto, H. (2007). A conceptual model of trust in the online environment. *Online Information Review*, 31(5), 604-621.
- *San-Martín, S., & Camarero, C. (2009). How perceived risk affects online buying. *Online Information Review*, 33(4), 629-654.
- *San-Martín, S., & Camarero, C. (2012). A cross-national study on online consumer perceptions, trust, and loyalty. *Journal of Organizational Computing and Electronic Commerce*, 22(1), 64-86.
- Saxton, M. L. (2006). Meta-analysis in library and information science: Method, history, and recommendations for reporting research. *Library Trends*, 55(1), 158-170.
- Schepers, J., & Wetzels, M. (2007). A meta-analysis of the technology acceptance model: Investigating subjective norm and moderation effects. *Information & Management*, 44(1), 90-103.
- Selnes, F. (1998). Antecedents and consequences of trust and satisfaction in buyer-seller relationships. *European Journal of Marketing*, 32(3/4), 305-322.

- Shankar, V., Smith, A. K., & Rangaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International Journal of Research in Marketing*, 20(2), 153-175.
- Shankar, V., Urban, G. L., & Sultan, F. (2002). Online trust: A stakeholder perspective, concepts, implications, and future directions. *The Journal of Strategic Information Systems*, 11(3/4), 325-344.
- Shapiro, S. P. (1987). The social control of impersonal trust. *American Journal of Sociology*, 93(3), 623-658.
- Singh, J., & Sirdeshmukh, D. (2000). Agency and trust mechanisms in consumer satisfaction and loyalty judgments. *Journal of the Academy of Marketing Science*, 28(1), 150-167.
- *Sun, H. (2010). Transferring attributes of e-commerce systems into business benefits: A relationship quality perspective. *Journal of Electronic Commerce Research*, 11(2), 92-109.
- Swan, J. E., Bowers, M. R., & Richardson, L. D. (1999). Customer trust in the salesperson: An integrative review and meta-analysis of the empirical literature. *Journal of Business Research*, 44(2), 93-107.
- Sztompka, P. (1999). *Trust: A Sociological Theory*. Cambridge: Cambridge University Press.
- Szymanski, D. M., & Henard, D. H. (2001). Customer satisfaction: A meta-analysis of the empirical evidence. *Journal of the Academy of Marketing Science*, 29(1), 16-35.
- Tan, Y. H., & Thoen, W. (2001). Toward a generic model of trust for electronic commerce. *International Journal of Electronic Commerce*, 5(2), 61-74.

- *Teo, T. S., & Liu, J. (2007). Consumer trust in e-commerce in the United States, Singapore and China. *Omega*, 35(1), 22-38.
- Tett, R. P., & Meyer, J. P. (1993). Job satisfaction, organizational commitment, turnover intention, and turnover: path analyses based on meta-analytic findings. *Personnel Psychology*, 46(2), 259-293.
- trust. 2015. In *Merriam-Webster.com*. Retrieved April 22, 2015, from <http://www.merriam-webster.com/dictionary/trust>.
- Urban, G. L., Amyx, C., & Lorenzon, A. (2009). Online trust: state of the art, new frontiers, and research potential. *Journal of Interactive Marketing*, 23(2), 179-190.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2), 186-204.
- Verhaeghen, P., & Salthouse, T. A. (1997). Meta-analyses of age–cognition relations in adulthood: Estimates of linear and nonlinear age effects and structural models. *Psychological Bulletin*, 122(3), 231-249.
- Viswesvaran, C., & Ones, D. S. (1995). Theory testing: Combining psychometric meta-analysis and structural equations modeling. *Personnel Psychology*, 48(4), 865-885.
- Walczuch, R., & Lundgren, H. (2004). Psychological antecedents of institution-based consumer trust in e-retailing. *Information & Management*, 42(1), 159-177.
- Wang, Y. S. (2008). Assessing e-commerce systems success: A respecification and validation of the DeLone and McLean model of IS success. *Information Systems Journal*, 18(5), 529-557.

- Wang, Y. D., & Emurian, H. H. (2005). An overview of online trust: Concepts, elements, and implications. *Computers in Human Behavior, 21*(1), 105-125.
- Webb, H. W., & Webb, L. A. (2004). SiteQual: An integrated measure of Web site quality. *Journal of Enterprise Information Management, 17*(6), 430-440.
- Whitener, E. M. (1990). Confusion of confidence intervals and credibility intervals in meta-analysis. *Journal of Applied Psychology, 75*(3), 315-321.
- Wilson, J. M., Straus, S. G., & McEvily, B. (2006). All in due time: The development of trust in computer-mediated and face-to-face teams. *Organizational Behavior and Human Decision Processes, 99*(1), 16-33.
- Wong, N., Rindfleisch, A., & Burroughs, J. E. (2003). Do reverse-worded items confound measures in cross-cultural consumer research? The case of the Material Values Scale. *Journal of Consumer Research, 30*(1), 72-91.
- Wu, G., Hu, X., & Wu, Y. (2010). Effects of perceived interactivity, perceived web assurance and disposition to trust on initial online trust. *Journal of Computer-Mediated Communication, 16*(1), 1-26.
- Yamagishi, T., & Yamagishi, M. (1994). Trust and commitment in the United States and Japan. *Motivation and Emotion, 18*(2), 129-166.
- Yaobin, L., & Tao, Z. (2007). A research of consumers' initial trust in online stores in China. *Journal of Research and Practice in Information Technology, 39*(3), 167-180.
- Yi, Y. (1990). A critical review of consumer satisfaction. *Review of Marketing, 4*(1), 68-123.
- Yoon, S. J. (2002). The antecedents and consequences of trust in online-purchase decisions. *Journal of Interactive Marketing, 16*(2), 47-63.

*Zhang, Y., Fang, Y., Wei, K. K., Ramsey, E., McCole, P., & Chen, H. (2011).

Repurchase intention in B2C e-commerce—A relationship quality perspective.

Information & Management, 48(6), 192-200.

Zhang, L., Zhu, J., & Liu, Q. (2012). A meta-analysis of mobile commerce adoption and the moderating effect of culture. *Computers in Human Behavior*, 28(5), 1902-1911.

ADDITIONAL ARTICLES USED IN META-ANALYSIS ARE MARKED IN ASTERISK

*Akbar, M. M., & Parvez, N. (2009). Impact of service quality, trust, and customer satisfaction on customers loyalty. *ABAC Journal*, 29(1), 24-38.

*Al-Somali, S. A., Gholami, R., & Clegg, B. (2009). An investigation into the acceptance of online banking in Saudi Arabia. *Technovation*, 29(2), 130-141.

*Atcharyachanvanich, K., & Hitoshi, O. (2011, July). Trust on e-Commerce website in Thailand: A case of online hotel reservation. *Paper presented at the IEEE/IPSJ 11th International Symposium on Applications and the Internet*, Munich, DE. IEEE

*Ba, S., & Pavlou, P. A. (2002). Evidence of the effect of trust building technology in electronic markets: Price premiums and buyer behavior. *MIS Quarterly*, 26(3), 243-268.

*Belanger, F., Hiller, J. S., & Smith, W. J. (2002). Trustworthiness in electronic commerce: The role of privacy, security, and site attributes. *The Journal of Strategic Information Systems*, 11(3), 245-270.

*Benamati, J., Fuller, M. A., Serva, M. A., & Baroudi, J. (2010). Clarifying the integration of trust and TAM in e-commerce environments: Implications for systems design and management. *IEEE Transactions on Engineering Management*, 57(3), 380-393.

- *Bente, G., Baptist, O., & Leuschner, H. (2012). To buy or not to buy: Influence of seller photos and reputation on buyer trust and purchase behavior. *International Journal of Human-Computer Studies*, 70(1), 1-13.
- *Büttner, O. B., & Göritz, A. S. (2008). Perceived trustworthiness of online shops. *Journal of Consumer Behaviour*, 7(1), 35-50.
- *Chen, C. (2007). *Consumer trust in an e-retailer: An integrative model directed toward customer retention* (Doctoral dissertation, The University of Arizona). Retrieved June 10, 2014, from Dissertations & Theses: Full Text. (Publication No. 3274224).
- *Chen, Y. T., & Chou, T. Y. (2012). Exploring the continuance intentions of consumers for B2C online shopping: Perspectives of fairness and trust. *Online Information Review*, 36(1), 104-125.
- *Chen, S., & Li, J. (2009, May). An empirical research on consumer trust in e-commerce. *Paper presented at the 2009 IEEEC International Symposium on Information Engineering and Electronic Commerce*, Ternopil, UA. IEEE
- *Chiu, C. M., Chang, C. C., Cheng, H. L., & Fang, Y. H. (2009). Determinants of customer repurchase intention in online shopping. *Online Information Review*, 33(4), 761-784.
- *Chiu, C. M., Hsu, M. H., Lai, H., & Chang, C. M. (2012). Re-examining the influence of trust on online repeat purchase intention: The moderating role of habit and its antecedents. *Decision Support Systems*, 53(4), 835-845.
- *Chiu, C. M., Huang, H. Y., & Yen, C. H. (2010). Antecedents of trust in online auctions. *Electronic Commerce Research and Applications*, 9(2), 148-159.
- *Connolly, R., & Bannister, F. (2008). Factors influencing Irish consumers' trust in Internet shopping. *Management Research News*, 31(5), 339-358.

- *Cyr, D. (2013). Website design, trust and culture: An eight country investigation. *Electronic Commerce Research and Applications*, 12(6), 373-385.
- *Dinev, T., Bellotto, M., Hart, P., Russo, V., Serra, I., & Colautti, C. (2006). Privacy calculus model in e-commerce—a study of Italy and the United States. *European Journal of Information Systems*, 15(4), 389-402.
- *Dinev, T., & Hart, P. (2006). An extended privacy calculus model for e-commerce transactions. *Information Systems Research*, 17(1), 61-80.
- *Eid, M. I. (2011). Determinants of e-commerce customer satisfaction, trust, and loyalty in Saudi Arabia. *Journal of Electronic Commerce Research*, 12(1), 78-93.
- *Fang, Y. H., Chiu, C. M., & Wang, E. T. (2011). Understanding customers' satisfaction and repurchase intentions: An integration of IS success model, trust, and justice. *Internet Research*, 21(4), 479-503.
- *Fang, Y., Qureshi, I., Sun, H., McCole, P., Ramsey, E., & Lim, K. H. (2014). Trust, satisfaction, and online repurchase intention: The moderating role of perceived effectiveness of e-commerce institutional mechanisms. *MIS Quarterly*, 38(2), 407-427.
- *Fassnacht, M., & Köse, I. (2007). Consequences of Web-based service quality: Uncovering a multi-faceted chain of effects. *Journal of Interactive Marketing*, 21(3), 35-54.
- *Flick, K. L. (2009). Assessing consumer acceptance of online shopping: Examining factors affecting purchase intentions (Doctoral dissertation, Northcentral University). Retrieved June 10, 2014, from Dissertations & Theses: Full Text. (Publication No. 3353661).
- *Gao, Y., & Wu, X. (2010). A cognitive model of trust in e-commerce: Evidence from a field study in China. *Journal of Applied Business Research*, 26(1), 37-44.

- *Glennie, N. T. (2010). *Examining trust factor relationships in the online business-to-consumer environment* (Doctoral dissertation, Northcentral University). Retrieved June 10, 2014, from Dissertations & Theses: Full Text. (Publication No. 3407613).
- *Gurung, A. (2006). *Empirical investigation of the relationship of privacy, security and trust with behavioral intention to transact in e-commerce* (Doctoral dissertation, The University of Texas at Arlington). Retrieved June 10, 2014, from Dissertations & Theses: Full Text. (Publication No. 3212100).
- *Ha, S., & Stoel, L. (2009). Consumer e-shopping acceptance: Antecedents in a technology acceptance model. *Journal of Business Research*, 62(5), 565-571.
- *Harsandi, B., Purnama, J., Soetomo, M., Amin, A., & Galinium, M. (2013, September). Internet user trust measurement analysis towards e-commerce system in Indonesia. *Paper presented at 2013 International Conference on Advanced Computer Science and Information Systems*, Bali, ID. IEEE.
- *Hong, I. B., & Cha, H. S. (2013). The mediating role of consumer trust in an online merchant in predicting purchase intention. *International Journal of Information Management*, 33(6), 927-939.
- *Hsu, M. H., Chang, C. M., Chu, K. K., & Lee, Y. J. (2014). Determinants of repurchase intention in online group-buying: The perspectives of DeLone & McLean IS success model and trust. *Computers in Human Behavior*, 36, 234-245.
- *Hu, X., Wu, G., Wu, Y., & Zhang, H. (2010). The effects of Web assurance seals on consumers' initial trust in an online vendor: A functional perspective. *Decision Support Systems*, 48(2), 407-418.

- *Hwang, Y., & Kim, D. J. (2007). Customer self-service systems: The effects of perceived Web quality with service contents on enjoyment, anxiety, and e-trust. *Decision Support Systems, 43*(3), 746-760.
- *Jai, T. (2010). *The impact of unsolicited behavioral tracking practices on consumers' shopping evaluations and attitudes toward trusted online retailers* (Doctoral dissertation, Oregon State University). Retrieved June 10, 2014, from Dissertations & Theses: Full Text. (Publication No. 3425579).
- *Kamarulzaman, Y. (2007). Adoption of travel e-shopping in the UK. *International Journal of Retail & Distribution Management, 35*(9), 703-719.
- *Kassim, N., & Asiah Abdullah, N. (2010). The effect of perceived service quality dimensions on customer satisfaction, trust, and loyalty in e-commerce settings: A cross cultural analysis. *Asia Pacific Journal of Marketing and Logistics, 22*(3), 351-371.
- *Kim, E. (2003). *Factors impacting customers' trust in e-businesses: An empirical study of customers' initial trust in e-businesses* (Doctoral dissertation, Southern Illinois University at Carbondale). Retrieved June 10, 2014, from Dissertations & Theses: Full Text. (Publication No. 3100760).
- *Kim, H. B., Kim, T. T., & Shin, S. W. (2009). Modeling roles of subjective norms and eTrust in customers' acceptance of airline B2C eCommerce websites. *Tourism Management, 30*(2), 266-277.
- *Kim, K. K., & Prabhakar, B. (2004). Initial trust and the adoption of B2C e-commerce: The case of internet banking. *ACM SIGMIS database, 35*(2), 50-64.
- *Kim, S., & Stoel, L. (2004). Apparel retailers: Website quality dimensions and satisfaction. *Journal of Retailing and Consumer Services, 11*(2), 109-117.

- *Kim, E., & Tadisina, S. (2005, January). Factors impacting customers' initial trust in e-businesses: An empirical study. *Paper presented at the 38th Annual Hawaii International Conference on System Sciences*, Hawaii, US. IEEE.
- *Kim, H. W., Xu, Y., & Gupta, S. (2012). Which is more important in Internet shopping, perceived price or trust?. *Electronic Commerce Research and Applications*, 11(3), 241-252.
- *Kimery, K. M., & McCord, M. (2002, January). Third-party assurances: The road to trust in online retailing. *Paper presented at the 35th Annual Hawaii International Conference on System Sciences*, Hawaii, US. IEEE.
- *Konradt, U., Wandke, H., Balazs, B., & Christophersen, T. (2003). Usability in online shops: scale construction, validation and the influence on the buyers' intention and decision. *Behaviour & Information Technology*, 22(3), 165-174.
- *Lee, H. Y., Ahn, H., & Han, I. (2006, January). Analysis of trust in the e-commerce adoption. *Paper presented at the 39th Annual Hawaii International Conference on System Sciences*, Hawaii, US. IEEE.
- *Lee, K. C., Chung, N., & Lee, S. (2011). Exploring the influence of personal schema on trust transfer and switching costs in brick-and-click bookstores. *Information & Management*, 48(8), 364-370.
- *Li, D., Browne, G. J., & Wetherbe, J. C. (2006). Why do Internet users stick with a specific web site? A relationship perspective. *International Journal of Electronic Commerce*, 10(4), 105-141.
- *Li, H., Jiang, J., & Wu, M. (2014). The effects of trust assurances on consumers' initial online trust: A two-stage decision-making process perspective. *International Journal of Information Management*, 34(3), 395-405.

- *Liao, C., Liu, C. C., & Chen, K. (2011). Examining the impact of privacy, trust and risk perceptions beyond monetary transactions: An integrated model. *Electronic Commerce Research and Applications, 10*(6), 702-715.
- *Liao, C., Palvia, P., & Lin, H. N. (2006). The roles of habit and web site quality in e-commerce. *International Journal of Information Management, 26*(6), 469-483.
- *Liu, B. Q., & Goodhue, D. L. (2012). Two worlds of trust for potential e-commerce users: Humans as cognitive misers. *Information Systems Research, 23*(4), 1246-1262.
- *Liu, C., Marchewka, J. T., Lu, J., & Yu, C. S. (2004). Beyond concern: A privacy–trust–behavioral intention model of electronic commerce. *Information & Management, 42*(1), 127-142.
- *Lowry, P. B., Twyman, N. W., Pickard, M., & Jenkins, J. L. (2014). Proposing the Affect-Trust Infusion Model (ATIM) to explain and predict the influence of high and low affect infusion on Web vendor trust. *Information & Management, 51*(5), 579-594.
- *Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet users' information privacy concerns (IUIPC): The construct, the scale, and a causal model. *Information Systems Research, 15*(4), 336-355.
- *McKnight, D. H., & Choudhury, V. (2006, August). Distrust and trust in B2C e-commerce: Do they differ?. *Paper presented at the 8th International Conference on Electronic commerce: The new e-commerce: Innovations for conquering current barriers, obstacles and limitations to conducting successful business on the Internet*, Fredericton, CA. ACM
- *Metzger, M. J. (2004). Privacy, trust, and disclosure: Exploring barriers to electronic commerce. *Journal of Computer-Mediated Communication, 9*(4). Retrieved April 2, 2014, from <http://jcmc.indiana.edu/vol9/issue4/metzger.htm>.

- *Midha, V. (2012). Impact of consumer empowerment on online trust: An examination across genders. *Decision Support Systems*, 54(1), 198-205.
- *Miremadi, A., Hassanian-esfahani, R., & Aminilari, M. (2013, April). A new trust model for B2C e-commerce based on 3D user interfaces. *Paper presented at 2013 7th International Conference on e-commerce in Developing Countries: With Focus on e-Security*, Kish Island, IR. IEEE.
- *Nusair, K., & Hua, N. (2010). Comparative assessment of structural equation modeling and multiple regression research methodologies: E-commerce context. *Tourism Management*, 31(3), 314-324.
- *Oh, S. H., Kim, Y. M., Lee, C. W., Shim, G. Y., Park, M. S., & Jung, H. S. (2009). Consumer adoption of virtual stores in Korea: Focusing on the role of trust and playfulness. *Psychology & Marketing*, 26(7), 652-668.
- *Ou, C. X., & Sia, C. L. (2010). Consumer trust and distrust: An issue of website design. *International Journal of Human-Computer Studies*, 68(12), 913-934.
- *Palvia, P. (2009). The role of trust in e-commerce relational exchange: A unified model. *Information & Management*, 46(4), 213-220.
- *Pavlou, P. A., & Dimoka, A. (2006). The nature and role of feedback text comments in online marketplaces: Implications for trust building, price premiums, and seller differentiation. *Information Systems Research*, 17(4), 392-414.
- *Pennington, R., Wilcox, H. D., & Grover, V. (2003). The role of system trust in business-to-consumer transactions. *Journal of Management Information Systems*, 20(3), 197-226.
- *Phung, K. D., Yen, K. L., & Hsiao, M. H. (2009, December). Examining the factors associated with consumer's trust in the context of business-to-consumer e-commerce.

Paper presented at the 2009 IEEE International Conference on Industrial Engineering and Engineering Management, Hong Kong. IEEE.

- *Pittayachawan, S. (2007). *Fostering consumer trust and purchase intention in B2C e-commerce* (Doctoral dissertation, RMIT University). Retrieved June 10, 2014 from Google Scholar.
- *Premazzi, K., Castaldo, S., Grosso, M., Raman, P., Brudvig, S., & Hofacker, C. F. (2010). Customer information sharing with e-vendors: The roles of incentives and trust. *International Journal of Electronic Commerce*, 14(3), 63-91.
- *Ribbink, D., van Riel, A. C., Liljander, V., & Streukens, S. (2004). Comfort your online customer: Quality, trust and loyalty on the internet. *Managing Service Quality: An International Journal*, 14(6), 446-456.
- *Roca, J. C., Garc ía, J. J., & de la Vega, J. J. (2009). The importance of perceived trust, security and privacy in online trading systems. *Information Management & Computer Security*, 17(2), 96-113.
- *Roy, M. C., Dewit, O., & Aubert, B. A. (2001). The impact of interface usability on trust in web retailers. *Internet Research*, 11(5), 388-398.
- *Sanchez-Franco, M. J. (2009). The moderating effects of involvement on the relationships between satisfaction, trust and commitment in e-banking. *Journal of Interactive Marketing*, 23(3), 247-258.
- *Steinbrück, U., Schaumburg, H., Duda, S., & Krüger, T. (2002, April). A picture says more than a thousand words: Photographs as trust builders in e-commerce websites. *Extended abstract presented at the SIGCHI Conference on Human Factors in Computing Systems*, Minneapolis, MN. ACM.

- *Suh, B., & Han, I. (2003). The impact of customer trust and perception of security control on the acceptance of electronic commerce. *International Journal of Electronic Commerce*, 7(3), 135-161.
- *Toufaily, E., Souiden, N., & Ladhari, R. (2013). Consumer trust toward retail websites: Comparison between pure click and click-and-brick retailers. *Journal of Retailing and Consumer Services*, 20(6), 538-548.
- *Utz, S., Kerkhof, P., & van den Bos, J. (2012). Consumers rule: How consumer reviews influence perceived trustworthiness of online stores. *Electronic Commerce Research and Applications*, 11(1), 49-58.
- *van der Heijden, H., Verhagen, T., & Creemers, M. (2003). Understanding online purchase intentions: Contributions from technology and trust perspectives. *European Journal of Information Systems*, 12(1), 41-48.
- *van Dyke, T. P., Midha, V., & Nemati, H. (2007). The effect of consumer privacy empowerment on trust and privacy concerns in e-commerce. *Electronic Markets*, 17(1), 68-81.
- *van Slyke, C., Belanger, F., & Comunale, C. L. (2004). Factors influencing the adoption of web-based shopping: the impact of trust. *ACM SIGMIS Database*, 35(2), 32-49.
- *Wakefield, R. L. (2001). *A determination of the antecedents of online trust and an evaluation of current Web assurance seals* (Doctoral dissertation, The University of Mississippi). Retrieved June 10, 2014, from Dissertations & Theses: Full Text. (Publication No. 3010964).
- *Weisberg, J., Te'eni, D., & Arman, L. (2011). Past purchase and intention to purchase in e-commerce: The mediation of social presence and trust. *Internet Research*, 21(1), 82-96.

- *Wen, C. (2012). *The impact of quality on customer behavioral intentions based on the consumer decision making process as applied in e-commerce* (Doctoral dissertation, University of North Texas). Retrieved June 10, 2014, from Dissertations & Theses: Full Text. (Publication No. 3538138).
- *Wu, L. (2013). The antecedents of customer satisfaction and its link to complaint intentions in online shopping: An integration of justice, technology, and trust. *International Journal of Information Management*, 33(1), 166-176.
- *Wu, K. W., Huang, S. Y., Yen, D. C., & Popova, I. (2012). The effect of online privacy policy on consumer privacy concern and trust. *Computers in Human Behavior*, 28(3), 889-897.
- *Yang, Y., Hu, Y., & Chen, J. (2005, August). A web trust-inducing model for e-commerce and empirical research. *Paper presented at the 7th International Conference on Electronic Commerce*, Xi'an, CN. ACM.
- *Yang, Q., Huang, L., & Xu, Y. (2008). Role of trust transfer in e-commerce acceptance. *Tsinghua Science & Technology*, 13(3), 279-286.
- *Yoon, C. (2009). The effects of national culture values on consumer acceptance of e-commerce: Online shoppers in China. *Information & Management*, 46(5), 294-301.
- *Yoon, C., & Kim, S. (2009). Developing the causal model of online store success. *Journal of Organizational Computing and Electronic Commerce*, 19(4), 265-284.
- *Zhou, T., Lu, Y., & Wang, B. (2009). The relative importance of website design quality and service quality in determining consumers' online repurchase behavior. *Information Systems Management*, 26(4), 327-337.

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