Online Buying Behavior and Perceived Trustworthiness

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Authors' contributions

This work was carried out in collaboration between all authors. Author MAS designed the study, conducted literature review, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. All other authors managed the analyses of the study, read, edit, and approved the final manuscript.

ABSTRACT

Trustworthiness perceived by customers plays a very important role in pursuing online buying, particularly in the business-to-consumer (B2C) E-commerce (EC) purchase process. After a thorough investigation of the literature, this study reveals that privacy, security, behavioral attitudes, cognitive perception, and fulfillment/reliability are significant antecedents of perceived trustworthiness that affect the purchasing behavior of customers in B2C EC. This study reviews the literature dealing with trust in EC and develops a conceptual framework for formation of perceived trustworthiness by customers in B2C EC.

Keywords: Business-to-consumer; E-commerce; trust; purchase behavior; consumer.

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1. INTRODUCTION

Consumer online buying behavior is very complex, since the purchasing process is conducted in a virtual medium. There are several driving and inhibiting factors which have a dominant influence on buyer decisions to purchase through an online medium. The literature on information and communication technology (ICT) [35,48,69] suggests that, for online buying, trust is an important, problematic, and complex issue due to the multidimensional nature of its definition, lack of clarity in the relationship between risk and trust, confusion between trust in a website and its antecedents, and the outcomes of a trusting relationship. This study addresses this issue specifically for business-to-consumer (B2C) E-commerce (EC). Customers of different countries differ greatly in the perceived trustworthiness of EC, depending on their social values, security concerns, attitude towards personal trust, and their overall cultural environment. There is empirical evidence on how the nature of trustworthiness, based on behavioral and attitudinal differences, limits the ability of service providers to expand their global operations in different countries [64]. The literature on trust in EC generally focuses on trust in a website or the impact of trust on customer intentions to purchase. However, little information is available that is specific to initial trust formation during the EC purchase process. In this perspective, it is a challenging and important issue for B2C EC to identify the critical factors that affect the development of perceived trustworthiness among customers. This study attempts to investigate these issues, which are very topical and bear significant implications for both researchers and practitioners. The research question is: What are the critical factors that form customer perceptions of the trustworthiness of B2C EC?

The following subsection provides definitions of the key words used in this article in order to conceptualize the underlying paradigms. The next section enlarges on the knowledge available from the literature that informs the research question. The following section provides the resulting propositions, including the proposed conceptual framework. Finally, the conclusions of the study are presented.

1.1 Definitions and Research Concepts

This study contains three core terms: Electronic-commerce (EC), Business-to-consumer [B2C], and Trust. Before going further, it is important to define the specific meanings of these terms, as they are used throughout the paper. Boyer et al. [13] defined EC as "all interactive services that are delivered on the Internet using advanced telecommunications, information, and multi-media technologies." Generally, EC is defined and adopted in this paper as conducting business operations and maintaining business relationships with consumers and supply chain members by means of the Internet [114].

This study is focused primarily on B2C EC. This paper views B2C EC as corresponding to "electronic retailing," i.e., any electronic trade transaction where the purchaser is the end user of the products and services procured.

Deutsch [24] defined trust as: "an individual may be said to have trust in the occurrence of an event if he expects its occurrence and his expectation leads to behavior which he perceives to have greater negative motivational consequences if the expectation is not confirmed than positive motivational consequences if it is confirmed." Management literature [45,108] conceptualizes trust from two perspectives: confidence in the predictability of one's expectations, and confidence in another's goodwill. Moorman et al. [75] defined trust as "a

willingness to rely on an exchange partner." From a marketing point of view, trust forms when one party has confidence in an exchange partner's reliability and integrity. A trust violation would create a negative image of the online store [10]. We define perceived trustworthiness of a website as a belief of assurance in the overall system performance of the website including information; policies and statements; transactional performance; transactional security and privacy; and reliability of price, product, and service under risk-aversion conditions.

To explain the paradigms of the objective, i.e., the critical antecedents of perceived trustworthiness of consumers in B2C EC, this study views the topic from three perspectives. Before concentrating on the conceptualization of a trust formation model of EC, it is important first to identify and examine certain extrinsic and intrinsic factors which help to evaluate the formation of trust in a website. These factors are related to the following three perspectives:

1. Customer behavioral intention to adopt global EC,
2. Societal experience of customers in their own country, and
3. Customer perception of B2C EC quality factors.

Several researchers have found perceived trustworthiness in online retailing as one of the most significant factors that led customers to interact with and purchase from specific websites [5,23,102,109]. Some authors have also determined that perceived trustworthiness is the crucial factor that differentiates customers in different geographical regions. Our study is primarily focused on perceived trustworthiness as it affects customer purchasing intentions in the B2C EC process. Based on concepts of perceived trustworthiness in B2C EC from several scholarly articles [35,48,53,92], this paper will argue that the three aforementioned perspectives constitute the most important determinants of perceived trustworthiness in B2C EC.

1.2 Literature Review

Trust has been an important topic of research in many fields since the 1950s. Mayer et al. [69] reckoned that the study of trust is problematic for many different reasons: "problems with the definition of trust itself; lack of clarity in the relationship between risk and trust; confusion between trust and its antecedents and outcomes; lack of specificity of trust referents leading to confusion in levels of analysis; and a failure to consider both the trusting party and the party to be trusted." The multi-dimensionality of trust–with each field producing its own unique concept, definition, and findings based on functional requirements and trusting characteristics of that field–makes it difficult to arrive at a consensus of its definition. This is evident from the review of several research studies in this area [30,35,48]. Other studies also identified at least 17 different meanings of trust [19,71]. It is evident that different researchers have conceptualized trust differently to suit their research objectives. Therefore, in our case it is necessary to look at trust from the perspective of EC.

The basic focus of trust in the domain of human-computer interaction (HCI) is the user's trust in new technology. Warne and Holland (1999) studied the factors that influence trust between remote workers and their managers. Fox [31] suggested that the information accuracy of a new system affects a user's trust. Fogg et al. [30] viewed the trustworthiness of a website as a key element of website credibility. Lee et al. [62] found that comprehensive information, shared values, and diverse communication affect the level of trust in a cyber store. Trust has also been found to be an important factor in helping customers to overcome

their perceptions of risk and uncertainty in the use and adoption of new technology [36,85]. Research in the field of computer-mediated communications (CMC) shows that internal and external environments of communication media significantly influence interpersonal trust building. Other studies found that trust develops more quickly if the virtual environment can add some features like face-to-face interaction or small talk among partners in CMC [12,113]. Earlier research showed that a significant relationship exists between trust and personality [10]. Furthermore, a study conducted by Li et al. [65] confirmed that the personality trust base and the technology institutional trust base were overshadowed when cognitive-reputation, calculative, and organizational institution trust bases and social influence were also assessed.

Trust research in EC is relatively new compared to other disciplines. Cheskin Research/Sapient [16] conducted groundbreaking work on EC trust, where they identified six building blocks of trustworthiness: seals of approval, brand, navigation, fulfillment, presentation, and technology. The report suggests a model of developing trustworthiness for websites. Some of the research works in this field include topics such as impact of trust and cooperation in the pre-sales integration [53], purchase behavior of consumers in electronic channels [81], trust in the online relationship [76,84], consumer attitude toward a retailer's web page [48], perceived ethical performance of a shopping website [110], a perception of credibility and trustworthiness [30,77], the online purchase process [34,35], cognitive process of trust [99], the effect of communication on trust [37], and the effects of privacy and security on trustworthiness [6,59,92].

There is evidence that, due to lack of trust, customers do not like to interact with or purchase products or services from websites [48,36]. A study conducted in a developing country disclosed that perceived site security, perceived operational security, a disposition towards an attitude of trust, and perceived local environmental security are the main factors for forming perceptions of trust [92]. Staples et al. [98] identified online trust from two perspectives: cognition-based and affect-based. Trust formation in B2C EC has been found to be related to perceived size, perceived reputation, attitude, and risk perception [48,55]. These researchers also suggested that these factors ultimately lead to willingness to buy. Kim et al. [58] examined perceived risk and benefit factors that were likely to mediate the effects of trust on purchase intentions. Reviewing Gefen's framework [35], it is also found that trust is related to familiarity and a disposition to trust that affects purchase behavior. Lee et al. [62] viewed comprehensive information, shared values, and communication as antecedents of trust, which affects customer revisits to a website. Belanger et al. [2002] found pleasure, privacy, security, and web features to be matters related to the perceived trustworthiness of a website. A study by Shareef et al. [93] suggested that familiarity and reputation are important factors for initial trust formation. After reviewing several scholarly articles dealing with perceived trustworthiness and the quality factors of B2C EC, we found that measuring items and constructs on perceived trustworthiness dimensions are quite different for several proposed trust frameworks in terms of the number of scale items, the number of constructs, the definition of the items and constructs, and also in terms of the methodology followed to develop these scale items and constructs [5, 23, 84, 88, 105, 111]. These disparities and the sometimes opposite meaning of constructs lead to a very complex situation when it comes to accepting a model as a standard for a B2C EC perceived trustworthiness framework. The integration of all plausible measurement items and constructs with a strong background definition is essential to developing a global trustworthiness framework for B2C EC.

After the literature review described above on perceived trustworthiness, quality, and purchase behavior in B2C EC, we deconstructed different constructs and meanings of factors that are used frequently in defining perceived trustworthiness in B2C EC. We then developed a suitable paradigm of perceived trustworthiness and postulates based on perceived security, perceived privacy, behavioral attitudes, cognitive perceptions, and fulfillment/reliability as plausible antecedents of perceived trustworthiness relevant to characteristics of B2C EC. Behavioral attitude is relevant to customer behavioral intentions to adopt global EC; cognitive perception is related to societal experience of the customers' own country; and security, privacy, and fulfillment/reliability are dependent on customers' perceptions of B2C EC quality factors.

2. PROPOSITIONS AND CONCEPTUAL FRAMEWORK

McAllister [70] assessed the relationships of interpersonal trust among managers and professionals in organizations to determine how they influenced behavior and performance. His findings show that the mechanism of trust formation and peer trustworthiness is influenced by both affect-based and cognitive-based trust. According to interpersonal trust, trust exists between entities that are good, bad, and/or vulnerable depending on the psychological states of consciousness of human beings. However, this is not identical for attitudes towards a technological system. This is because "People trust people, not technology" [32]. EC represents a blend of social and technological systems, where human actors and technological systems interact. One of the issues most essential in the context of techno-social interaction in EC is trust [87,92]. Therefore, the theory of complementarities can be useful in the study of complex IT-enabled processes like EC. The theory of complementarities refers to the synergistic effect and integrated view of a number of variables influencing organizational processes [107]. In this perspective, in developing and conceptualizing the framework of trust formation on EC, variables influencing the process should be considered as part of an integrated system of factors that are mutually reinforced [92]. By shedding light on the complementary theory, we can encapsulate the complex interaction between consumers and ICT and the interaction effects among various complementary variables of EC. This highlights the significance of consumer behavior and EC operational characteristics. If we translate the core doctrine of socio-technical theory, which explains the social aspects of people and society and the technical aspects of machines and technology, we get an insight into how to integrate the social, organizational, and technological aspects of the EC trust formation framework. The discourses of this theory explain the system, which consists of social and organizational elements as well as technical elements, and emphasizes that successful systems require the integrative interaction of "technical," "organizational," and "social" aspects of the system [22,104,106,108].

Socio-technical theory has significant implications in evaluating the success of IT. The high failure rate of many previous large-scale IT implementation projects, including many in the public sector [UK Passport Office, the London Ambulance Service Dispatch System, the Gires project in Québec or the Canadian Firearms Registry project etc.], is often associated with a focus on delivering a working technical system. To be successfully implemented, it is essential for the technical system to be properly synthesized with the social-cultural aspect and the organizational environment in which the technical system must operate [22,28,80]. EC implementation, development, and successful adoption have organizational, technical, cultural, and social stimuli. Bickmore and Cassell [10] also noted that modeling trust can help understand a socio-technical system. Socio-technical and complementary theories adhere to all these aspects to present a comprehensive theoretical framework of trust formation.

2.1 Customers' Behavioral Intention to Adopt Global EC

2.1.1 Behavioral attitude

In the context of personal trust, Luhmann [67] acknowledged that activities of human beings are special kind of systems that have freedom of action, and they have the potential for diverse action according to human behavioral attitudes. He recognizes that human beings interact with others and in the process understand others and vice versa. The result of interaction is both experience and knowledge. This concept is valid for human interaction with EC. Social penetration theory [2] affirms that personal disclosure and sharing of vulnerable information in online purchase largely depends on users' attitudinal belief on the system. In the light of theory of reasoned action (TRA) [29] and theory of planned behavior (TPB) [1], we can claim that behavioral attitude is an antecedent of trust. Taylor and Todd's [101] decomposed TPB (DTPB) identified differences in behavioral attitude toward any object. Several research studies have recognized that behavioral attitude is critical in influencing transaction intention [83, 84]. In the context of high-tech marketing, Moore [74] recommended the use of psychographic profiling [i.e., a combination of psychology and demographics] to understand the groups associated with different stages of the technology adoption life cycle. A behavioral attitude in relation to perceived trustworthiness is defined for the purposes of this paper as *the personal trait of an individual towards any objects like, human beings, society, organizations, institutions etc. developed, accumulated, and inherited from personal characteristics and cultural values grounded in general beliefs.*. These beliefs are characterized by normative values of culture. Hofstede's [39] findings strongly suggest that cultural differences differentiate customers in terms of behavioral attitudes that, in turn, influence perception and expectation of trustworthiness in EC. A study published by Mutz [78] also suggests that social trust can be fostered by successful Internet transactions while one would become less trusting with negative experiences. There is empirical evidence that behavioral and attitudinal differences in beliefs affect adoption of web interfaces [64,89,100,112]. Therefore, it is very important to look at the relationship between behavioral attitude and perceived trustworthiness. Behavioral attitude is considered to endure across contexts and to be specifically relevant in ambiguous, unstructured situations [49]. It contributes to the explanation of variance in trust [69]. Actually, behavioral attitude, a characteristic defined by the general term individualism [38], plays a significant role an individual's view of perceived trustworthiness [5]. Research conducted in developing countries has found that behavioral attitude has a significant effect on perceived trustworthiness of B2C EC [92]. Based on these arguments, our first proposition is:

P_1: The behavioral attitude of customers has an effect on the perceived trustworthiness of B2C EC.

2.2 Societal Experience of a Customer in His/Her Own Country

2.2.1 Cognitive perception

A society imprints values, ideas, intentions, and speculations on human personality. This perceived psychological phenomenon depends on past experience or cognitive perceptions of rules, regulations, relationships, and traditions. A country's social environment has potential influence in developing trusting attitude in B2C EC [27]. Based on the literature [25, 33, 52, 66], it is evident that cognitive perception develops from the surrounding society, institutional systems, and the country's rules and regulations. These generate pre-trust

disposition and security concerns that affect customer purchasing behaviors; they are very important for the perception of trustworthiness of B2C EC. If customers perceive high uncertainty based on their society/country environment, this would cause them to have a high risk aversion, leading them to avoid uncertain situations [79]. Therefore, customers who perceive high uncertainty from their society have higher trust expectations compared with customers having low uncertainty perceptions [25]. Depending on the above arguments, this research assumes that the cognitive perceptions of consumers about trust can be characterized as *the degree to which customers perceive general confidence towards any objects like human beings, society, organizations, institutions etc. derived from their societal environment grounded on traditional experiences.* This general security concern of consumers is based on their cognitive experiences about security from their country, government, society, local market, shopping, organizations, and inter-personal interactions. This argument is supported by TPB [1] and social exchange theory [26]. Based on the above arguments, this study proposes:

P_2: The cognitive perception of customers has an effect on perceived trustworthiness in B2C EC.

2.3 Customer Perceptions of B2C EC Quality Factors

2.3.1 Perceived security

Previous research [7,8,89] visualizes security of websites as the authentication of web information, policies, and transactions. It refers to perceived uncertainty and risk of transactions that provide information on the web to consumers receiving products/services from electronic-retailers [97,99,110]. Cox et al. [21] refer to perceived risk as the overall amount of uncertainty perceived by a consumer in a particular purchase situation. Hu et al. [43] examines the three major assurance functions served by Web assurance seals: transaction security assurance, consumer privacy assurance, and transaction-integrity assurance. Shareef et al. [95] also examined the effect of security on trust. They found that security assurance has a significant positive impact on increasing consumers' initial trust. Therefore, perceived security is a significant variable that leads tp the formation of consumer trust in a website to make purchase decisions in EC. We paper define security as the degree to which consumers perceive it to be safe to disclose personal and financial information during interactions and transaction with websites. Based on the above arguments, this study proposes:

P_3: The perceived security of customers has a positive effect on perceived trustworthiness in B2C EC.

2.3.2 Perceived privacy

Privacy is defined in this paper as the extent to which customers can be assured that the personal information provided during interactions or transactions with the website will not be disclosed or shared with others or misused for any purpose [92,94]. Several researchers [5,58,90] conducted empirical studies in developed countries regarding the quality of B2C EC and found that perceived privacy is a major concern for Internet customers during website purchasing processes. Customers are afraid that websites can disclose, share, or misuse their personal information [9,14,73]. Trusting the web has a great influence on the perceived privacy feeling of the customers about web purchases [51]. This perception is considered an important determinant of EC acceptance [96]. Contrarily, an empirical study in

a developing country conducted by Shareef et al. [92] found that privacy is not a significant factor for customers' perceived trustworthiness. Nevertheless, it is an important factor in B2C EC, especially for customers in developed countries. Privacy risk reflects the degree to which consumers suffer a loss of privacy due to information collected about them during online purchases [47]. So, perceived privacy is also related to the perceived trustworthiness of the web [95]. Therefore, this study argues:

P_4: The perceived privacy of customers has a positive effect on perceived trustworthiness in B2C EC.

2.3.3 Fulfillment

This construct explains different features of product, price, and order processing and reliability of information, product, and service. It includes items related to characteristics and availability of products; product alternatives; price; and competence in order placing, processing, handling, delivery, and reliability. The understanding of fulfillment varies, depending on the situation [50]. This is an important perceived service quality of B2C EC, which contributes significantly to developing trustworthiness among consumers [11]. This argument gets support from social penetration theory [2] and the literature review of McKnight and Chervany [72]. Following the study of Iacovou et al. [46], we find that perceived benefits of the system positively enhance customer beliefs about the system. The emotional, or affective aspect, of decision-making theories [86] presents evidence that fulfillment can be used as a positive factor to infer trustworthiness and make a purchase decision. It is defined here as the degree to which product features, including price and process accuracy [including policies] assure functional benefit and fulfill customer expectations as promised. It includes product, order processing, price, delivery, return policy, and reliability characteristics. Based on the above arguments, this study proposes:

P_5: The perceived fulfillment of customer purchases has a positive effect on the perceived trustworthiness of B2C EC.

2.4 Perceived Trustworthiness and Purchase Behavior

Trustworthiness is the perception of confidence in a website's reliability, credibility, and integrity [6]. Purchase decisions are greatly influenced by the perceived trustworthiness of the website [40]. Trust is a very significant and important factor in the online environment, because customers have few tangible and verifiable cues regarding the service-provider's capabilities and intentions [103]. Every customer attempts to evaluate the trustworthiness of the website before committing to a business transaction. Perceived trustworthiness is one of the most important driving forces for making a purchase decision [68]. Other research studies have also confirmed that trust is considered an essential factor for consumers making decisions on electronic purchases that is otherwise perceived as risky, and that trust can have a direct or indirect impact on consumer purchasing intentions [4,18,48,57]. Online purchase behavior can be defined as a continuous process which reflects a positive behavior regarding buying any products or services to fulfill any need, with virtual satisfaction based on certain persuasive emotional and physical factors [92]. Generally, customers are quite rational and make systemic use of the information available to them [73]. Purchase decision can be viewed symbolically in terms of emotional responses, sensory pleasures, daydreams, or aesthetic considerations [27]. We argue that perceived trustworthiness might be a very important variable which initiates differences in attitude toward EC and, finally, purchasing behavior.

P_6: The perceived trustworthiness of customers has a positive effect on purchase behavior in B2C EC.

2.5 Conceptual Framework

In the electronic medium, competitors can emerge from anywhere in the world with significant differences in attitude, especially in adopting new information and communication technology [ICT], which is the main vehicle of EC. As a result, national and also global cultural attributes may have significant disparities in behavioral intentions and attitudes of users towards EC. A society imprints some values, ideas, intentions, and speculations on human personalities. These perceived psychological phenomena depend on rules, regulations, relationships, culture, tradition, etc. Depending on cultural factors, behavioral intention of human beings to adopt EC can be substantially different. According to the theories of planned behavior and of reasoned action, beliefs can be controlled by environmental factors. Beliefs and attitudes about a system direct human beings toward an intention. Therefore, behavioral, or attitudinal, aspects of consumers are very important in stimulating a perception of trustworthiness leading to purchase intentions through EC. At the same time, some quality attributes of EC, which substantially denote transactional characteristics, are potential factors for the formation of trust on EC. These factors include perceived security and perceived privacy of the EC transaction, interaction, and operation. Additionally, the credibility of E-retailers to fulfill customers' expectations during the purchase process is also an important factor. Therefore, the proposed framework postulates that the aforementioned five constructs are the critical factors of perceived trustworthiness that consumers have in B2C EC, which affects customers' online purchase behavior. Not only technological and organizational but also behavioral, social, and cultural attributes influence the formation of trust in EC purchase behavior. We have investigated those issues from behavioral, technological, and service quality theories and extensive literature reviews. Since the model has considered both epistemological and ontological paradigms of behavioral, social, cultural, technological, organizational, and service perspectives, we believe that our proposed propositions of trustworthiness on EC, which leads to formulating consumer purchase behavior, is exhaustive as well as parsimonious.

The proposed framework for B2C EC, presented in Fig. 1, is based on the formation of perceived trustworthiness, as outlined in the forgoing propositions.
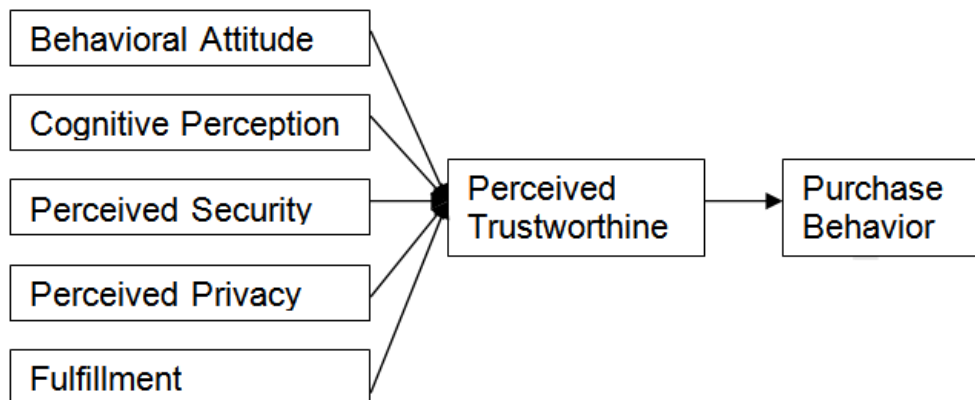

Fig. 1. Perceived trustworthiness-purchase behavior in B2C EC

3. RESEARCH DESIGN

Measurement scale items for all the exogenous and endogenous constructs of the proposed model were developed and operationalized based on the literature review [with certain revisions, modifications, and additions that maintain the consistency of the concept in this study] are shown in Table 1. The measurement items are reflective indicators for the constructs and the constructs are formative for perceived trustworthiness. In the latter case, perceived trustworthiness cannot affect the constructs; rather the constructs affect the concept of perceived trustworthiness and purchase behavior. This concept is supported by Coltman et al. [20]. Burton-Jones [15] and Hoyt [41] documented that knowledge bias and rating bias can develop common method variance (CMV). Hence, we attempted to reduce this effect in two ways: a] Respondents are only those who have experience of purchasing through B2C EC, and b] Respondents are users, and not company managers. Hence they will be less likely to purposely providing false information. Since the outcome of this study has no direct effect on respondents and thus, responses are assumed to be free from the effects of method bias [15]. We developed the related questionnaire with. Based pm a rigorous literature review and theory analyses, and distributed it to respondents in two separate ways. This could also reduce the possibility of CMV bias [41]. Although there is no consensus in how serious common method variance is (CMV) [54], we can claim that our sample collection has tried to reduce any adverse effect that might be due to CMV.

The questionnaire which was prepared for this study to validate the proposed model as shown in Fig. 1. It has 21 measurement items for the five exogenous variables. For the two endogenous variables, there are a total of 9 measurement items. Among the two endogenous variables, perceived trustworthiness is both an exogenous and endogenous variable. A structured questionnaire was used to measure the exogenous and endogenous variables of the study with a 5-point Likert scale ranging from 1 [strongly disagree/never] to 5 [strongly agree/always].

In order to empirically validate the proposed model presented in Fig. 1, a field survey was conducted in Ottawa, Canada among 1000 general consumers. In this research, the respondents are the users of different B2C EC websites. Consumers who had any experience of buying any products or services through EC were requested to participate in this survey, based on their recent experience of doing so. We requested citizens of Ottawa to fill out the questionnaire based on their experiences of any type of B2C EC product/service purchase most recently have done through any one of the websites like eBay, Amazon, Best Buy, Future Shop, Wal-Mart, Sears etc. We divided the Ottawa city into five regions: east, west, north, south, and center to distribute the questionnaire among the citizens randomly. From the Telephone White Pages of the city, we then collected addresses of different areas as well as houses, condominiums, and apartments located in these five regions. Half of the total questionnaires were distributed by mail. The other half was distributed physically to the houses, condominiums, and apartments in different areas in the five zones. We distributed 50 percent of the questionnaires in houses and condominiums and 50 percent in apartments. The empirical study was conducted for a two-month period.

Table 1. Model variables and measurement

Items	Definitions	Questions	Reference
Behavioral Attitude	The personal trait of an individual towards any objects like, human beings, society, organizations, institutions etc. developed, accumulated, and inherited from personal characteristics and cultural values grounded on general beliefs.	1. I believe generally human beings are honest 2. I believe generally human beings are helpful. 3. I believe general people can be trusted. 4. I believe a government looks after citizens' interest. 5. I believe a society looks after citizens' interest.	92
Cognitive Perception	The degree to which customers perceive general confidence towards any objects like, human beings, society, organizations, institutions etc. derived from the surrounding society [where they belong] grounded on traditional experiences.	6. I have experience that government laws protect any cheating of web purchasing. 7. I have experience that company legal policy protects cheating. 8. I have experience that consumer association protects cheating.	92
Perceived Security	The degree to which consumers perceive it to be safe to disclose personal and financial information during an interaction and transaction with websites.	9. The website is safe to interact with for financial purposes. 10. The website has adequate security features. 11. The website protects information about my credit card. 12. The security policy at the website is clearly stated.	95
Perceived Privacy	The extent to which customers can be assured that the personal information provided during interaction or transaction with the website will not be disclosed or shared with others or misused for any purpose.	13. I would hesitate to provide information to the website. 14. The website protects my disclosed information. 15. The website does not share my personal information with other sites.	95

Fulfillment	The degree to which the product features including prices and the process accuracy including policies assure functional benefit and fulfill customers' expectation as promised.	16. The website presents accurate information. 17. Products/services available in this website offer reasonable price. 18. It delivers orders timely. 19. This site makes items available for delivery within a suitable time frame. 20. It sends out the exact items ordered. 21. It has in stock the items the company claims to have.	92, 95
Perceived Trustworthiness	A belief of assurance in the overall system performance of the website including information; policies and statements; transactional performance; and the transactional security; privacy; and reliability of price, product, and service under risk-aversion conditions.	22. What I do through this website is guaranteed. 23. The website takes prompt action when I encounter problems performing my tasks. 24. The management takes full responsibility for any type of insecurity during interaction/ transaction at the website. 25. Legal and technological policies of the site adequately protect me from problems on the Internet. 26. The website follows its standards what it offers.	35, 92, 95
Purchase Behavior	An online purchase decision can be defined as a continuous process which reflects a positive behavior regarding buying any products or services to fulfill any need with virtual satisfaction based on certain persuasive emotional and physical factors	27. I purchase from the website. 28. I have Purchase intention from the website. 29. I would recommend my friends to purchase from this website. 30. I am satisfied with my purchase from this website	92

A total of 417 respondents answered and returned the questionnaires, for a response rate of 41.7 percent. This is quite satisfactory based on our previous knowledge of conducting empirical study among consumers living in any city of a developed country.

4. ANALYSIS AND FINDINGS

Since the measurement items were captured from the constructs of tested models, we did not verify the formation of the constructs through exploratory factor analysis [EFA]. We first checked the internal consistency and reliability of the latent variables by calculating Cronbach's alpha, which justified the reliability of the items and thus internal consistency among the items in each dimension. The alpha scores ranged from 0.725 to 0.957, exceeding the conventional minimum of 0.70 [82].

4.1 Path Analysis

We used LISREL for Path analysis to test the causal relationships in the model between the endogenous variables of perceived trustworthiness and purchase behavior, and the exogenous variables behavioral attitude, cognitive perception, perceived security, perceived privacy, and fulfillment. However, perceived trustworthiness also has been assumed to lead to purchase behavior. The maximum likelihood procedure of LISREL was used for analysis. For path analysis, we used the correlation matrix as input data for all the variables.

The primary model fit indices did not fit well with the data. The path diagram displays both the unstandardized and standardized regression weights [factor loadings] for the exogenous variables. We found the Chi-Square statistic 47.13, p-value 0.00000, and RMSEA .193. Therefore, the model did not fit well. Based on modification indices to improve the model fitness, we added causal relations from cognitive perception to perceived security and error covariance between perceived security and perceived privacy, perceived security and cognitive perception, and cognitive perception and behavioral attitude. After doing this, the fitness of the model improved, with Chi-Square statistic 22.18, p-value 0.00000, and RMSEA .122. However, the model was still not acceptable. The modifications indices recommended causal relations between cognitive perception and perceived security and between perceived privacy and perceived security. However, we did not find any significant relations between perceived privacy and perceived trustworthiness, cognitive perception and perceived trustworthiness, and behavioral attitude and perceived trustworthiness at the 0.05 level. We found only perceived security and fulfillment are significant on perceived trustworthiness at the 0.05 level. Actually we hypothesized perceived privacy and cognitive perceptions to have direct relations with purchase behavior through perceived trustworthiness. However, we found indirect relations between perceived privacy and perceived trustworthiness and between cognitive perception and perceived trustworthiness through perceived security. We also observed a significant causal relation between perceived trustworthiness and purchase behavior. The path coefficients for these non-significant factors were very low. So these factors do not appear to have any relationship with perceived trustworthiness, leading to purchase behavior. Therefore, we removed all the non-significant causal relations and error covariance and ran the model again. Now we got a good model with acceptable model fitness indices. The model is shown in Fig. 2. The two variables, fulfillment and perceived security, together explained 41 percent of the variance on perceived trustworthiness, leading to purchase behavior. The Chi-Square statistic is 2.08 [df = 7], which indicates that the null hypothesis of the model is a good fit for the data. The root mean square error of approximation [RMSEA] [.023] is quite reasonable as a goodness

of fit measure [61]. Other fit measures such as CFI, GFI, and NFI [0.99, 0.98, and 0.99 respectively] indicate that the model fit compares reasonably with the literature [17,61]. This is shown in Table 2.
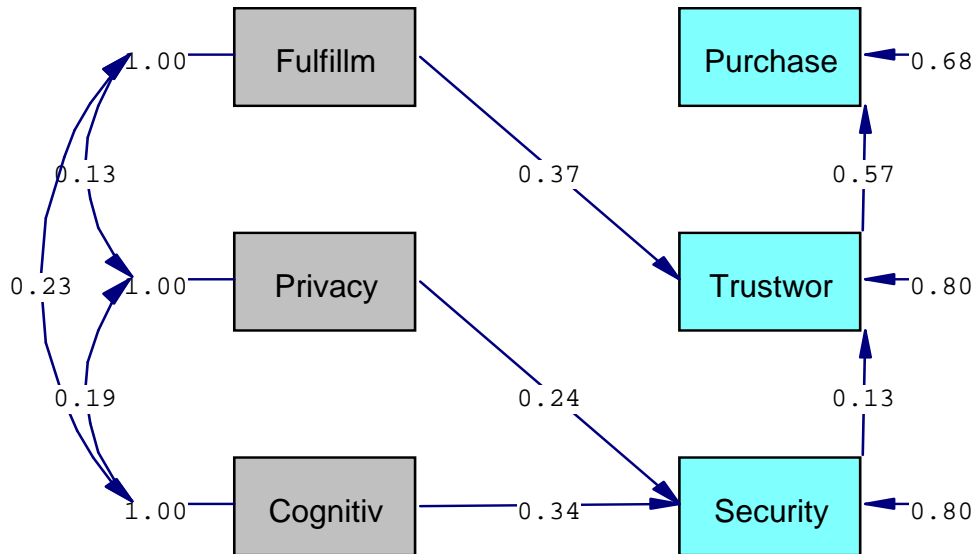

Fig. 2. Final model of perceived trustworthiness-purchase behavior in B2C EC

Table 1. Model fitness values [42,61,91]

Fit measures	Recommended values	Adoption model
Chi-square (χ2)	p≥0.05	2.08(0.1984)
Degrees of Freedom		7
χ2/Degree of freedom (DF)	≤3.0	.297
Comparative Fit Index (CFI)	≥.90	0.99
Goodness of Fit Index (GFI)	≥.90	0.98
RMSEA	<0.06	0.023
Normed Fit Index (NFI)	≥0.90	0.99

5. DISCUSSIONS

This study was designed to address the formation of perceived trustworthiness and to identify how perceived trustworthiness could affect purchasing behavior. The perception and expectation of trustworthiness of B2C EC by consumers were proposed in this study as the major parameters that distinguish purchasing behavior. We argue that consumer purchasing behavior primarily depends on behavioral intention, customers' societal and cognitive experience, and quality perception, which develop the underpinnings of consumer perceived trustworthiness of online purchasing.

Five important constructs – behavioral attitude, cognitive perception, perceived security, perceived privacy, and fulfillment – signify differences in behavioral intention, cultural values, societal experience gathered from their own environment, and quality perception among

customers. In this study these are conceptualized as the underlying paradigms of perceived trustworthiness in B2C EC that lead to purchase behavior in EC. This conceptual framework is grounded in literature review and theoretical perspectives.

Based on path analysis through LISREL, we found that fulfillment [which indicates the performance of the products, services, and the complete interaction and transaction process between the customer and the B2C EC websites for which the customers interact with a website] and perceived security [which conceptualizes the perceptions of the customers regarding the safe environment of the websites for transaction and personal and final information disclosure] affect the perception of trustworthiness of the consumers in the website. Since 41 percent of the variance in perceived trustworthiness is explained by the two significant variables fulfillment and perceived security, [very good for this type of exploratory study] [61], we can claim that the model is appropriate in predicting trustworthiness toward EC purchases. We found from path analysis that our conjectured relation is significant for perceived trustworthiness affecting purchase behavior of consumers of B2C EC. From the statistical analysis, we found that cognitive perception and perceived privacy have direct causal effects on perceived security. However, we observed that behavioral attitude, cognitive perception, and perceived privacy do not significantly contribute towards developing perceived trustworthiness of B2C EC. The findings reveal that a consumer's past experience gathered in a society from millions of different interactions in everyday life has significant effects in developing security perception of B2C EC; however, this cognitive perception does not affect perceived trustworthiness directly. Perceptions of the website that it will maintain privacy have no direct causal relation with perceived trustworthiness; rather it can enhance security perceptions of the website. We hypothesize that behavioral attitude [which reflects a consumer's general attitude about human beings, society, and about any object] has a causal relation with the formation of trustworthiness on B2C EC; however, our findings did not support that proposition.

6. CONCLUSION AND IMPLICATION

Trust in B2C EC is a potential factor in influencing purchase behavior [3,56]. Consumers interact with different B2C EC websites like eBay, Amazon, Wal-Mart, Best Buy, and Future Shop to get product information and finally develop buying behavior. In this aspect, perceived trustworthiness on a website has a potential causal effect on forming buying behavior in the virtual medium [56]. Buying through the virtual medium has some distinct characteristics. When consumers buy any product from B2C EC, they do not interact physically with the sales representatives. They cannot physically verify the quality of the product. Through the Internet, customers view, read, and understand everything that is disclosed about the product, price, and buying process. During the purchasing process, customers have to disclose some very sensitive information like credit card number and personal identification. Their complete realization about the product, process, price, and company policies are derived from the information displayed on the website. Even when customers pay for their intended purchase, they cannot get any explicit or visualized ideas about the quality of the product, or its delivery, packaging, and return policy, if necessary. Under these circumstances, customers have to rely on their disposed trustworthiness in the virtual environment in general, and on the website, in particular. Basically, customers in B2C EC are buying an instant offer by paying with credit cards. So, trustworthiness has a potential impact on the purchasing behavior of customers [93]. The present study has empirically proved this theoretical evidence. Behavioral attitudes are different for different people. Some people are very pessimistic about trusting others. We conceptualized this norm in this study as a behavioral attitude. This is a general characteristic of human beings;

however, we found that this characteristic has no significant effect on specific trustworthiness behavior for B2C EC. Therefore, virtual retailers do not need to focus on personal characteristics of the consumers to develop trustworthiness in their websites. Consumers may buy any product to fulfill their any specific needs. They pay for that particular need in the virtual environment. In lieu of this, they deserve to receive certain values which can be exchanged for their payments. Consumers enthusiastically want to evaluate retailer overall performance in presenting product information, and different policies including return policy, product availability with differentiation, pricing, packaging, and on time delivery. They need to meet their requirements throughout the entire purchasing process, beginning from the interaction with the web to ultimately using the product. This fulfillment is one of the significant constructs for developing perceptions of trust on the website, which tends to shape consumer buying behavior. However, since consumers are buying products in the virtual medium, they put a substantial priority on security related issues of the website, the transaction itself, and information that is disclosed. If they feel it is safe to provide personal and financial information through the purchase process and that the company will not abuse their personal data, and that information will be stored safely and not be shared with others — overall if the consumers feel that the website is authentic, they will tend to trust that website, thereby shaping their purchase behavior. However, according to the results of our empirical test, perceptions of security are impacted by consumer experience with the market and society where they belong. These perceptions are supported by prior research [43,44,60].

Since the B2C EC environment is virtual, consumers are very sensitive concerning the performance of the retailer [3]. Retailers should be very careful about what they promise on the website. In B2C EC, retailers should not include in the scope of their interaction, the promotion of emotional compensation or convincing consumers through direct interaction with sales representatives or by explanations by customer service if there is some post purchase frustration. Whatever retailers promise about the product, process, delivery, policies, and security — they must produce it accordingly. Consumers will develop their trust and form their buying behavior for a particular website based only how retailers can fulfill their needs as viewed through the website, and by the buying process, pricing, product availability, product delivery, and product quality, and how they support consumer security needs for personal and financial data which they disclose during purchase. Once the consumers find the website is distrustful, they will be far less likely to buy any product from that website.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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