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## Understanding the drivers of online trust and intention to buy on a website: An emerging market perspective<sup>☆</sup>

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### ABSTRACT

In recent years, examining the determinants and outcomes of online trust in emerging online markets in the North Africa Region has been lacking. Therefore, the purpose of this study is twofold: first, to gain knowledge of the key predictors of online trust in Morocco; second, to investigate the consequences of online trust on perceived risk, attitude, and online purchase intentions in Morocco. A research model based on the work of Jarvenpaa et al. (2000) was empirically tested. Data was collected from a total of 414 experienced online buyers through online surveys. The PLS approach using SmartPLS 3 was performed to test the hypotheses. The results demonstrate that the effect of perceived size and perceived reputation on online trust is positively significant; online trust has a significant positive influence on attitude and significant negative influence on perceived risk; online trust and attitude positively influence purchase intention; perceived risk has a significant negative effect on attitude and the negative influence of perceived risk on purchase intentions was found to be not significant. The post-hoc analysis further shows that attitude transmits completely the effect of perceived risk on purchase intention, while perceived risk partially mediates the effects of online trust on attitude.

### 1. Introduction

E-commerce refers to a virtual gathering system, in which sellers exchange products or services for money, including interacting and communicating with buyers through the Internet channel (Agag & El-Masry, 2016; Sullivan & Kim, 2018; Yoon & Occeña, 2015). The widespread diffusion and associated advantages of information technology have profoundly revolutionized the usual vision of business among sellers and buyers (Saheb et al., 2021; Verma et al., 2021). Recent statistics estimate that the worldwide e-commerce market in 2021 generates transactions totaling \$4.89 trillion US dollars accounting for 19.5% of the total retail sales, a value which is expected to increase to \$6.39 trillion US dollars accounting for 21.8% of the total retail sales by 2024 (eMarketer, 2021).

Morocco was chosen as a developing country to carry out this Internet commerce adoption study for several reasons. Firstly, Morocco has an estimated population of nearly 36.47 Million (United Nations, 2019), and out of this figure, 54.9% of households in Morocco were reported to be computer users (ITU, 2017). Secondly, recent information suggests strongly that Morocco has been one of the fast-expanding countries in

terms of Internet accessibility. While the average diffusion of the Web in the African countries was 39.3%, more than six in ten individuals were considered as Internet users in Morocco, with a growth of 23.6% since the year 2000 (Internet World Stats, 2020). Finally, Morocco is one of the North African countries committing most to cybersecurity to ensure safety while shopping online. According to the UNCTAD B2C E-commerce Index, secure Internet server penetration in Morocco reached over 54%, compared to 29% for Africa (UNCTAD, 2018). However, despite these economies' preparedness for viable and vibrant electronic markets in Morocco, the reality is that online shopping penetration (% of the total population) is very low (7.89%) (ANRT, 2017). Such findings draw our attention to the fact that this is mainly because of the relative absence of trust among online shoppers as well as the potential risk in the electronic environment and the existence of fears regarding unpredicted online sellers' behavior (Hallikainen & Laukkanen, 2018).

Extant studies in web-based shopping settings have noted that online trust is a powerful and effective way to decrease perceived risk (Hsu & Hsu, 2014; Kim, 2016; Kitsios et al., 2022; Wu, 2013) and promote intention to shop over online marketplaces (Dennis et al., 2010; Ha & Janda, 2014; Shi et al., 2013; Weisberg et al., 2011). More recent e-commerce related research has reported that customers' trust

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may be even more essential for the e-commerce marketplace than in traditional markets (Eastlick & Lotz, 2011; Sullivan & Kim, 2018). This is because most purchases in the context of online marketplaces are conducted over lack of face-to-face human interaction and large geographical distances, where online consumers cannot touch and feel the products directly (Al-Debei et al., 2015; Eastlick & Lotz, 2011; Fu et al., 2018; Wu et al., 2016; Zendeheel et al., 2015), which in turn could increase overall risk and uncertainty during an online transaction (Eastlick & Lotz, 2011; Kim, 2016; Liu et al., 2017; Wu et al., 2020). Earlier studies in e-commerce adoption have explored numerous drivers of trust toward online sellers. For example, one stream of e-commerce literature concentrates on consumer-based factors such as hedonic value (Chang et al., 2016), shopping experience (Lim, 2015), and disposition to trust (Agag & El-Masry, 2016). Many others have focused mainly on website-based factors such as security/privacy (Hsu & Hsu, 2014), perceived usefulness (Kim, 2017), and Website quality (Al-Debei et al., 2015). Moreover, some other researchers consider organizational factors such as perceived size (Jarvenpaa et al., 2000) and perceived reputation (Kaur et al., 2017). And lastly, numerous other studies have focused on institution-based factors such as structural assurance (Kim, 2012), legal structure, and national integrity (Huang & Chang, 2019).

Although this significant effort clarifies how online consumer trust plays a prominent role in the process of retailers' websites developing, many researchers in consumer behavior have paid considerable attention to understanding the generation of trust perceptions in the context of mature e-commerce markets, especially in countries such as China (Peng & Kim, 2014), South Korea (Kim, 2012), Taiwan (Hsu & Hsu, 2014), United States (Eastlick & Lotz, 2011), Spain (Crespo & Bosque, 2010), United Kingdom (Dennis et al., 2010), and Malaysia (Zendeheel et al., 2015). To the best of our knowledge, there is still, unfortunately, a lack of empirical evidence to investigate the role of trust in the formation of online purchase decisions in the context of a growing e-commerce market such as Morocco. Thus, additional research is needed to understand how Moroccan consumers form their trust and shopping intentions toward online retail channels.

Furthermore, many studies that have focused on e-commerce adoption have obtained contradictory results. While various studies on online commerce have shown a significant positive relationship between perceived size and online trust (Grazioli & Jarvenpaa, 2000; Jarvenpaa et al., 2000), not all studies have found the interaction of these variables to be statistically significant (Agag & El-Masry, 2016; Hsu & Hsu, 2014). Additionally, upon closer review of the e-commerce-related studies, we found that customers' perception of risk has been identified to be a significant negative indicator of attitude, (Crespo & Bosque, 2010; Sarkar & Khare, 2017). However, other research we explored shows that risk perception is not significantly associated with attitude (Agag & El-Masry, 2016). Further, we find that the prevailing literature generally favors consumers' perceptions of risk over the Internet as a significant determinant of their intention to use electronic commerce (Liao et al., 2011; Sullivan & Kim, 2018). However, some studies have argued that this relationship is not statistically significant (Bebber et al., 2017). Finally, e-commerce literature proposed that customers' online trust is a significant predictor of intention to purchase via an Internet store (Dennis et al., 2010; Ha & Janda, 2014). However, other online consumer research has revealed that the relationship between the two variables is statistically non-significant (Amaro & Duarte, 2016). These inconsistent results within the studies represent a significant gap in the existing literature and provide new challenges for researchers to warrant additional exploration of these variables in the online commerce era.

Therefore, the key objective of this study is to analyze how online sellers' perceived size and perceived reputation determine Moroccan consumers' online trust. We also examined how online trust affects perceived risk and Moroccan consumers' attitudes. We also clarified how perceived risk influences Moroccan consumers' attitudes and purchase intentions. We also identified how Moroccan consumers' attitudes and

online trust influence purchase intention. Finally, we empirically investigated the mediating roles of risk perception and Moroccan consumers' attitudes.

Using data gathered from 414 experienced e-shoppers in Morocco, this research has major contributions for both online retailers and researchers interested in understanding the online behaviors of consumers in an emerging e-commerce market like Morocco. Firstly, by drawing on the widely established e-commerce model of Jarvenpaa et al. (2000), this study contributes to the literature by providing empirical evidence of not only which drivers have a significant impact on online trust, but also the determinants behind attitudes and intentions of online consumers in a North African context. Secondly, since establishing trust towards e-commerce is a major concern for e-retailers targeting the Moroccan online market, the current study will be useful to formulate possible marketing strategies that enhance perceptions of trust and consequently reduce the degree of risk perceived in the online shopping context. Finally, the findings of this study provide an opportunity for marketers of popular e-commerce sites in Morocco, including Jumia.ma, Amazon.com, and Aliexpress.com to understand how the consumers' beliefs about the reputation and size of their online stores could be stimulated to generate online shopping adoption.

The rest of the paper is organized as follows Section 2. presents a review of prior research related to trust in e-commerce and Jarvenpaa's model of e-commerce. Thereafter, Section 3 proposes the empirical evidence supporting the research hypotheses of the theoretical framework. Further, Section 4 discusses the research methodology and data collection procedures Section 5. reports the reliability and validity outcomes, as well as hypotheses testing and mediation analysis results Section 6. discusses the results and provides the implications for theory and practice along with limitations and directions for future research. Finally, Section 7 concludes our study by summarizing the findings.

## 2. Theoretical background and related work

In the context of e-commerce, academics have used several established theoretical models for explaining consumers' behavior (Gurung & Raja, 2016; Hsu & Hsu, 2014; Sarkar & Khare, 2017). Major models among these are the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975), the theory of planned behavior (TPB) (Ajzen, 1985), and the technology acceptance model (TAM) (Davis, 1989) Table 1. summarizes the main studies that examined the applicability of these theories in the context of e-commerce adoption.

### 2.1. Previous research on online trust

Because of the complexity and the broad nature of online trust, it is not surprising that there is no clear shared consensus about its conceptualization. In the e-commerce literature, researchers identify three types of online trust which are: trusting belief, trusting attitude, and trusting intention (Eastlick & Lotz, 2011; Hsu & Hsu, 2014; Kim, 2012; Ku, 2012). According to Hsu and Hsu (2014), trusting belief is viewed as the individual's perceptions of online vendor attributes, which are the honesty, integrity, and benevolence of e-retailers. The concept of trust as an attitude can be referred to as positive or negative feelings towards online sellers (Kim, 2012). Finally, Eastlick and Lotz (2011) conceptualized online trusting intentions towards the website as the consumer's willingness to rely and depend on an online retailer. In this study, online trust is posited as a combination of both trusting beliefs and trusting intentions toward companies that sell products or services through e-commerce websites (e.g., Amazon.com and Jumia.ma).

Several researchers in online shopping examined numerous antecedents of online trust (Agag & El-Masry, 2016; Al-Debei et al., 2015; Hsu & Hsu, 2014; Lim, 2015). For example, one such study that took place in Taiwan found security and privacy to have an important role in predicting trust towards using e-commerce platforms (Hsu & Hsu, 2014).

**Table 1**  
A review of empirical research in e-commerce adoption.

Study	Context	Participants	Model	Main results
Crespo and Bosque (2010)	B2C e-commerce	998 Internet users in Spain	TPB	Subjective norm → Intention (S+) Shopping experience → Attitude (S+) Perceived risk → Intention (S-)
Dennis et al. (2010)	Internet shopping	150 students in the United Kingdom	TRA, TPB	Perceived control → Intention (NS+) Trust → Intention (S+) Substitutability → Intention (S+)
Kim (2012)	Online shopping	241 experienced users in South Korea	TAM, ITM	Structural assurance → Trust (S+) Ease of use → Usefulness (S+) Usefulness → Intention (NS+)
Hsu et al. (2013)	Online shopping	327 experienced users in Taiwan	TRA, TAM,TPB	Usefulness → Attitude (S+) Trust → Usefulness (S+) Attitude → Intention (S+)
Hsu and Hsu (2014)	Online shopping	242 experienced users in Taiwan	TRA	Perceived size → Trust (NS+) Perceived reputation → Trust (S+) Security → Trust (S+)
Peng and Kim (2014)	Online shopping	416 experienced users in China	SOR	Hedonic value → Attitude (S+) Utilitarian value → Attitude (S+) Attitude → Intention (S+)
Ashraf et al. (2014)	Online shopping	248 Internetusers in Pakistan	TAM, TPB	Trust → Ease of use (S-) Ease of use → Intention (S+) Usefulness → Intention (NS+)
Al-Debei et al. (2015)	Online shopping	273 experienced users in Jordan	TRA, TPB	Perceived benefits → Attitude (S+) Website quality → e-WOM (S+) Website quality → Perceived benefits (S+)
Zendeheel et al. (2015)	Online purchasing	375 students in Malaysia	TRA, IDT,TPB	Relative advantage → Attitude (S+) Compatibility → Attitude (S+) Complexity → Attitude (NS-)
Lim (2015)	E-shopping	320 experienced users in Malaysia	TAM, TRA	Perceived value → Attitude (S+) Emotion → Attitude (S+) Intention → Behavior (S+)
Agag and El-Masry (2016b)	Online travel websites	1431 experienced users in Egypt	TRA, TAM	Disposition to trust → Trust (S+) Perceived size → Trust (NS+) Trust → Perceived risk (S-)
Amaro and Duarte (2016)	Online travel purchasing	1732 Internet users in Portugal	TPB	Communicability → Perceived risk (S-) Perceived control → Intention (S+) Trust → Intention (NS+)
Agag and El-Masry (2016a)	Online travel purchasing	495 experienced users in Egypt	TAM, IDT	Relative advantage → Attitude (S+) Compatibility → Attitude (S+) Usefulness → Trust (S+)
Kaur et al. (2017)	Online shopping	592 Internet users in India	TRA, SOR	Offline presence → Trust (S+) Offline presence → Attitude (S+) Familiarity → Attitude (S+)
Li et al. (2017)	E-auctions	210 experienced users in China	TAM	Enjoyment → Usefulness (S+) Enjoyment → Attitude (S+) Security → Trust (S+)
(Sarkar and Khare, 2017)	Online shopping	300 experienced users in India	TAM	Usefulness → Attitude (S+) Ease of use → Attitude (NS+) Perceived risk → Attitude (S-)
Zhao et al. (2017)	Online fresh food purchasing	122 experienced users in China	UTAUT	Perceived value → Intention (S+) Online comments → Perceived value (S+) Online comments → Perceived risk (S-)
Loketkrawee and Bhatiasevi (2018)	Online grocery shopping	400 experienced users in Thailand	TAM	Entertainment → Attitude (S+) Convenience → Attitude (S+) Trust → Attitude (S+)
Sullivan and Kim (2018)	E-commerce	312 experienced users in South Korea	TAM	Perceived price → Perceived quality (S+) Usefulness → Intention (NS+) Perceived price → Perceived value (S+)

[Legend (S+) denotes significant positive relationships; (S-) denotes significant negative relationships; (NS+) denotes non-significant positive relationships; (NS-) denotes non-significant negative relationships; TPB = Theory of planned behavior; TRA = Theory of reasoned action; TAM = Technology acceptance model; ITM = Initial trust model; SOR = Stimulus organism response theory; IDT = Innovation diffusion theory; UTAUT = Unified theory of acceptance and use of technology.].

Additionally, Al-Debei et al. (2015) provided useful insights by indicating that online shopping trust was enhanced by electronic word of mouth. Moreover, a study in Malaysia reported that experience in electronic shopping has a considerable effect on consumers' trust perceptions (Lim, 2015) Agag and El-Masry (2016b.) surveyed 1431 consumers who did shop online and confirmed that a greater level of disposition to trust leads to high levels of trust towards online travel websites (see Table 1). Another group of existing research in the context of Internet shopping reminds us that online trust leads to several favorable outcomes (Agag & El-Masry, 2016; Ashraf et al., 2014; Lee et al., 2011;

Li et al., 2017). For example, a study on e-auctions revealed that trust is the key element in determining perceived usefulness (Li et al., 2017). Furthermore, Lee et al. (2011) acknowledged that trust towards online shopping malls is a direct positive determinant of online consumer reviews. Using a quantitative approach, Ashraf et al. (2014) have provided evidence that trust toward online shopping positively and significantly predicts perceived ease of use of a website. A study in Egypt observed that the greater levels of trust, the higher the amount of positive word of mouth towards online travel websites (Agag & El-Masry, 2016).

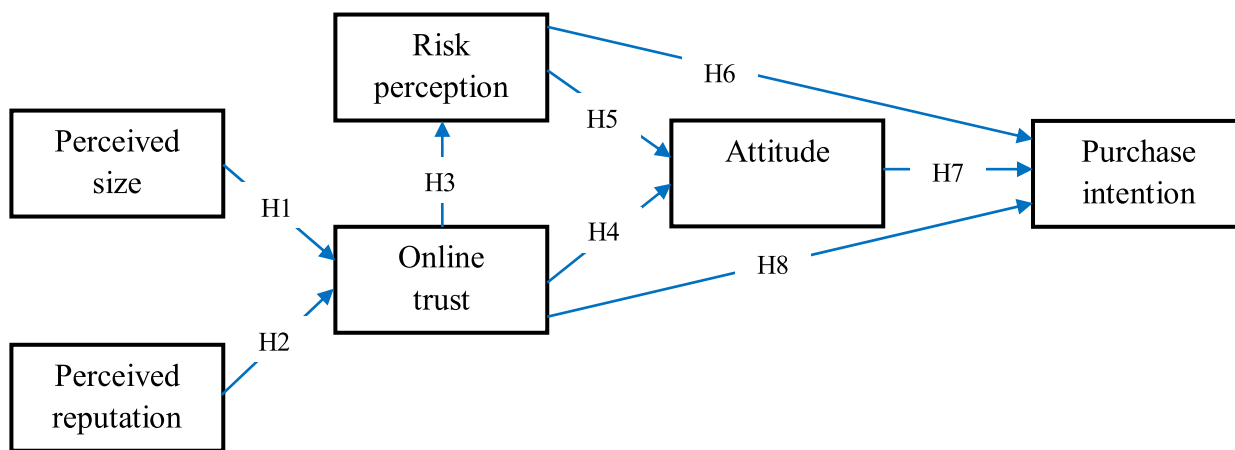


Fig. 1. Research model (Adapted from Jarvenpaa et al., 2000).

## 2.2. Jarvenpaa's model of e-commerce

The core goal of Jarvenpaa's model of e-commerce is to explain how an individual's beliefs influence behavioral intentions through attitudes (Jarvenpaa et al., 2000). This model postulates that attitudes, perceived risk, and online trust play an important role in predicting behavioral intentions. We have used this model because this framework demonstrated a highly predictive power in an e-commerce setting. More precisely, this research model explained 83%, 57%, 38%, and 43% of the variance in online trust, attitude, perceived risk, and intention to buy online, respectively (Jarvenpaa et al., 2000). Jarvenpaa et al. (2000) have used the theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) to explain the consumers' behavior in the context of e-commerce. Previous authors in different countries have also applied an extended version of TRA as a baseline model to explain the online shopping decision process (Hsu & Hsu, 2014; Kaur et al., 2017). For instance, a study of Indian online shoppers done by Kaur et al. (2017) used the TRA as a theoretical basis to gain an understanding of the effects of familiarity, perceived reputation, and offline presence. In particular, the empirical findings show that familiarity and perceived reputation along with offline presence were significant predictors for attitudes towards e-shopping. These authors also found that attitudes among these online shoppers had a significant positive effect on willingness to purchase on the Internet. A study by Hsu and Hsu (2014) on Taiwanese online consumers has applied an adapted TRA approach by examining the effect of perceived risk and individual's trust on online shopping attitudes. The results suggest that the level of risk perceived while purchasing online and consumer's trust perception have a considerable effect on individuals' attitudes. The study also maintained that shoppers' attitudes increased the likelihood of shopping online.

## 3. Research model and hypotheses development

Fig. 1 shows the structural model of the present study and summarizes the hypothesized relationships among latent variables. This model is based on the work of Jarvenpaa et al. (2000). The basic premise of this belief-attitude-intention model is that online trust is hypothesized to be directly determined by two salient beliefs, including users' perception of online retailer size and perceived reputation of the e-vendor (H1 and H2). At the same time, online trust leads to the formation of perceived risk (H3), while online shopping attitude is affected by two factors, namely trust toward the e-vendor and risk perceptions (H4 and H5). Purchase intention is the key dependent variable. Its major causal determinants are risk perceptions, attitudes, and online trust (H6, H7, and H8).

## 3.1. Perceived size, perceived reputation, and trust

In this research, perceived size is defined as a general belief that a large Internet seller has the necessary competence and financial resources to honor its promises to its consumers (Hsu & Hsu, 2014; Jarvenpaa et al., 2000). Research has recognized that consumers' perceptions of vendor size have a significant effect on trust in online shopping. For instance, Grazioli and Jarvenpaa (Grazioli & Jarvenpaa, 2000) declared that high degrees of online firm's size generate stronger trust towards commercial websites. Similarly, Jarvenpaa et al. (2000) indicated that when online shoppers perceive a higher large vendor size, they are likely to perceive it as trustworthy. In view of the empirical studies discussed above, the first hypothesis is presented as follows:

**H1.** Perceived size will have a significant positive effect on online trust.

Perceived reputation is defined as a consumers' belief that enables an online seller (trustee) to be perceived subjectively as trustworthy by an online consumer (trustor) (Kaur et al., 2017). The existing empirical evidence has confirmed that perceived online store reputation is one of the variables that play an important role in determining trust in e-commerce (Huang & Chang, 2019; Kaur et al., 2017; Kim, 2017). For example, Eastlick and Lotz (2011) concluded that consumers' perception of the vendor's reputation is a key factor that determines trust towards unfamiliar online insurance retailers. More recently, Huang and Chang (2019) proposed that consumers' belief about the reputation of a foreign e-merchant contributes significantly to the formation of consumers' trust towards cross-border e-commerce websites Kaur et al. (2017). have also demonstrated that the perceived reputation of an online vendor has a significant influence on consumers' trust perceptions about using platforms for online shopping. A similar observation was made by Kim and Peterson (2017) who found that the reputation of an online retail channel is one of the dominating sources for trust in B2C e-commerce websites. In our attempt to assess the construct of perceived reputation, the second research hypothesis is proposed:

**H2.** Perceived reputation will have a significant positive effect on online trust.

## 3.2. Trust, perceived risk, and attitude

Online trust is portrayed as trusting beliefs and trusting intentions about the extent to which an online consumer will accept vulnerability and dependability to rely on an online vendor's credibility, benevolence, and competence to fulfill its promises in the future (Eastlick & Lotz, 2011). Previous research on e-commerce adoption



has suggested that consumers' trust is vital for lowering individual consumer perceived risk in the domain of online shopping (Amaro & Duarte, 2016; Kim, 2016; Mortimer et al., 2016). For instance, Amaro and Duarte (2016) validated the negative influence of Internet shoppers' trust on the risk involved in online travel purchasing. In a similar vein, Chang et al. (2016) acknowledge that consumers' trust regarding online shopping exerts negative influences on online perceived risk Kim and Koo (2016). also found that online marketplace trust is a direct negative antecedent of risk perception among online consumers. In support of this view, Mortimer et al. (2016) noted that higher levels of e-shoppers' trust lead to low levels of risk perceptions of online grocery shopping. Hence, the third hypothesis is suggested as follows:

**H3.** Online trust will have a significant negative effect on risk perception.

As Fishbein and Ajzen (1975) pointed out, attitude refers to one's favorable or unfavorable immediate evaluation of performing a particular behavior. This study considered the definition by Al-Debei et al. (2015) who have conceptualized consumers' attitude towards online shopping as a specific kind of positive or negative evaluation about adopting e-commerce. Past investigations within the e-commerce adoption literature have proved that trust is a major determinant of online shopping attitudes (Al-Debei et al., 2015; Gurung & Raja, 2016; Li et al., 2017; Loketkrawee & Bhatiasevi, 2018). In this sense, Gurung and Raja (2016) indicate that higher levels of online shoppers' trust are considered a major source of shaping favorable customers' attitudes towards online purchasing. This finding was reinforced by Al-Debei et al. (2015) who suggest that perceived trust towards online shopping exerts a positive influence on the formation of consumers' attitudes. According to Li et al. (2017), consumers' online trust towards e-auctions has a positive relationship with attitudes toward using the online marketplace in China. Furthermore, Loketkrawee and Bhatiasevi (2018) found that when the online grocery shopping website is more trustworthy, the attitude toward the online retail environment is positive. In view of the aforementioned evidence, the fourth hypothesis is thus proposed as follows:

**H4.** Online trust will have a significant positive effect on an individual's attitude.

### 3.3. Perceived risk, attitude, and purchase intention

According to Zendeled et al. (2015), the perceived risk associated with online sellers is the degree to which an individual believes about the potential losses when purchasing a product and/or a service from a particular e-commerce website (e.g., delivering defective product, credit card numbers stealing and unauthorised sharing of personal information). E-commerce research finds that as e-commerce risks decreased, attitudes towards Internet shopping strengthened (Crespo & Bosque, 2010; Sarkar & Khare, 2017; Zendeled et al., 2015). In their study, Chakraborty et al. (2016) revealed that risk associated with online shopping is a direct negative antecedent of attitudes of online consumers. In support of this notion, Crespo & Bosque (2010) make the point that consumers' beliefs about the risk that occurs in B2C e-commerce is a significant barrier inhibiting attitudes towards online purchases. Perceived risk as the direct antecedent variable for customers' attitude toward using an online store is also reported in the study conducted by Sarkar and Khare (2017). They evidenced that a consumer's perceived risk is negatively related to e-shopping attitudes. Also, Zendeled et al. (2015) suggested that a low level of students' online risk perception can lead to an increase in building a positive attitude toward online purchasing in Malaysia. Considering the above discussion, we suggest the fifth hypothesis:

**H5.** Risk perception will have a significant negative effect on an individual's attitude.

According to the theory of planned behavior, behavioral intention refers to the individual's subjective probability that a person will perform a specified future behavior under conditions of a person's volitional control (Ajzen, 1985). Following the conceptualization of Zhao et al. (2017) and Teng et al. (2018), this study defined online buying intentions as the extent to which an individual will purchase products or services from an online merchant. Prior literature points to a negative association between perceived risk and purchase intention (Liao et al., 2011; Sullivan & Kim, 2018; Zhao et al., 2017) Ingham et al. (2015)., in their meta-analytic study, reported that consumers' perceived risk is a significant negative indicator of consumer intent to purchase from websites. Similarly, Liao et al. (2011) postulate that consumers' online risk perceptions while shopping online had a negative effect on online shoppers' intentions Sullivan and Kim (2018). indicated that risk among consumers had a negative influence on purchase intention on the Internet Zhao et al. (2017). have provided evidence that consumers' risk in e-shopping has a significant negative relationship with intentions to purchase from online food websites. Accordingly, the sixth hypothesis is listed below:

**H6.** Risk perception will have a significant negative effect on purchase intention.

### 3.4. Attitude, trust, and purchase intention

Other scholars have revealed that attitude plays a paramount role in shaping intentions to shop in a web-based environment (Lim, 2015; Peng & Kim, 2014; Zhang et al., 2019). For example, Hsu et al. (2013) emphasize that attitudes toward purchasing from an online store is a strong determinant of consumers' Internet purchasing intentions. A study conducted by Lim (2015) shows that if the attitude toward e-shopping is positive, the consumers' intentions to buy online will accordingly be enhanced. Peng and Kim (2014) have also found a direct and significant link between positive attitudes and consumers' likelihood to buy online. Consistent with this statement, Zhang et al. (2019) posited that if consumers evaluate online apparel websites positively, they will be more likely to conduct a particular transaction with online retailers. Following the theory of planned behavior and the above empirical evidence, we formulated the seventh hypothesis:

**H7.** Individual's attitude will have a significant positive effect on purchase intention.

Several researchers have revealed that trust affects purchase intentions towards online vendors positively (Dennis et al., 2010; Ha & Janda, 2014; Lee et al., 2011). Bock et al. (2012) empirically proved that consumers' perceived trust is an important determinant of website use intention. Similarly, Dennis et al. (2010) have also argued that one's perception of trust is a key factor in predicting the consumer's intention to shop online. Ha and Janda (2014) demonstrated that the effect of online buyers' trust in website-based e-commerce on customers' purchasing intentions was statistically significant. Lee et al. (2011) emphasized that a high perception of trust leads to a higher level of online buyers' intentions to purchase. Taking these findings into consideration, the eighth hypothesis is therefore proposed:

**H8.** Online trust will have a significant positive effect on purchase intention.

## 4. Research methodology

This study targeted individuals who reside in Morocco and had past online shopping experience. We used a cross-sectional design with self-administered online surveys for theoretical framework testing and construct validation. As most existing e-commerce consumers are also In-

ternet users (Chen & Lu, 2011), we have adopted online surveys as the data collection method. Web-based questionnaires are very useful for collecting quick and inexpensive empirical data on consumer behaviors in the e-commerce context.

Data for the main study were collected over five months from March to July in 2019. The participants were recruited through electronic mail message invitations and professional social media groups. The questionnaire was pilot tested for appropriateness of our instrument and clarity of survey questions with a sample of 50 Moroccan consumers who had experienced e-commerce marketplaces. Consequently, several indicators were slightly adjusted according to comments and suggestions from the pilot study. The items measuring the six underlying latent constructs are summarized in the Appendix.

The online survey for this study was conducted in four sections that took approximately 12 to 15 min to complete. The first part served as a homepage to request invitees' participation and to explain the general purpose of the study. The participants were also notified that participation was voluntary, that their anonymity would be assured, that there were no rights or wrong answers, and that they should answer questions as honestly as possible. To further encourage participants to offer reliable responses, the respondents were promised that after completing the questionnaire they will get the results of the study in their email addresses.

In the second part, a filter question was used to identify experienced e-commerce shoppers. The question was "Do you have any experience with a specific e-shopping website". Following the screening question, we asked the participants who responded "yes" to identify a specific e-shopping website they have a purchase experience with (e.g., Amazon.com, Booking.com, Jumia.ma, and Aliexpress.com). In addition, they were also asked about their motivations to shop online and the product/service they purchased on this website.

Based on the e-commerce website chosen, the third part then asked subjects on five-point Likert scales to answer questions about their beliefs, attitudes, and intentions. All the reflective validated instruments were obtained from the study by Jarvenpaa et al. (2000). Perceived size was measured with two manifest variables. Perceived reputation was developed based on two indicators. Customers' trust was operationalized through three manifest items. Risk perceptions were operationalized by a three-item scale. The variable of attitude toward e-retailers was assessed by three measurement items. At long last, the intention to purchase was measured by two observed variables. The final part contained basic demographic information, which included age, gender, occupation, and education.

## 5. Data analysis and results

Data were analyzed using partial least squares (PLS) and based on SmartPLS software version 3.2.8. Both its widespread use in technology adoption research, especially for academics in the context of e-commerce adoption (Agag & El-Masry, 2016; Amaro & Duarte, 2016; Sullivan & Kim, 2018; Yeh et al., 2012), and its ability to examine not only the measurement relationships between observed and latent variables but also the structural relationships linking the exogenous and endogenous latent variables (Hair et al., 2017; Sharma et al., 2022) are the reasons for using this variance-based SEM technique as a statistical method for estimating model parameters (see Fig. 2).

### 5.1. Descriptive analysis

#### 5.1.1. Characteristics of participants

Table 2 presents the complete demographic information of the sample. Regarding the country of residence, this study surveyed a total of 414 Moroccan residents. In terms of gender, the sample was not well balanced, comprising 63% men (261) and 37% women (153). A great majority of online shoppers (68.6%) were in the 18–29 age group. Online shoppers are highly educated. Almost 98.6% of the participants

**Table 2**  
Demographic characteristics of participants.

Category	Subcategory	Frequency	Percentage
Gender	Male	261	63
	Female	153	37
Age	18–24	137	33.1
	25–29	147	35.5
	30–39	89	21.5
	40–49	33	8
	50–64	8	1.9
Education	High school or below	3	0.7
	Diploma	3	0.7
	Bachelor's degree	92	22.2
	Master's degree	293	70.8
Marital status	Doctoral degree	23	5.6
	Married	129	31.2
Occupation	Single	285	68.8
	Manager	120	29
Social class	Employee	100	24.2
	Student	78	18.8
	Employment seekers	68	16.4
	Entrepreneur	26	6.3
	Freelance	16	3.9
	Others	6	1.4
	Middle class	341	82.3
Working-class	Working-class	62	15
	Upper class	11	2.7

hold either a master's degree or at least a university degree. Online consumers are most often declared as single (68.8%). Only 31.2% of individual consumers declared that they were married. As noted in Table 2, the demographic distribution reveals a diverse sample, comprising managers (29%), employees (24.2%), students (18.8%), employment seekers (16.4%), entrepreneurs (6.3%), freelancers (3.9%), merchants (1%), workers (0.2%), and liberal professionals (0.2%). Based on descriptive results, the majority of subjects (82.3%) were from the middle class.

#### 5.1.2. Online shopping behaviors

Table 3 presents the online behavior of Moroccan shoppers. All the participants had access to the Internet (3G/4G or Wi-Fi) and have made previous online purchases with an online marketplace. Of these 414 participants, about 56.5% said their usage of the e-commerce marketplace was by mobile electronic devices such as smartphones and tablets. Laptops are also frequently chosen as a way of purchasing online (36.1%). Furthermore, almost 42.5% of the participants reported purchasing from the Internet through credit cards, whereas 31.8% of the respondents are doing transactions by cash on delivery (COD). A great percentage of consumers (59.4%) report that their last use of an Internet shopping mall goes back to a month. 28.3% of participants often used e-shopping sites between 1 and 6 months. When asked about the main purposes for transacting on the Internet, 31.8% of interviewees indicated saving time to be the prominent factor that influences their decisions to purchase via the Internet. 15.2% of Moroccan online consumers mentioned comparing product quality and prices as their primary reason for choosing to shop online. The third dominant factor that influences Moroccan consumers to shop online is the availability of discounted prices (15.2%). Nearly 14.7% of the participants prefer to purchase over shopping websites because of the ability to find opinions of past consumers. Benefit from wider product selection was cited by 14.7% of Moroccan consumers as one of the factors that motivate them to shop online. Only 7.5% of consumers said that familiarity with online merchants was among key considerations when buying online. The main products and services purchased online by Moroccan consumers are electricity, Internet and water bill payment (20.9%), followed by hotel reservations (13.1%), travel ticket (13.1%), clothing/shoes (11.9%), electronic products (9.1%), watches/jewelry (7.8%), perfumes/cosmetics (5.2%), concerts/plays (3.6%), food products (3.5%), online courses (3.2%), and software/video games (2.2%). We learned also from questionnaire re-

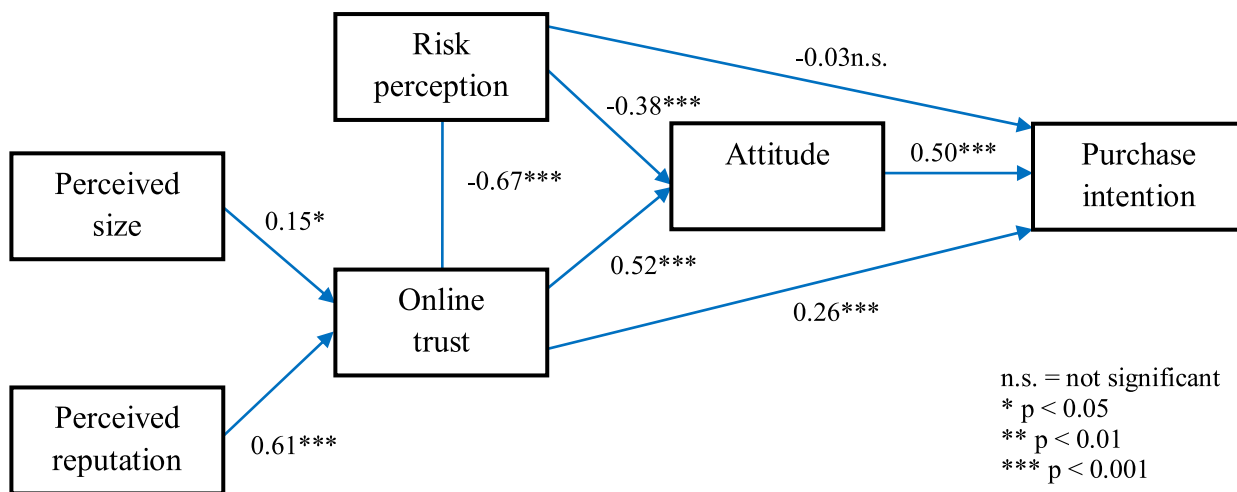


Fig. 2. Path coefficients and significance levels.

Table 3 Description of shoppers' online behavior.

Category	Subcategory	Frequency	Percentage
Device used	Smartphone	327	53.4
	Laptop	221	36.1
	Personal computer	45	7.4
	Tablet	19	3.1
Modes of payment	Credit cards	297	42.5
	Cash on delivery	222	31.8
	Mobile payment apps	104	14.9
	PayPal account	52	7.4
E-shopping experience	Cash solution technology	24	3.4
	Less than 1 month	246	59.4
	1 – 3 months	89	21.5
	3 – 6 months	28	6.8
	6 - 9 months	20	4.8
Reasons for using	9 – 12 months	10	2.4
	More than 12 months	21	5.1
	To save time	273	31.8
	Compare offers	130	15.2
	Discounted prices	130	15.2
	Past consumers judgments	126	14.7
	Multiple selections	126	14.7
Items purchased	Familiarity	65	7.5
	Others	8	0.9
	Bill payment	240	20.9
	Hotel reservations	150	13.1
	Travel ticket	150	13.1
	Clothing/shoes	137	11.9
	Electronic products	104	9.1
	Watches/jewelry	89	7.8
	Perfumes/cosmetics	60	5.2
	Concerts/plays	41	3.6
	Food products	41	3.5
	Online courses	37	3.2
	Video game/software	25	2.2
Websites used	Others	73	6.4
	Jumia.ma	98	23.7
	Aliexpress.com	72	17.4
	Booking.com	38	9.2
	Orange.ma	29	7
	Oncf.ma	22	5.3
	Amazon.com	20	4.8
	Iam.ma	18	4.3
	Avito.ma	17	4.1
	Inwi.ma	12	2.9
	Others	88	21.3

sponses that Jumia.ma (23.7%), Aliexpress.com (17.4%), Booking.com (9.2%), Orange.ma (7%), Oncf.ma (5.3%), Amazon.com (4.8%), Iam.ma (4.3%), Avito.ma (4.1%), Inwi.ma (2.9%) are recognized as the most popular e-commerce platforms in Morocco.

5.2. PLS results

The PLS-SEM statistical approach was conducted into two stages following the recommendation of Hair et al. (2017). The researchers start with the test of the measurement model (outer model). Then, this study verifies the structural model (inner model).

5.2.1. Measurement model

The analysis of the measurement model addresses the following aspects. First, we estimated internal consistency for reliability. After, we evaluated both convergent and discriminant validity (Hair et al., 2017). To assess the reliability of items and therefore the internal consistency among the measures, we used Cronbach's  $\alpha$  scores and composite reliability (CR) (Hair et al., 2017). As presented in Table 4, the results indicate that Cronbach's  $\alpha$  for all six variables falls between 0.74 and 0.84, which exceeded the minimum threshold value of 0.70 (Hair et al., 2017). Additionally, all CR coefficients for the six theoretical constructs ranged from 0.86 to 0.90, which were above the commonly minimum cutoff score of 0.70 (Hair et al., 2017). Therefore, composite reliability and Cronbach's  $\alpha$  indicate good measures' reliability and internal consistency.

According to Hair et al. (2017), convergent validity was done by means of two phases. Specifically, in the first step, we check the outer loadings of the measurement items, and in the second procedure, we verify the average variance extracted (AVE) values. Viewing the convergent validity results, it can be noted that all items loaded from 0.80 to 0.95 on their corresponding latent variables at  $p < 0.001$  significance level (see Table 4), which were above the reference value of 0.70 (Hair et al., 2017). Additionally, all constructs' AVE was between 0.67 and 0.82, which exceeds the recommended minimum AVE criterion of 0.50, showing adequate convergent validity (Hair et al., 2017).

In an attempt to determine discriminant validity, we verified cross-loadings and Fornell-Larcker criterion (Hair et al., 2017). The goal here is to diagnose if each reflective construct has the strongest relationships with its indicators than any other latent variable. Using cross-loading analysis, the results indicate that all measurement items always loaded extremely higher on their respective latent constructs than on any other constructs (see Table 4). The Fornell-Larcker assessment demonstrates that square roots of AVEs (bold diagonal elements), in all cases, exceed the inter-construct correlations (off-diagonal elements) (see Table 5). Overall, cross-loadings, as well as the Fornell-Larcker criterion indicate that the discriminant validity of the six constructs was supported.

**Table 4**  
Cross loading analysis, reliability, and convergent validity.

Constructs	Items	Cross loading						$\alpha$	CR	AVE
		1	2	3	4	5	6			
1. Perceived size	PS1	0.95	0.43	0.43	-0.37	0.39	0.40	0.78	0.89	0.81
	PS2	0.84	0.27	0.24	-0.26	0.27	0.25			
2. Perceived reputation	PR1	0.42	0.93	0.68	-0.56	0.66	0.52	0.79	0.90	0.82
	PR2	0.31	0.88	0.52	-0.47	0.52	0.40			
3. Online trust	OT1	0.32	0.51	0.81	-0.50	0.57	0.60	0.82	0.90	0.74
	OT2	0.36	0.57	0.88	-0.55	0.67	0.57			
	OT3	0.35	0.65	0.89	-0.65	0.75	0.58			
4. Risk perception	RP1	-0.29	-0.40	-0.46	0.80	-0.49	-0.37	0.76	0.86	0.67
	RP2	-0.27	-0.54	-0.64	0.81	-0.71	-0.53			
	RP3	-0.34	-0.44	-0.49	0.84	-0.54	-0.48			
5. Attitude	AT1	0.31	0.60	0.67	-0.65	0.87	0.60	0.84	0.90	0.76
	AT 2	0.31	0.55	0.68	-0.60	0.88	0.68			
	AT3	0.35	0.57	0.67	-0.64	0.85	0.62			
6. Purchase intention	PI1	0.26	0.39	0.56	-0.48	0.59	0.87	0.74	0.89	0.79
	PI2	0.40	0.52	0.64	-0.54	0.70	0.91			

[Legend  $\alpha$  = Cronbach's reliability coefficients; CR = Composite reliability; AVE = Average variance extracted. All outer loadings are statistically significant at  $p < 0.001$ ].

**Table 5**  
Means and Fornell-Larcker criterion analysis.

Latent variables	Mean	Correlations					
		1	2	3	4	5	6
1. Perceived size	4.14	<b>0.90</b>					
2. Perceived reputation	4.24	0.41	<b>0.91</b>				
3. Online trust	4.05	0.40	0.67	<b>0.86</b>			
4. Risk perception	2.09	-0.36	-0.57	-0.67	<b>0.82</b>		
5. Attitude	4.06	0.37	0.66	0.77	-0.73	<b>0.87</b>	
6. Purchase intention	4.02	0.38	0.51	0.67	-0.57	0.73	<b>0.89</b>

[Legend Bold diagonal elements represent the square root of the AVE. Off-diagonal values depict the correlations between latent variables].

**Table 6**  
Summary of the structural results in PLS-SEM.

Hypothesis	$\beta$	R <sup>2</sup>	Supported?
H1 Perceived size → Online trust	0.15*	0.47	Yes
H2 Perceived reputation → Online trust	0.61***		Yes
H3 Online trust → Risk perception	-0.67***	0.44	Yes
H4 Online trust → Attitude	0.52***	0.68	Yes
H5 Risk perception → Attitude	-0.38***		Yes
H6 Risk perception → Purchase intention	-0.03n.s	0.56	No
H7 Attitude → Purchase intention	0.50***		Yes
H8 Online trust → Purchase intention	0.26***		Yes

[Legend \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ ; n.s = Not significant;  $\beta$  = Path coefficient; R<sup>2</sup> = Coefficient of determination].

5.2.2. Structural model

Since the evaluation of the measurement model provided evidence of internal reliability, convergent validity, and discriminant validity, the structural model was assessed using (1) the significance of the path coefficient (p-value) obtained on the basis of bootstrap technique with 5000 resamples and (2) the coefficient of determination (R<sup>2</sup>) of the endogenous or dependent latent variables (Hair et al., 2017). Table 6 and Fig. 2 display the PLS-SEM analysis results.

The PLS path model indicates a generally acceptable fit since Standardized Root Mean Square Residual (SRMR) has a value of 0.076, which is less than 0.08 (Nitzl et al., 2016). The results in Table 6 demonstrate that seven of the eight structural hypotheses (H1, H2, H3, H4, H5, H7, and H8) were fully supported by the data at  $p < 0.001$  and  $p < 0.01$  significance levels. The first hypothesis (H1) saying about a positive association between the Web merchants' perceived size and online trust is strongly supported by PLS-SEM analysis (H1:  $\beta_1 = 0.15$ ;

$p < 0.01$ ). The second hypothesis (H2) proposing a positive and significant impact of perceived reputation on online trust is empirically supported by PLS-SEM results (H2:  $\beta_2 = 0.61$ ;  $p < 0.001$ ). The third hypothesis (H3) predicting a negative association between online trust and perceived risk in e-commerce websites receives significant support from the data (H3:  $\beta_3 = -0.67$ ;  $p < 0.001$ ). The fourth hypothesis (H4) suggesting a significant positive influence of online trust on consumer's attitude was supported by empirical evidence (H4:  $\beta_4 = 0.52$ ;  $p < 0.001$ ). The fifth hypothesis (H5) proposing a direct negative association between perceived risk and customer's attitude towards online shopping is supported by the results from the structural modeling analysis (H5:  $\beta_5 = -0.38$ ;  $p < 0.001$ ). The sixth hypothesis (H6) predicting that perceived risk has a strong negative impact on online shopping intentions is not statistically significant (H6:  $\beta_6 = -0.03$ ;  $p \geq 0.05$ ). The seventh hypothesis (H7) suggesting that consumer attitude exhibits a great influence on intention to purchase in an e-commerce website is strongly supported by the data (H7:  $\beta_7 = 0.50$ ;  $p < 0.001$ ). The eighth hypothesis (H8) saying about a positive relationship with online trust and intention to use online shopping is strongly supported by the study's results (H8:  $\beta_8 = 0.26$ ;  $p < 0.001$ ).

Complementing the evaluation of the structural model, we examined how well the path model predicts the underlying latent factors by checking the explained variance values (R<sup>2</sup>). Perceived size and perceived reputation jointly explained 47% of the variance for online trust. Online trust explained 44% of the variance for online risk perceptions. Together, online trust and perceived risk explained 68% of the variance for user attitudes toward shopping websites. Together, consumers' perceived trust and attitude toward the e-retailer accounted for 56% of the explained variance for consumers' willingness to purchase in e-commerce Websites. Finally, it should be noted that R<sup>2</sup> values of 20% are considered high in consumer behavior studies (Nitzl et al., 2016). Therefore, it can be concluded that the R<sup>2</sup> values indicate a good model's predictive power.

5.2.3. Post-hoc analysis

We conducted a post hoc analysis to gain additional insight on whether the latent variables of risk perception and attitude work as mediators between online trust and behavioral intentions. As noted by Nitzl et al. (2016), we first see if the significance of the indirect effect is met by using the same bootstrap method with 5000 sub-samples. In the next step, we also compare the statistical significance of direct and indirect effects to determine the type of mediation (i.e., complete or partial mediation).



**Table 7**  
Results of mediation analysis.

Indirect path	$\beta$	Results
Online trust $\rightarrow$ Risk perception $\rightarrow$ Purchase intention	0.02 <sup>n.s</sup>	No mediation
Online trust $\rightarrow$ Risk perception $\rightarrow$ Attitude	0.25 <sup>***</sup>	Partial mediation
Online trust $\rightarrow$ Attitude $\rightarrow$ Purchase intention	0.26 <sup>***</sup>	Partial mediation
Risk perception $\rightarrow$ Attitude $\rightarrow$ Purchase intention	-0.19 <sup>***</sup>	Full mediation
Online trust $\rightarrow$ Risk perception $\rightarrow$ Attitude $\rightarrow$ Purchase intention	0.13 <sup>***</sup>	Partial mediation

[Legend \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ ; n.s = Not significant;  $\beta$  = Path coefficient].

From the mediational analysis presented in Table 7, we demonstrate that perceived risk does not mediate the effect of online trust on behavioral intentions. We found that even if the direct effect of online trust on behavioral intentions is statistically significant (H8:  $\beta_8 = 0.26$ ;  $p < 0.001$ ), risk perception in online stores did not emerge as a significant intervening variable in the relationships among online trust and consumers' intentions to use online commerce ( $\beta = 0.02$ ;  $p \geq 0.05$ ). Additionally, given that the indirect effect of online trust on consumers' attitudes through risk perception is statistically significant ( $\beta = 0.25$ ;  $p < 0.001$ ). Coupled with the fact that the direct effect of online trust on attitude is also shown to be significant (H4:  $\beta_4 = 0.52$ ;  $p < 0.001$ ). In this case, we can conclude that the relationship between online trust and attitude is partially mediated by risk perception. This study also found that both the direct effect (H8:  $\beta_8 = 0.26$ ;  $p < 0.001$ ) and the indirect effect ( $\beta = 0.26$ ;  $p < 0.001$ ) of trust on behavioral intention are significant. This indicates that trust in online purchases indirectly affects consumers' intentions through the partial mediation of shoppers' attitudes. Furthermore, despite the lack of the direct path of risk perception on intention (H6:  $\beta_6 = -0.03$ ;  $p \geq 0.05$ ), the indirect effect of risk of online purchasing on the intention to use is significant ( $\beta = -0.19$ ;  $p < 0.001$ ). This means the effect of online risk perceptions on consumers' intentions with the help of attitude meets the Nitzl and colleagues criteria for establishing complete mediation (Nitzl et al., 2016). Finally, results reported in Table 7 show that the indirect effects of trust on intention through risk perception and attitude are significant ( $\beta = 0.13$ ;  $p < 0.001$ ). Analogously, online trust has a significant direct effect on purchase intention (H8:  $\beta_8 = 0.26$ ;  $p < 0.001$ ). This means that the influence of online trust on purchase intention is partially mediated by both perceived risk and attitude.

## 6. Discussion

### 6.1. Direct effects

The first empirical result regarding the antecedents of consumers' trust in online sellers is that perceived vendor size leads to greater consumer's trust. The results corroborate previous studies that support the influence of the size of an online retailer on consumers' trust perceptions toward the online retailer's website (Grazioli & Jarvenpaa, 2000; Jarvenpaa et al., 2000), but inconsistent with other findings in which perceptions of size did not exhibit positive influences on consumers' trust (Agag & El-Masry, 2016; Hsu & Hsu, 2014). This means that, on the Internet, Moroccan consumers tend to focus on the overall perceptions of the size of the e-merchant when they do online shopping. In other words, when an online vendor acts in a way that builds large-sized activities, Moroccan consumers are more likely to consider that online retailer to be trustworthy and thus should affect the likelihood to depend on his retail website platform.

The second finding as postulated in H2 is that perceived store reputation has a positive relationship with trust among online consumers. In previous studies, consumers' perception of an Internet vendor's reputation has been shown to correlate well with online trust perceptions (Huang & Chang, 2019; Kim, 2017). A plausible explanation for the strong association between the reputation of the online vendors and trust is that Moroccan consumers can trust a reputable e-vendor because

the seller's reputation is a fragile factor that requires efforts among online sellers, investments, and necessary business engagements. Therefore, the more reputable the website is perceived, the greater Moroccan users will trust the site.

Consistent with the third hypothesis, another interesting finding is that consumer perceptions of trust towards buying online have a direct negative effect on the risk perceived by consumers in online stores. This is also in congruence with prior e-commerce research (Amaro & Duarte, 2016; Mortimer et al., 2016) which posited that trust in e-commerce shopping did exhibit a significant negative impact on perceptions of risk. Thus, these results imply that Moroccan consumers who are highly concerned about trust in the vendor tend to place less emphasis on risk while engaging in online purchasing. During browsing, users will believe subjectively that online shopping is less risky through their overall perceptions of trust towards merchants' websites. That is, as consumer-perceived trust increased, the level of perceived risk in purchasing online decreased.

A fourth finding of the present work is that consumers' perceptions about trust in the e-retailer increase the likelihood of consumers' attitudes. This finding is also consistent with previous studies (Gurung & Raja, 2016; Loketkrawee & Bhatiasavi, 2018) in which the perception of customers about trust assumes a critical part in impacting consumers' attitudes. This means that Moroccan consumers of online stores would develop a positive shopping attitude toward the electronic marketplace if they believe that the Web merchant is trustworthy. Increasing trust in an Internet store leads to higher favorable evaluation by consumers, and conversely, if the e-commerce website is perceived to be untrustworthy, that is, consumer's attitude will decrease.

The study results indicated a significant negative correlation between perceived risk and attitude towards e-commerce. This result is similar to previous e-commerce adoption literature findings (Chakraborty et al., 2016; Zendejdel et al., 2015) in which consumers' perceived risk has been shown to be a strong barrier of consumer's attitude, but contradict previous findings regarding the e-commerce adoption, where the risk does not influence customer favorable attitude towards using online shopping (Agag & El-Masry, 2016). Thus, it may be stated that Moroccan consumers who perceive less risk regarding personal information disclosure, as well as financial loss, will be more likely to evaluate the vendors positively in an online purchase situation.

The results also indicate that perceived risk does not have a significant direct effect on online shopping intentions. This finding has been previously demonstrated by a study conducted by Bebbler et al. (2017) in which consumer risk perceptions do not influence the willingness to purchase. However, the present result is not aligned with previous findings in which perceived risk was found to impact significantly and negatively intention to purchase online (Liao et al., 2011; Sullivan & Kim, 2018).

From Table 6, our findings, as expected, strongly indicate that attitude in e-commerce is positively related to purchase intention. Hence, this work is consistent with the previous literature in the electronic commerce context (Hsu et al., 2013; Lim, 2015; Peng & Kim, 2014; Zhang et al., 2019). Based on the results, it may be inferred that a high degree of the intention to use online commerce is developed when Moroccan consumers develop a favorable evaluation around online transactions. The greater the consumers' attitude while exploring a website content, the more website use intention among consumers will be. By

contrast, the less users positively evaluate the Website, the lesser the likelihood that consumers will purchase from the website.

The empirical data of the PLS approach also confirm that trust perceptions towards the seller play a critical role in determining purchase intention. Our findings corroborate other studies (Bock et al., 2012; Dennis et al., 2010; Ha & Janda, 2014; Lee et al., 2011), in which intentions were significantly affected by online trust. On the other hand, the findings also contradict the study conducted by Amaro and Duarte (2016), which reported that trust does not have a significant direct influence on consumers' intention for shopping online. One explanation for this study's findings is that when consumers make transactions with electronic retailers, they may prefer products or services provided by a trustworthy company. Therefore, when consumers perceive the online store as trustworthy, their purchase intention is improved. In contrast, consumers' buying intentions decrease when consumers believe that the store's Website is untrustworthy.

### 6.2. Mediation effects

In the mediation analysis results, we found that customers' trust affects indirectly attitude through the partially mediating effect of risk perception, such that trust impacts negatively perceived risk, which in turn negatively influences attitude. Therefore, it can be inferred that online consumers who have more trust in e-commerce may be less concerned about the fear of sharing personal information and therefore he or she will have a more favorable evaluation towards the online seller.

Although one's belief in the risk related to online shopping has no direct effect on purchase intention, it is important to acknowledge that the relationship between customers' perceived risk and consumer's intentions is completely mediated by attitude. We can conclude that as customers' attitude increases because of decreasing risk perception of an e-retailer, a further increase in the consumers' willingness to buy in e-commerce platforms will follow.

Furthermore, we did not find that the effect of online trust on the intention to use e-commerce websites is transmitted by risk perception. In the case of consumers in Morocco, this finding proves that despite the importance of trust as one of the prerequisites of reducing the level of risk, experienced consumers who trust online vendors will purchase products or services on the website even if they believe that the online stores may be risky.

The results of this empirical study also revealed that trust in the e-commerce context can affect purchase intention through the mediation role of attitude. In other words, this means that if consumers trust an online vendor, this will generate a positive attitude towards online shopping, which in turn eventually leads to more buyers' intentions.

Finally, risk perception and attitude have been found to mediate partly and jointly the influence of online trust on purchase intention. Consequently, this means that as trust increases, risk perception decreases, which relates to higher levels of attitude, which in turn affect positively purchase intention.

### 6.3. Theoretical implications

This study contributes to the enrichment of previous research on the topic of Internet shopping by offering three theoretical insights. First, by empirically testing the roles of online trust, attitude, and risk perceptions along with their relationships with Moroccan shoppers' online intentions, the current research explains 68% of the variance of consumers' attitudes and 56% of online shopping intentions. Thus, the present study affirms the robustness of the model of Jarvenpaa et al. (2000) in one of the emergent North African online markets.

Second, the relationship between perceived size and online trust has not been considerably studied. With this regard, the results of this study advance the existing knowledge in e-commerce adoption by confirming the importance to integrate the positive impact of users' beliefs towards

the online retailer size as an antecedent for estimating trust in online shopping.

Third, as a response to Nitzl et al. (2016) call for studies using mediation analysis in the PLS-SEM approach, an important contribution to the theory is a deeper understanding of the mediating role of risk perception in e-commerce and consumers' attitude towards e-shopping. Essentially, this study throws some light on (1) how online trust affect indirectly behavioral intentions through perceived risk and attitude towards e-commerce websites, (2) how attitude mediates the relationship between risk perception and willingness to purchase online, and (3) how online trust affect indirectly attitude toward e-shopping through risk perception.

### 6.4. Practical implications

From a practical perspective, the present study suggests some important e-commerce strategies for international marketers who want to expand their businesses to an emerging online market that is still at its infancy level like Morocco. Indeed, we have shown that online trust can reduce the perceptions of risk in e-shopping in the case of Moroccan consumers. This research also indicated that the perception of vendor size is particularly a predominant factor driving individual consumers' online trust. In other words, when Moroccan online customers believe that the website belongs to a large company, they will rely on the online vendor's credibility, benevolence, and competence. Therefore, e-retailers can promote online trust in Morocco by providing the following large-size indicators. (1) Communicating the number of e-shoppers along with fostering the numbers of salespersons and delivery teams. (2) Providing a map of warehouse locations on the welcome page, which is particularly important for supporting the promotion of online trust. (3) It is quite interesting for website managers to allow the e-shopper to consult relevant and updated annual sales revenue statistics (in volume) such that the idea of perceived size remains fresh in consumers' minds. (4) E-commerce websites must also be designed in a way that allows online shoppers to consult the number of strategic B2B clients and trustworthy partners along with the number of suppliers and distributors. (5) Providing information about the number of years of experience contributes to increasing consumer trust, as well.

Findings from PLS-SEM analyses indicate that a good website's reputation is a major motivation factor that drives consumers to trust e-commerce vendors. In this regard, online merchants targeting Moroccan consumers should build their reputation in an online channel environment by using the following trust signals. First, marketers should effectively advertise about authentic feedback, positive emotions, and online shopping experiences of their current customers, which may lead potential ones to believe that the e-commerce website is honest and is making every effort to keep its promises. Second, this study also suggests that marketers should emphasize increasing the visibility of recommendations of influencers periodically with regard to the pricing and quality of the products and services offered on the e-commerce website. Third, it may also be important for e-tailing companies to highlight real images and a succinct and well-presented biography of key e-commerce website founders to give a strong indication that there is a very interpersonal human connection on the Website page.

### 6.5. Limitations and future research

Although this research offers some important contributions for managers and academic literature in online settings, certain limitations of this study should be discussed. This study integrates perceived size and perceived reputation to an intention-based model. Nonetheless, our research model omitted several important antecedents that have often been portrayed as leading directly to trust in e-commerce retailing channels. The effect of other variables on trust toward the website is expected because using only perceived size and perceived reputation cannot provide an overall picture and satisfactory information surrounding the

trust-building process. An interesting area for consumer researchers is to specify the importance of other factors affecting trust formation. For example, the disposition to trust (Agag & El-Masry, 2016), perceived usefulness (Kim, 2017), and structural assurance (Kim, 2012) were frequently found to affect consumer trust.

In the present case, our study mostly considers the positive impact of trust and the negative effect of perceived risk in understanding the attitude of individuals toward e-commerce sites, while ignoring the roles of other elements most often used as predictors of consumers' attitudes. For instance, e-shopping experience (Crespo & Bosque, 2010), utilitarian value (Peng & Kim, 2014), and enjoyment (Li et al., 2017) are not explored in this study and are expected to affect consumers' attitudes. Thus, future e-commerce studies must pay more attention to the crucial role of these variables in the formation of favorable attitudes toward websites so that a more comprehensive picture can be developed. Additionally, although the present research pointed out that two variables (i.e., trust and attitude) are significant indicators of behavioral intentions, it may be likely that several other antecedent variables have a significant impact on behavioral intention to purchase a product on the Internet. For example, subjective norms (Crespo & Bosque, 2010), perceived control (Dennis et al., 2010), perceived ease of use (Ashraf et al., 2014) are interesting factors that also affect online consumer intention. Hence, academic literature should extend the present study by testing a more robust decision-making model of multiple factors that may affect the consumer's intention to use Internet shopping.

Another possible criticism of this study is that no explicit hypotheses are advanced in the theoretical model regarding the link between e-shopping intention and actual shopping behavior. However, several authors obtained empirical evidence supporting this relationship (Dennis et al., 2010; Lim, 2015). For instance, Lim (2015) reported that consumers' purchase intention is an important direct determinant of online shopping behavior. Similarly, Dennis et al. (2010) also observed in their empirical study that intention to use online shopping malls is significantly linked to e-shopping usage behavior. Accordingly, future research is needed to explore consumer intention to use as a major antecedent of consumers' actual behavior.

This study has some methodological constraints that might be addressed in future research. First, this study includes only Moroccan online shoppers, which begs the question as to whether the PLS-SEM results may be generalized to other countries. Given the increasingly global nature of e-commerce platforms, this might limit the generalizability of our results to other nations outside Morocco. To overcome the issue of interpretation and generalization, there is much room for additional cross-cultural studies to compare the results of this empirical research with results in other different countries.

Second, it is noteworthy that data was collected at one point in time, making it a cross-sectional analysis. As the development of consumer acceptance is an ongoing phenomenon, cross-sectional data cannot be used to capture fluctuations in the relationships between variables. Future longitudinal research design should attempt to capture fluctuations and observe changes in buyers' e-commerce adoption phenomena at multiple time points.

## 7. Conclusion

The primary goal of this study was to provide useful insights into how online shoppers form their trust towards e-commerce websites and to analyze how online trust influences perceived risk, attitude, and online purchasing intention in a new and emerging online commerce market. Based on the work of Jarvenpaa et al. (2000) and prior empirical evidence, a theoretical model was tested using a sample of 414 Moroccan consumers. The PLS-SEM approach was chosen for hypothesis testing. From a theoretical standpoint, the research findings confirm the robustness of Jarvenpaa's model of e-commerce in analyzing individuals' beliefs, online consumer purchasing intentions, and attitudes in a North African culture. From a practical perspective, the findings stated that

merchants in the e-commerce platforms must focus their promotional efforts on organizational factors (i.e., perceived size and perceived reputation) as assurance cues to strengthen trust and mitigate the risk perceived by consumers, which in turn greatly elevates shopping online attitude and, consequently, an improvement of online purchase intentions.

## Declaration of Competing Interest

None.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.jjimei.2022.100065](https://doi.org/10.1016/j.jjimei.2022.100065).

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