



# A Meta-analysis of Online Trust Relationships in E-commerce

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## Abstract

A meta-analysis examined the role of online trust in business-to-consumer e-commerce. The analysis of 16 pairwise relationships derived from 150 empirical studies involving online trust revealed that online trust exhibits significant relationships with selected antecedents (e.g., perceived privacy, perceived service quality) and consequences (e.g., loyalty, repeat purchase intention). Even so, additional analyses demonstrated that methodological characteristics such as study design, website type, and type of items used to measure the trust construct moderated certain online trust relationships. These additional analyses indicated that the relationships between online trust and its respective antecedents and consequences are simultaneously more idiosyncratic, complex, and subtle than previously envisioned. Implications of the analyses for theory, practice, and future research are discussed.

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*Keywords:* Online trust; E-commerce; Consumer behavior; Meta-analysis; Moderator analysis

## Introduction

Consumer online trust is an important construct that has been frequently studied in the e-commerce literature. Online trust is typically conceptualized as a mediator in research models between selected antecedents and consequences. Antecedents of online trust are studied to determine the extent to which they influence online trust. Consequences of online trust are studied to determine the extent to which online trust influences consumers' intention to use, use, or continue to use an e-commerce website (Pavlou 2003). However, empirical research involving online trust has produced inconsistent results. For example, the perceived size of an e-vendor had a significant positive effect on online trust in one study (i.e., Jarvenpaa, Tractinsky, and Vitale 2000), but an insignificant effect in other studies (e.g., Teo and Liu 2007). Inconsistent results create a quandary when attempting to generalize the existence, nature, and magnitude of online trust-related relationships.

One explanation proffered for the lack of consistent findings is that online trust and its antecedents and consequences do not have simple or direct relationships; rather, the relationships are moderated by other variables. The present research addresses possible moderated relationships involving online trust by means of a meta-analysis of empirical research findings from 150 business-to-consumer e-commerce studies involving online trust over the past 16 years. To date, while there have been several qualitative reviews of online trust relationships (e.g., Beatty et al. 2011; Beldad, de Jong, and Steehouder 2010; Chen and Dhillon 2003; Grabner-Kräuter and Kaluscha 2003; Salo and Karjaluoto 2007; Wang and Emurian 2005), no attempt has been made to quantitatively summarize the body of research involving online trust and its antecedents and consequences.

The manuscript begins with a brief description of online trust, followed by identifying 16 pairwise relationships involving online trust. The next section describes the search strategy used to obtain the meta-analysis data, the inclusion/exclusion criteria employed when harvesting data, and the meta-analysis procedures. The following section contains the results for the main effects emanating from the meta-analysis and the impact of possible research methodology characteristics on the relationships examined. The final section includes a

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discussion of the research findings and limitations as well as suggestions for theory, practice, and future research on online trust.

### *Online Trust Construct*

With a plethora of e-commerce websites that consumers can choose from, online trust has become an important construct to investigate in the context of e-commerce. Online trust is generally regarded as reliance on a specific firm by its stakeholders with respect to the firm's business activities in the electronic medium generally, and specifically on its website (e.g., Kim 2012; Shankar, Urban, and Sultan 2002). Three attributes arguably comprise the main elements of online trust: integrity, ability, and benevolence (Lee and Turban 2001). For consumers, the assurance of online trust helps them mitigate vulnerabilities such as security and privacy breaches associated with online commercial transactions (Beldad, de Jong, and Steehouder 2010; Blut et al. 2015).

Although a plethora of antecedents and consequences that map into online trust has been investigated (e.g., Beldad, de Jong, and Steehouder 2010; Chen and Dibb 2010), the present research incorporates only those that have been frequently studied with at least ten observations identified from prior empirical research. For this meta-analysis, antecedents of online trust investigated include disposition to trust, perceived risk, perceived security, perceived privacy, perceived reputation, perceived usefulness, perceived system quality, perceived information quality, perceived service quality, and perceived design quality. Consequences of online trust investigated in the present meta-analysis include satisfaction, attitude, purchase intention, repeat purchase intention, intention to use website, and loyalty. Table 1 provides a brief overview of the 16 online trust relationships examined in the present meta-analysis.

## **Research Methodology**

### *Data Collection*

Several labor-intensive retrieval strategies were used to identify the analysis set of relevant published and unpublished studies. An initial search for studies was conducted through Google Scholar using the terms *trust*, *website*, *e-commerce*, *Internet*, and *online*, and combinations of these terms. The next step was to search for studies within ACM, Business Source Complete, 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 relatively high density of information systems, marketing, and communication articles and papers in which online trust-related studies would likely be found.

In addition, two dozen prominent academic journals (e.g., *Journal of Marketing*, *MIS Quarterly*) in which quantitative, Internet-related articles are frequently published were searched. All articles published in the journals reviewed over the period of 1999 to 2015 were thoroughly examined to determine if

empirical studies included online trust and its antecedents and consequences as measured variables.

Relevant studies were also identified by scanning review papers and references from the retrieved papers. Finally, studies were retrieved from conference and dissertation databases. Proceedings of established information systems conferences including INFORMS, International Conference on Information Systems, Pacific Asia Conference on Information Systems, and the Hawaii International Conference on Systems Sciences were searched as were dissertations in ProQuest Dissertations & Theses Full Text.

Incorporating unpublished research allows addressing the file-drawer problem. Since journals are more likely to publish statistically significant results than nonsignificant results, articles therein are more likely to report the results of studies with effect sizes larger than studies that are not published (Rosenthal 1995). Although there is the possibility of overlooking potential studies, the data collection procedure attempted to obtain a complete set of studies—whether published or unpublished. The harvested values were zero-order correlations involving online trust and its respective antecedents and consequences; these values were used to create a database. In addition to these correlations, reliability estimates associated with the harvested values were coded. Finally, methodological characteristics of each study were also included in the database as potential moderators.

### *Inclusion/Exclusion Criteria*

The literature search resulted in 231 articles and papers reporting empirical studies that incorporated online trust relationships. As long as online trust was measured empirically and was correlated with one or more antecedents or consequences in an e-commerce context, the study was initially included in the meta-analysis database.

However, some studies that examined online trust were excluded from the meta-analysis. Studies were excluded because they used the same dataset as another study (e.g., Gefen, Karahanna, and Straub 2003a; Gefen and Straub 2003) or only measured trust in the Internet (e.g., Pan and Chiou 2011). Studies were also excluded if they only measured trust in an e-vendor's brand (e.g., Ha 2004) or if they focused on business-to-business e-commerce or consumer-to-consumer e-commerce instead of business-to-consumer e-commerce (e.g., Pavlou 2002). Other studies were excluded because they did not report statistics necessary for the meta-analysis or only contained results from multivariate models (e.g., Chen and Barnes 2007). Consequently, 111 papers were excluded for one or more of these reasons. This resulted in 120 papers consisting of 97 journal articles, 14 conference papers, and 9 dissertations reporting findings for 150 independent studies providing data for the meta-analysis. The total sample size from all studies was 54,752; sample sizes ranged from 35 to 6,831 ( $M = 377.6$ ,  $SD = 49.0$ ). The 97 journal articles originated from 50 different journals.

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