

E-commerce Ethics and Its Impact on Buyer Repurchase Intentions and Loyalty: An Empirical Study of Small and Medium Egyptian Businesses

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Received: 18 July 2015 / Accepted: 17 January 2017 / Published online: 28 January 2017
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Abstract The theoretical understanding of e-commerce has received much attention over the years; however, relatively little focus has been directed towards e-commerce ethics, especially the SMEs B2B e-commerce aspect. Therefore, the purpose of this paper is to develop and empirically test a framework that explains the impact of SMEs B2B e-commerce ethics on buyer repurchase intentions and loyalty. Using SEM to analyse the data collected from a sample of SME e-commerce firms in Egypt, the results indicate that buyers' perceptions of supplier ethics construct is composed of six dimensions (security, non-deception, fulfilment/reliability, service recovery, shared value, and communication) and strongly predictive of online buyer repurchase intentions and loyalty. Furthermore, our results also show that reliability/fulfilment and non-deception are the most effective relationship-building dimensions. In addition, relationship quality has a positive effect on buyer repurchase intentions and loyalty. The results offer important implications for B2B e-commerce and are likely to stimulate further research in the area of relationship marketing.

Keywords E-commerce ethics · Commitment-trust theory · Relationship quality · Repurchase intentions · Loyalty · Structural equation modelling

Introduction

The internet has come as a strong alternative way of physical commerce. The internet itself is a global phenomenon, with over 3 billion users worldwide in 2015, up from 420 million in 2000 and one billion in 2005 (Internet World Stats 2015). In the developing world, 31% of the population is online, compared with 77% in the developed world (Internet World Stats 2015). In particular, the phenomenal growth in firms' use of the Internet for business transactions has led to the emergence of B2B e-commerce, in which many buying and selling firms access a given website to transact their business. E-commerce between firms has a broader scope than e-commerce between firms and consumers. As shown, for example, in the World Trade Organization (WTO) (2013), B2B e-commerce accounted for 90% of total e-commerce sales worldwide, with an increasing tendency.

The incredible growth of e-commerce presents ethical issues as the Internet presents a new environment for unethical behaviour (Freestone and Michell 2004). Although many businesses acknowledge the importance of e-commerce activities, little attention has been paid to the business community's perceptions of the ethicality of this new media (Bush et al. 2000; Roman 2007; Roman and Cuestas 2008). Therefore, this paper advances our understanding of the ethical issues in the context of SMEs B2B e-commerce.

A scale for measuring consumer perceptions regarding the ethics of online retailers (CPEOR) has been developed by Roman (2007), which includes four constructs: privacy, security, non-deception, and fulfilment/reliability. This scale adds greater dimensionality to measure ethics than scales using a unidimensional approach to measure consumer perceptions of online service providers ethics

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(Roman 2007). The CPEOR scale has been adopted for measuring consumer perceptions of e-retailers' ethics, specifically in examining the potential relationships between selected constructs and CPEOR. The current study examines the buyer perceptions about the online service providers' ethics and its effect on buyer intentions to purchase online and loyalty.

The instrument measures consumers' perceptions about the integrity and responsibility of the company that is behind the web site in its attempt to deal with consumers in a secure, confidential, fair, and honest manner that ultimately protects consumers' interests. Since its publication, the CPEOR scale has experienced limited validation in academic research. The importance of an instrument measuring the perception of ethical behaviour of online providers is given by continued concerns of internet security, privacy, and truthfulness of information in internet transactions (Roman and Cuestas 2008). Ethical factors such as privacy and security substantially influence consumers' willingness to purchase from online retailers (Roman and Cuestas 2008). It therefore seems plausible to re-examine and expand the validity of the CPEOR scale by employing a different sample. Additional motivation to employ the CPEOR scale stems from its development using a Spanish consumer sample. Past studies indicate consumers' online behaviour varies across the different cultures (Park and Jun 2003; Elbeltagi and Agag 2016), which may raise questions regarding the ability to generalize findings across nations and cultures using the instrument. Arguments regarding inconsistencies of the adoption of online shopping behaviour often reference infrastructural development and cultural differences (Soares et al. 2007; Elbeltagi and Agag 2016). For example, variation in the use of the internet is found even in economically homogeneous Europe (DeMoijs and Hofstede 2002). Thus, by surveying Egyptian online consumer sample, this study also seeks to validate previous theoretical findings of consumer perception regarding the ethics of online service providers.

According to Commitment-trust theory (Morgan and Hunt 1994), commitment and trust play an important role in mediating the relationship between buyer and supplier to ensure on-going relational exchange. Trust and commitment mediates a relational exchange by developing a cooperative environment between parties involved in a relationship. Acting in an unethical manner can have a detrimental effect on the building of trustworthy relationships because it reduces confidence and generates negative intentions (Brown et al. 2000). Ethics play a critical role in the formation and maintenance of long-term relationships with buyers (Gundlach and Murphy 1993).

Despite the interest of practitioners and academicians in business ethics in electronic markets, concerted efforts to

understand them have been lacking (Roman and Cuestas 2008). Furthermore, it has been observed that the majority of prior research has been conceptual in nature, and has primarily focused on privacy issues (Palmer 2005) ignoring other important ethical marketing concerns surrounding the Internet such as deception and security (Mcintyre et al. 1999; Roman and Cuestas 2008).

The aim of the present study, therefore, is to develop and empirically test a framework that explains the impact of online service provider ethics on buyer repurchase intentions and loyalty through relationship quality (trust and satisfaction) from the buyer perspective in the context of SMEs B2B e-commerce. In order to do so, this study integrates two theoretical lenses—Commitment trust theory and Roman model.

The structure of this paper is organized as follows: Following on from this introduction, the “[Theoretical Background and Development of Theoretical Framework](#)” section presents the development of the theoretical framework. The “[Hypothesis Development](#)” section introduces the research model and hypotheses. The “[Methodology](#)” and “[Empirical Analysis and Results](#)” sections are concerned with the methodologies and statistical data analysis. The discussion and implication follow in “[Discussion and Implications](#)” section.

Theoretical Background and Development of Theoretical Framework

Ethical Issues in E-commerce

Research on ethical marketing first made an appearance in the late 1960s, with the pioneering work of Bartels (1967), which provided the first conceptualization of factors influencing marketing ethics decision-making. Since then, there has been a steady growth of contributions on the subject, reflecting increasing public concern about unethical marketing practices, such as dangerous products, misleading prices, and deceptive advertising. However, it was not until the early 1980s that the important role of ethics in marketing became widely recognized by business practitioners when, for the first time, many companies and professional associations began to adopt certain codes of ethics in conducting their operations. Reflecting this, academic interest has grown exponentially, with dozens of studies conducted on the subject see, for example, reviews by Kim et al. (2010) and Schlegelmilch and Oberseder (2010).

Bush et al. (2000) assessed the perceptions of the ethical issues concerning marketing on the Internet with a sample of 292 marketing executives. The authors used an open-ended question “due to the lack of published research from which scaled items could be developed” (Bush et al. 2000).

The ethical concern most often mentioned regarding marketing on the Internet was the security of transactions. The next three most often mentioned ethical concerns were illegal activities (e.g. fraud, privacy, and honesty/truthfulness). A study by Singh and Hill (2003) focused on consumers' concerns regarding online privacy in Germany. Their results suggest that consumers' views regarding Internet use and online behaviours are influenced, among other things, by their views regarding privacy in general, and how they view the role of the government and the role of firms in protecting consumer privacy. Schlegelmilch and Oberseder (2010) showed that ethical issues involving the Internet are privacy, identity theft, and phishing. In exploring specific e-commerce ethics, Kracher and Corritore (2004) examined the key issues of access, intellectual property, privacy and informed consent, protection of children, information security, and trust.

Miyazaki and Fernandez (2001) assessed customers' concerns regarding online shopping. Four major concerns emerged from a sample of 189 customers; three of these concerns were related to ethical issues. The first category, privacy, contained a variety of worries including unauthorized sharing of personal information. The second category, system security, included concerns regarding potentially malicious individuals who breach technological data protection devices to acquire customers' personal and financial information. The third category, online fraud, focused on concerns regarding fraudulent behaviour by online retailers, such as purposeful misrepresentation. Forsythe et al. (2006) developed a three-factor scale to measure the perceived risks of online shopping. One of these (financial risk) was related to ethical issues. Financial risk was defined as potential net loss of money and included customers' sense of insecurity regarding online credit card usage.

Corruption and Egyptian Revolutions

Corruption is one of the most prominent issues in political debates all over the Middle East. This is, at first glance, surprising since the Middle East notwithstanding some extreme cases such as Egypt and Sudan in general appears to be a world region where governments' performance in containing corruption is regular and even good if compared with some other corruption prone areas such as Central Asia and Sub-Saharan Africa. The January 25 Revolution, as Egyptians call it, is the fourth Egyptian revolution in the last 130 years. The modern Egyptian national movement has consistently sought three goals: self-government in the basic sense of allowing Egyptians to be in charge of public offices; independence in the international community and effective domestic sovereignty, in particular with regard to

the national economy and the ability to secure a more egalitarian distribution of national wealth and income; and governmental accountability to the people of Egypt. While Egypt's prior revolutions secured, to a certain extent, the first two goals, contradictions between the desire for national independence and the desire for democracy ultimately led to the Free Officers' Revolution of 1952. The Egyptian people discovered, however, that in the absence of internal democracy, it was impossible to preserve the gains of the previous revolutions. The January 25 Revolution therefore affirmed the centrality of democracy to the Egyptian national movement, not just as a utopian goal one whose practical implementation would be indefinitely deferred but rather as the foundation for a modern, independent, and prosperous Egypt. The Mubarak regime was the last breath of the Free Officers' Revolution. The Mubarak regime systematically stifled the development and maturity of democratic and egalitarian norms which are immanent in Egypt's modern legal and political history, even as the regime paid increasingly grotesque lip service to democratic forms. The spread of corruption and torture represented the grossest and most palpable failures of the regime to live up to the aspirations of the Egyptian state: Egyptian law prohibited both financial corruption and torture, yet Mubarak used his powers under the Constitution of 1971 to subvert the enforcement of Egyptian law in order to benefit himself, his family, and their allies. It is not surprising, then, that eliminating torture and public corruption were issues that galvanized Egyptians during the January 25 Revolution. With the resignation of Mubarak on 11 February 2011, Egyptians have now turned their attention to how the Egyptian state can recover public property from the possession of corrupt officials of the ancient regime. A quick glance at poverty in Egypt explains why corruption was such a central concern of the January 25 Revolution. In the early 1990s, Egypt began to implement structural adjustment reforms to its economy at the behest of the International Monetary Fund ("IMF"), and the Egyptian state embarked on a campaign of privatization of state-owned firms combined with a substantial reduction in the state provided safety net and state investments in education and health. As a result, and despite the generally high marks Egypt received from the IMF, the rate of Egyptians living on less than \$2 per day remained at a stubbornly high 20%, and real wages for the working class stagnated. Benefits of growth during the Mubarak era generally went almost exclusively to those sectors of Egypt that were already relatively well-off, and the class of crony capitalists close to the regime especially benefitted. Consequently, both the working classes and the upwardly mobile but politically disconnected professional middle classes could easily unite behind a revolution committed to the elimination of public corruption. The working class

blamed the public sector's failures on the corruption of Mubarak cronies who were appointed as managers of state-owned firms. On the other hand, the upwardly mobile professional classes could identify corruption as a primary cause holding back Egypt's international competitiveness and an immediate threat to the value of their greatest asset their human capital.

National Culture

Culture, considered to be one of the most abstract elements affecting human behaviour, can be described and defined in many different ways. Hofstede's framework is considered to be the most reliable measure of national culture (Yeniurt and Townsend 2003). His work provides us with a strong empirical base and numerical assessments of the position of several countries, in relation to four dimensions of culture (Kolman et al. 2003). According to Hofstede (1980, 1991, 2001), there are four dimensions that differ according to each culture: power distance; masculinity/femininity; individualism/collectivism; and uncertainty avoidance. These cultural dimensions play an important role in determining how consumers expect services to be delivered (Tansik and Chase 1988 in Tsaour et al. 2005). Differences in the dimensions of national culture can help to explain the differences in perception and adoption of information technologies. Therefore, it is highly probable that national culture as well as other factors affects the management of online trade (Junglas and Watson 2004). Egypt is part of the Arab countries index listed in Hofstede's cultural dimension study (Hofstede 2001). When comparing the power distance dimension between Egypt and some other advanced country, e.g. the UK, Egypt received an index of 80 and the UK an index of 35, with a difference of 45. For uncertainty avoidance, Egypt received a score of 68 while the UK received a score of 35, a difference of 33. In the individualism/collectivism dimension, Egypt received a score of 38 while the UK received a score of 89, a difference of 51. For masculinity/femininity, Egypt received a score of 53 and the UK a score of 66, a difference of 13. However, the last cultural dimension score (long-/short-term orientation) is not available for Egypt. Table 1 shows the index scores and the ranks for Egypt and the UK.

Language and religion are often used as proxies of culture. Historically distant societies developed distinct languages and cultures, making them intrinsically related. Religious norms and beliefs have a great impact on the way of life in a society. However, in recent years, more direct metrics of culture (independent of other variables) have gained wide acceptance in the international business arena. Cultural differences between countries contain the element of mutual trust that is embedded in generalized beliefs and prejudices of individuals from the countries.

Most of empirical studies on international trade bring evidence of the pro-trade effect of different cultural and social bilateral linkages, although they seldom concentrate on these issues. The same language spoken in the importing and the exporting country, similar religious beliefs, colonial ties in the past, all significantly increase the volume of goods exchanged by countries. In particular, Helliwell (1999) and Mélitz (2002) highlight the positive role on trade of a common language. Guiso et al. (2004) show that the trust of European citizens towards foreigners depends on cultural aspects (religion, history, wars, etc.) and exerts a considerable impact on trade and investments. Additionally, a work by Combes et al. (2005) shows that cross-border networks, both social and business, also stimulate trade.

Development of Theoretical Framework

Based on the business ethics and relationship marketing literature (Roman and Cuestas 2008; Bush et al. 2000; Freestone and Michell 2004; Pavlou 2011; Riquelme and Roman 2014; Cheng et al. 2014; Palmatier 2008; Palmatier et al. 2006; Elbeltagi and Agag 2016; Agag and El-Masry 2016b; Agag and Elbeltagi 2013), commitment-trust theory (Morgan and Hunt 1994), and Roman (2007) work, we have identified some ethical issues which affect relationship quality in the context of SMEs B2B e-commerce (e.g. privacy, security, non-deception, reliability, service recovery, shared value, and communication).

In their research, Morgan and Hunt showed that "relationship marketing"—the act of establishing and maintaining successful relational exchanges—constitutes a major shift in marketing theory and practice. Morgan and

Table 1 Hofstede's cultural dimensions: Egypt versus UK. From Hofstede (2001, p. 500)

Country	Power distance		Uncertainty avoidance		Individualism/collectivism		Masculinity/femininity		Long-/Short-term Orientation	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Egypt	80	7	68	27	38	26	53	23	N/A	N/A
UK	35	40	35	30	53	20	66	11	29	27
Difference		33		3		6		12		27

Hunt (1994) developed the key mediating variable (KMV) model of relationships marketing. The KMV model examined trust and commitment as mediating variables between five antecedents (relationship termination cost, relationship benefits, shared value, communication, and opportunistic behaviour) and five outcomes (acquiescence, propensity to leave, co-operation, functional conflict, and decision-making uncertainty). Although they tested the model in the context of automobile tyre retailing, Morgan and Hunt (1994) mentioned that their theory would apply for all relational exchanges involving supplier, consumer, or employees.

Using Palmatier et al. (2006) seminal article on relationship marketing; Crosby et al. (1990) introduction of relationship quality and Morgan and Hunt (1994) key mediating variable theory of relationship marketing, most research has conceptualized the effects of relationship marketing on outcomes as fully mediated by one or more of the relational constructs of trust, commitment, satisfaction, and/or relationship quality. Increased customer loyalty and repurchase intention are the most common outcomes expected from relationship quality efforts (Palmatier et al. 2006).

Hypothesis Development

Based on the preceding review, this study integrates privacy, security, reliability/fulfilment, non-deception, service recovery, shared value, and communication as major ethical issues in SMEs B2B e-commerce ethics, relationship quality (trust and satisfaction) as key mediators, and loyalty and intention to purchase as outcomes. Figure 1 shows our conceptual framework. The hypothesized relationships are discussed in the following section.

The Nature of BPSE

Online ethics, like traditional marketplace ethics, are multidimensional, complex, and highly abstract (Roman and Cuestas 2008; Roman 2007). Research suggests that ethics can play a critical role in the formation and maintenance of long-term relationships with customers (Gundlach and Murphy 1993; Román and Ruiz 2005; Roman 2007; Agag and Elbeltagi 2013).

In the context of SMEs B2B e-commerce, buyers' perceptions of supplier ethics (BPSE) have been defined as buyer perceptions about the integrity and responsibility of the company (behind the website) in its attempt to deal with buyers in a secure and fair manner that ultimately protects buyers' interests. The domain of this construct is still evolving (Roman 2007; Elbeltagi and Agag 2016), but it

comprises security, privacy, fulfilment/reliability, non-deception, service recovery, shared value, and communication.

The first factor, "privacy", extends itself beyond the uncertainty of providing information on websites, but includes the degree to which firms' information is shared or sold to third parties that have related interests (Miyazaki and Fernandez 2001). Privacy policies of a website involve the adoption and implementation of the privacy policy, disclosure, and choice/consent of buyer (Bart et al. 2005). Privacy practices are thus crucial for online provider in coaxing customers to disclose their personal information (Wanga and Wu 2014; Tsou and Chen 2012). In the SMEs B2B websites, which stands for business-to-business, is a process for selling products or services to other businesses, the information would need to be protected the same as how it is protected in a B2C, which stands for business-to-consumer, is a process for selling products directly to consumers, but B2B customers may care less about privacy and security issues because the corporate information is what is given in a transaction and not personal information about one person. A B2B website may already have the important information needed from the specific business in previous transactions since most business done on a website is to build strong relations with the other business. Until recently, the issue of privacy and security was a major worry of the B2C area, while privacy and security implications of B2B transfers had been neglected (Goodman 2000).

The second factor, "security", provided by a website refers to the safety of the computer and credit card or financial information of the firm (Bart et al. 2005; Roman and Cuestas 2008). Firms believe that electronic payment channels are not always secure and could potentially be intercepted (Jones and Vijayarathy 1998). The problem of security can be a result of the vulnerabilities of the internet upon which e-commerce is based resulting in a higher risk of information theft, theft of service, and corruption of data is a reality in this medium. Additionally, the probability of fraudulent activities can be significantly increased because of complexities of accounting for the use of services (Suh and Han 2003). Security control for confidentiality, reliability, and protection of information is therefore a crucial prerequisite for the effective functioning of e-commerce. Most corporate executives focus on the possibility that an eavesdropper could intercept their information or their customer's information as it traverses Internet channels (Suh and Han 2003). If security breaches occur, customers may incur damage ranging from invasions of their privacy to financial loss. Organizations will suffer severe losses ranging from the loss of valuable information to a bad public image and even legal penalties by regulatory agencies. Security control for confidentiality, reliability, and protection of information is, therefore, a crucial prerequisite for the functioning of e-commerce.

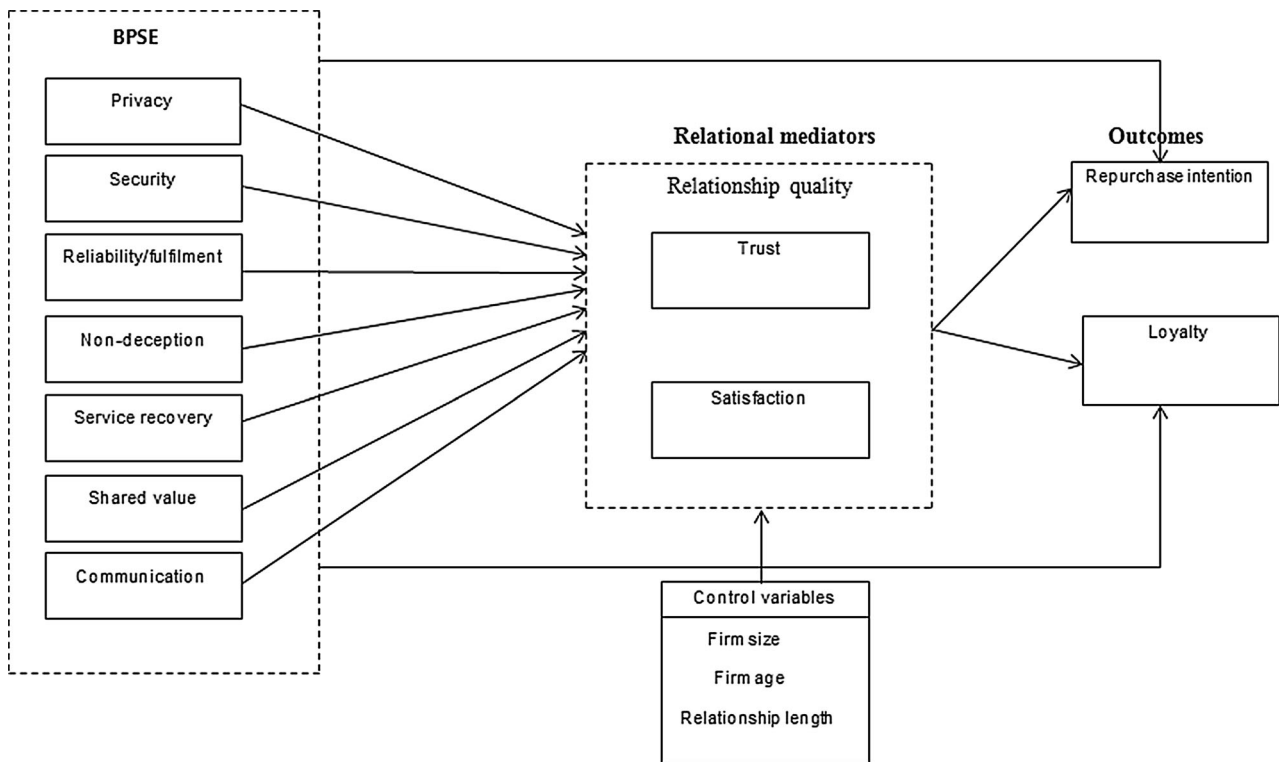


Fig. 1 Proposed conceptual model

The third factor, “reliability/fulfilment”, is related to the accurate display and description of a product or service so that firms receive what they believe they are ordering, as well as the delivery of the correct products and services within the frame promised (Wolfinbarger and Gilly 2003).

The fourth factor, “non-deception”, refers to the buyer’s belief that an e-service provider will not use deceptive practices to influence buyers to purchase e-products (Limbu et al. 2011). Many deceptive practices in e-commerce settings (e.g. the exaggeration of product benefits and characteristics) are variations of well-known deception types already used in the traditional shopping context. However, the opportunity to perpetrate an online deception is increased by several reasons. For instance, the Internet is inherently a representational environment, i.e. an environment in which buyers make decisions about products based on cognitive representations of reality. The relatively unfamiliar and impersonal nature of the Web as well as the lack of opportunities for face-to-face interactions reduces people’s ability to detect deception (Ben-Ner and Putterman 2003). For instance, in traditional retail settings, the detection of deception relies, among other things, on recognizing subtle changes in a person’s non-verbal behaviours, such as eye contact and body movements (DePaulo 1992). In the marketing field, deception has received special attention in the areas of advertising and personal selling/traditional retailing. Deception in the context of

marketing practices is “unethical and unfair to the deceived” (Aditya 2001).

The fifth factor, “service recovery”, refers to the actions an online service provider takes in response to a service failure (Gronroos 1988). A failed service encounter is an exchange where a buyer perceives a loss due to a failure on the part of the service provider. At which point, a sensitive service provider attempts to provide a gain via some recovery effort to offset the buyer’s loss. This view is consistent with social exchange and equity theories (Adams 1965; Homans 1958). Service recovery strategies involve actions taken by an online service provider to return the buyer to a state of satisfaction (Sparks and McColl-Kennedy 2001). These strategies may include acknowledgment of the problem, prompt rectification of the problem, providing an explanation for the service failure, apologising, empowering staff to resolve issues on the spot, making offers of compensation (i.e. refunds, price discounts, upgrade services, free products or services), and being courteous and respectful during the recovery process (for examples, see Patterson et al. 2006).

The sixth factor, “shared value”, measures the extent to which buyer and supplier have common beliefs regarding what behaviours, goals, and policies are important or unimportant, and right or wrong (Morgan and Hunt 1994). Ethics is a key aspect of shared value.

The seventh factor, “communication”, is defined as the formal and informal sharing of meaningful and timely information. Communication facilitates effective interactions, because managers can communicate freely and openly (Kogut and Singh 1988).

Perceived Privacy and Relationship Quality

Privacy is the willingness of firms to share information over the Internet that allows purchases to be concluded (Roman 2007). However, it is clear that buyer concern regarding privacy of information has an impact on the Internet market and that for electronic commerce to reach its full potential this concern still needs to be addressed in the context of SMEs B2B e-commerce. Privacy issues on the Internet include data collection, choice, and the sharing of information with third parties (Roman and Cuestas 2008). These areas of concern are reflected in the Federal Trade Commission’s standard for privacy on the Internet.

As online service providers place greater emphasis on building long-term relationships with buyers, trust has assumed a central role (Doney and Cannon 1997; Garbarino and Johnson 1999). A successful relationship requires businesses to describe their information collection practices and policies on its websites (Agag and El-Masry 2016c). Buyers, in turn, must be willing to provide information about their companies to enable businesses to advance the buyer relationships through improved offerings and targeted communications (Zeithaml et al. 1996). A higher perception of privacy will lead to increased relationship quality. A direct positive relationship between privacy and relationship quality dimensions (trust and satisfaction) is supported by a wide variety of studies, e.g. (Mukherjee and Nath 2007; Pavlou and Chellappa 2001; Wu et al. 2012; Chang et al. 2013; Eastlick et al. 2006; Agag and Elbeltagi 2013; Agag and El-Masry 2016b). In the context of SMEs B2B e-commerce, Soledad Janita and Javier Miranda, (2013) empirically find that privacy has a significant influence on buyer satisfaction. Hence, we propose the following hypothesis:

Hypothesis 1 There is a positive relationship between privacy and relationship quality.

Perceived Security and Relationship Quality

Security is one of the most worrying issues faced by buyers wishing to purchase products or services online, especially in the context of SMEs B2B e-commerce, and the problem arises from vulnerabilities of websites from which the products and services are purchased (Suh and Han 2003). Fam et al. (2004) mentioned that online trust in the context of relationships between buyers and online service

providers are influenced by buyers’ perception of security. A higher perception of security will lead to increased relationship quality. Kim et al. (2011) found that security has a positive relationship with buyer trust and satisfaction; this is empirically confirmed in most of the extant literature (Chellappa and Pavlou 2002; Flavian and Cuinaliu 2006; Eastlick et al. 2006; Mukherjee and Nath 2007; Kim et al. 2009; Ponte et al. 2015; Agag and El-Masry 2016b; Agag 2016). In the context of SMEs B2B e-commerce, Soledad Janita and Javier Miranda, (2013) have confirmed the positive link between security and satisfaction. Thus, the authors propose the following hypothesis:

Hypothesis 2 There is a positive relationship between security and relationship quality.

Reliability/Fulfilment and Relationship Quality

Reliability/fulfilment is related to the accurate display and description of a product and service so that firms receive what they believe they have ordered. Moreover, the delivery of the right products within the promised time-frame is also included in this (Wolfinbarger and Gilly 2003). Earlier research has found fulfilment/reliability to be one of the key dimensions of online service quality as perceived by buyers (Parasuraman et al. 2005). Reliable response is an important factor of relationship quality because it can influence customers’ satisfaction and trust (Kalakota and Whinston 1996; Bart et al. 2005). Therefore, delivering promises and fulfilling buyers’ trust in the product/service information presented should be a necessary condition in generating relationship quality (Kim et al. 2009; Reichheld and Schefter 2003; Soledad Janita and Javier Miranda 2013; Agag and El-Masry 2016b; Agag and Elbeltagi 2013). In line with this argument, we propose that relationship quality is earned by delivering the right product at the right time and meeting buyer expectation on product quality as promised by the online service provider. Hence, we propose the following hypothesis:

Hypothesis 3 There is a positive relationship between reliability/fulfilment and relationship quality.

Non-deception and Relationship Quality

Non-deception refers to the buyer’s belief that an online service provider will not use deceptive practices to influence the buyer to purchase products or services (Limbu et al. 2011). This dimension focuses on the buyer’s perceptions of the online service provider’s deceiving/misleading practices, rather than on the act of deceiving itself. Prior research on deceptive advertising has focused largely on identifying the specific types of claims that lead buyers to make erroneous judgments and its consequences on

buyers' beliefs and behavioural intentions (Darke and Ritchie 2007). For instance, findings from Darke and Ritchie (2007) showed that deceptive advertising engenders buyers' distrust. A number of studies (Ingram et al. 2005; Ramsey et al. 2007; Riquelme and Roman 2014; Agag and El-Masry 2016b; Agag and Elbeltagi 2014) found that deceptive selling actions decrease customer satisfaction and trust. We hypothesize that in the B2B context, when buyers believe that the online service provider is engaging in deceptive actions, such perceptions will lead to reduced relationship quality. Thus, the authors propose the following hypothesis:

Hypothesis 4 There is a positive relationship between non-deception and relationship quality.

Service Recovery and Relationship Quality

Service recovery measures buyers' perceptions of the fairness of e-commerce companies' recovery effort during the transaction processes. Consumers evaluate service recovery by considering distributive justice, procedural justice, and interactive justice (Tax and Brown 1998). Distributive justice refers to the perceived fairness of the tangible compensation for a dispute or negotiation. Procedural justice concerns the perceived fairness of the policies, procedures, and criteria used by decision-makers in arriving at the compensation for a dispute or negotiation. Interactional justice means the manner in which consumers are treated during the conflict resolution process (Blodgett et al. 1997). When a buyer perceives service recovery as unfair, he/she feels dissatisfaction and then forms the view that this service does not conform to ethical principles; ultimately, he/she will determine that the firm is not ethical, thus restoring equilibrium (Cheng et al. 2014). In other words, buyers believe sellers behave improperly when they neglect this ethical principle, which adversely affects relationships between online service providers and buyers (Fisher, et al. 1999). By contrast, appropriate responses from online service providers to service failures (i.e. service recovery) are ethical and may be a means of strengthening relationships with buyers (Massad and Beachboard 2009; Cheng et al. 2014). Thus, the authors propose the following hypothesis:

Hypothesis 5 There is a positive relationship between service recovery and relationship quality.

Shared Value and Relationship Quality

Shared value is the extent to which the buyer and supplier has a mutual understanding of their behaviours, goals, and

policies. When there is a higher perception of shared values, such perceptions will lead to increased buyer trust and commitment to the online service provider. Buyers and suppliers with shared values are more committed to their partnership (Morgan and Hunt 1994). For buyers and suppliers with goals or policies in common, sharing resources and abilities can lead to greater mutual commitment and closer bonds. Mukherjee and Nath (2007) pointed out that shared values promote development of commitment and trust. Such similarities between buyer and supplier may provide cues that the exchange partner will help facilitate important goals and has been shown to affect relationship quality positively (Palmatier et al. 2006; Crosby et al. 1990; Parsons 2002). Cai et al. (2010) and Agag and El-Masry (2016b) point out that a firm's trust in its supplier is positively related to information sharing between them. Therefore, we propose the following hypothesis:

Hypothesis 6 There is a positive relationship between shared values and relationship quality.

Communication and Relationship Quality

Communication refers to the formal as well as informal sharing of meaningful and timely information (Anderson and Narus 1990), fostering trust by assisting in resolving disputes and ambiguities, providing accurate information on order processing, and aligning perceptions and expectations (Etgar 1979). Internet-based business-to-business e-markets represent an inter-organizational information system that facilitates electronic interactions between buyers and sellers (Grewal et al. 2001). In fact, in an electronic market environment, buyers and suppliers come together in a market space and exchange information related to price, product specifications, terms of trade, and a dynamic price-making mechanism facilitates transactions between the firms (Kaplan and Sawhney 2000). Palmatier et al. (2006), Morgan and Hunt (1994), and Agag and El-Masry (2016b) and Agag et al. (2016) used communication as an antecedent of trust and commitment. One factor that distinguishes firms that merely possess information from those that use information is the level of trust users have in producers of information Lancaster and Lages (2006). Therefore, we posit that if a buyer's perception that communication and information from the supplier has been of high quality, that is, relevant, timely, and reliable, this will result in greater buyer relationship quality suggesting the following hypothesis:

Hypothesis 7 There is a positive relationship between communication and relationship quality.

Relationship Quality and Outcomes

Relationship quality is widely viewed as a metaconstruct made up of several components that support, reinforce, and complement each other (Dwyer et al. 1987). Although there has been considerable work on the conceptualization of relationship quality, the pertinent literature has not reached a general consensus on its constituents (Bove and Johnson 2001; Naudé and Buttle 2000). However, trust, commitment, and satisfaction are given the importance among the factors that constitute relationship quality, e.g. (Crosby et al. 1990; Hennig-Thurau et al. 2002; Hewett et al. 2002). Specifically, a rich stream of research views relationship quality as a combination of some or all of these constructs, e.g. (Leonidas et al. 2014; Palmatier 2008; Ulaga and Eggert 2006). In summary, there is little agreement among researchers as to which individual or composite relational mediator best captures the key aspects of a relationship that most affect outcomes. To address this issue empirically, our analysis compares the relative effects of the different perspectives by analysing relational mediators separately and as a group.

Trust is probably the most widely studied and accepted construct in relationship marketing, e.g. (Morgan and Hunt 1994; Madhok 2006). A frequently used definition of trust is the willingness to rely on an exchange partner in whom one has confidence (Moorman et al. 1992). Trust is critical in buyer–seller relationships that cross-national borders; it lessens the transaction costs of the exchange process as incomplete contracts become sufficient for running the exchange and concurrently augments transaction value via the creation of a positive working environment (Zhang et al. 2003). Commitment has also assumed a central role in the development of buyer–seller relationship models, e.g. (Anderson and Weitz 1992). Commitment is very difficult to emerge without trust in place the two constructs constitute the cornerstones of relationship marketing (Morgan and Hunt 1994).

Satisfaction is viewed as an essential part of successful relationships in a number of interfirm studies for over three decades (Jap and Ganesan 2000). Extant research suggests satisfaction refers to social as well as economic aspects of the exchange (Geyskens et al. 1999).

Increased customer loyalty is one of the most common outcomes expected from relationship marketing efforts, but loyalty has been defined and operationalized in many different ways. An expectation of continuity reflects the customer's intention to maintain the relationship in the future and captures the likelihood of continued purchases. However, researchers have criticized this measure of loyalty because customers with weak relational bonds and little loyalty may report high continuity expectations as a result of their perceptions of high switching costs or their

lack of time to evaluate alternatives (Oliver 1999). Some studies operationalize customer loyalty as a composite or multidimensional construct that includes groupings of intentions, attitudes, and seller performance indicators. Prior study points out that relationship quality positively influences global measures of customer loyalty, just as they do its individual components (Palmatier et al. 2006). Relationship quality impacts positively on buyers' intentions to purchase and loyalty (Palmatier et al. 2006) which is empirically confirmed in most of the extant literature, e.g. (Liua et al. 2011; Rauyruen and Miller 2007; Zhang et al. 2011). Thus, the authors propose the following hypotheses:

Hypothesis 8 There is a positive relationship between relationship quality and buyer intention to purchase.

Hypothesis 9 There is a positive relationship between relationship quality and buyer loyalty.

Relationship Quality as a Mediator

Consumers' satisfaction and trust are key factors for establishing long-term relationships with them and acquiring their repurchase intentions (Lee et al. 2008; Agag and El-Masry 2016b). Kim et al. (2006) stated that because e-commerce is mainly related to use of a new technological breakthrough, receptivity to online environment is important to form a positive relationship with satisfaction. Bai et al. (2008) suggested that in online environments, striving for satisfaction should be very significant to increase intentions for actual purchase of products online. Elbeltagi and Agag also conducted research on business ethics in the online environment, investigating five components of online service provides ethics: privacy, security, reliability, non-deception, service recovery, communication, and shared value and evaluating relationships between trust and commitment with repurchase intentions. Agag and Elbeltagi (2013) and Elbeltagi and Agag (2016) point out that trust and commitment mediate the relationship between e-commerce ethics (e.g. privacy, security, reliability, non-deception, and service recovery) and repurchase intention. Thus, the authors propose the following hypotheses:

Hypothesis 10 Relationship quality mediates the relationship between e-commerce ethics and repurchases intention.

Hypothesis 11 Relationship quality mediates the relationship between e-commerce ethics and loyalty.

Control Variables

In order to mitigate potential sources of systematic errors, firm age, firm size, and relationship length were included in

the structural model as control variables. These three factors are posited to affect the relationship quality in the B2B context (Sarmiento et al. 2015; Skarmneas et al. 2008; Jain et al. 2014). In this research, firm age refers to the number of years the firm has been doing business, firm size as the number of employees, while relationship length is the number of years the buyer and the online service provider have been doing business together.

Methodology

This section provides a brief overview of the quantitative methodology.

The Choice of Egypt as the Focal Country of the Study

The analysis of this study specifically relates to SMEs e-commerce firms in Egypt. We chose SME firms as an area of study since they play a vital and integral role in every country's economy especially in Egypt (Street and Meister 2004; Lawson-body and O'keefe 2006; Harrigan and Ibbotson 2009). They have become an essential sector of all countries' economies. Burke and El-Kot (2011) provide a detailed look at the Egyptian economy, workforce, employee attitudes and values, and the wider Egyptian context. Considering the SME situation, more directly, the SME sector in Egypt, as in most countries, plays an important role in the Egyptian economy in terms of its contribution to Egypt's GDP (Economic Research Forum 2007). SMEs (Medium-sized enterprises with 10–50 employees) constitute more than 90% of businesses and are expected to account for 80% of global economic growth (OECD 2012). Additionally, in many economies, including the Egyptian economy, SMEs represent the segment with the largest increase (Harrigan and Ibbotson 2009). Ayyagar et al. (2011) stated that in developing countries, the SME sector makes a critical contribution to employment and gross domestic product (GDP), and they are also an essential part of the economy. For example, Egyptian SMEs are major job providers; they create an important share of total added value and provide a high proportion of middle-income and poor people with affordable goods and services. Additionally, 99% of Egyptian enterprises are small (Ghanem 2013).

Egypt provides a suitable place for this type of research, because of: (a) The growing level of sophistication of local consumers and their increasing concern for business ethical issues; (b) It has recorded increasing incidents of unethical marketing practices in recent years, which, in many cases, violated consumer rights and interests; and (c) The Egyptian Revolution of 2011 (Revolution of 25th of January)

and the subsequent military coup have a negative effect on the law and order of the society which make Egypt a fertile context for unethical behaviour especially online.

Sampling and Data Collection

Data were gathered from managers responsible for purchasing in SMEs e-commerce firms in Egypt. We randomly selected 3000 firms from the Egyptian Ministry of Commerce, Egyptian Chamber of Commerce, and The Egyptian Cabinet Information and Decision Support Centre (IDSC) databases. Based on a systematic random procedure, a representative sample of 768 firms was selected, using product type and geographic location as stratification criteria. Product type was defined in terms of being consumer or industrial. Geographic location was also broadly grouped into five categories, namely Cairo, Alexandria, Upper Egypt, the Delta, and the Canal zones. The sampling frame is a cross section of four industries, machinery and equipment, chemicals, food, and paper products, in order to increase generalizability (Zhang et al. 2003). These sectors were chosen because they represent a large volume of the Egyptian economy.

The sample firms received a printed survey which included a cover letter, the questionnaire, and a prepaid return envelope. Follow-up telephone calls to non-respondents were made two, four, and six weeks after the surveys were mailed. Thirty-eight firms did not receive the survey instruments due to incorrect addresses. Over a 13-week period, the researchers received 260 surveys, representing a response rate of 33.85%. As in the study by Harrison et al. (1997), in this study, the researchers carefully screened respondents to ensure that each one was a manager responsible for purchasing in his/her firm. The researchers eliminated any response from a firm from the final analysis if the firm did not meet the definition of an SMEs, if the respondent was not a purchasing manager, or if the firm had not already adopted and implemented B2B e-commerce. As a result, the final analysis contained 260 firms. The majority of respondents (81%) were from small organizations: a variety of different industries were represented, including "chemicals" (39%), "food and consumables" (34%), and "clothing and accessories" (27%). A total of 72% of firms had started as "bricks and mortar" operations and had subsequently gone online, while a further 17% had started as online businesses, with the remaining 11% having commenced in both formats from inception. Respondents came from 27 provinces, and the final sample had the following geographic structure: Cairo (43%), Alexandria (21%), Upper Egypt (17%), the Delta (11%), and Canal zones (8%).

Furthermore, all measured scales, which were originally in English, were translated into Arabic by two native

speakers of Arabic who are also fluent in English. The Arabic translations were then back translated into English and checked against the meanings of each item on the original scales to ensure the authenticity of the translations. The results of this pretest revealed some questions in which the wording needed to be improved and in which the sequence of words needed to be changed. However, the changes were only minor and only minimal refinement of the questionnaire was undertaken for reasons of clarity.

Measurements

The survey instrument was designed after reviewing the relevant literature and two pretests. The first pretest was performed by 40 doctoral students, who checked the face validity of the measurement items; the second pretest was conducted by 60 purchasing managers, who checked whether the content of the questionnaire reflected real business situations and whether the managers understood the measures.

The overall model included ten main constructs: privacy, security, reliability/fulfilment, non-deception, service recovery, shared value, communication, relationship quality, repurchase intention, and loyalty. In addition, there were three control variables: firm age, firm size, and relationship length. Measurement for the thirteen constructs was taken from the marketing, business ethics, and management literature. A five-point Likert-type scale ranging from 1 = "strongly disagree" to 5 = "strongly agree" was used. Respondents were asked to respond to the survey on purchasing activities relating to their purchasing organization.

Repurchase intention was assessed by four items from the formalization construct from Zeithaml et al. (1996) and Doney and Cannon (1997). According to the corrected item-total correlations rule (Corrected item-total correlations ought to be retained if the value was placed between 0.35 and 0.80 (Netemeyer et al. 2003), two items have been excluded. The measurement for loyalty includes three selected items from Human and Naudé (2014). One item has been excluded according to the corrected item-total correlations rule given above. Relationship quality with the online service provider is a second-order formative scale composed of satisfaction and trust (Crosby et al. 1990; Palmatier 2008). Each first level indicator uses two items. We used existing multi-item scales for the measurement of the dimensions of (privacy, security, reliability, and non-deception). This scale, developed by Roman (2007), has four dimensions: security (three items), privacy (three items), non-deception (three items), and fulfilment/reliability (three items). New scales were developed for the service recovery as appropriate existing scales could not be found in a B2B context. Scales for this construct were

developed, consistent with established scale development procedures (Churchill 1979; Agag and El-Masry 2016b). The scale for shared value is adopted from Morgan and Hunt (1994) and Theron et al. (2008) and modified in the e-commerce context. Communication scale is obtained using a four-item scale modified from Morgan and Hunt (1994) and Moorman et al. (1993).

Data Analysis

Prior to the PLS analysis a set of items for each construct was examined in the pretest using exploratory factor analysis to identify those items not belonging to the specified domain. The properties of the proposed research constructs were then tested with structural equation modelling (SEM). We applied the partial least squares (PLS) technique, which is typically used when the investigated phenomenon is new and the study aims at theory generation rather than confirmation (Urbach and Ahlemann 2010). In addition, due to the distributional properties of our established variables, a PLS approach was deemed more appropriate as it does not require normal distribution, as opposed to a covariance-based approach which does. Furthermore, the PLS methodology is capable of including both formative and reflective measures simultaneously in a model, which was a constraint we faced with the measures that we used.

Empirical Analysis and Results

Measurement Model

In order to satisfy the criterion of multivariate normality tests of normality, namely skewness, kurtosis, and Mahalanobis distance statistics (Bagozzi and Yi 1988), were conducted for all the constructs. These indicated no departure from normality. The psychometric properties of the constructs were assessed by calculating the Cronbach's alpha reliability coefficient (Nunnally and Bernstein 1994).

First, a confirmatory factor analysis (CFA) was performed to test the measurement model. We assessed the measurement model through tests of convergent validity, discriminant validity, and reliability, using commonly accepted guidelines. These results are shown in Tables 2 and 3. We also performed tests for multicollinearity due to the relatively high correlations between some of the constructs. All constructs had variance inflation factor (VIF) values of less than 2.3, which is within the cut off level of 3.0.

All items loaded on to the corresponding latent variable structure and all exhibited loadings greater than 0.7. All constructs exhibited adequate internal consistency

Table 2 Loadings and cross-loadings of measurement items

Items	PV	SC	REL	DEC	SR	SV	COM	RQ	REP	LOY	SIZ	Age	LET	p value
PV1	0.872	0.262	0.538	0.617	0.283	0.297	0.478	0.271	0.139	0.378	0.461	0.278	0.261	<0.001
PV2	0.804	0.103	0.342	0.472	0.190	0.134	0.480	0.472	0.401	0.472	0.027	0.175	0.632	<0.001
PV3	0.865	0.493	0.421	0.460	0.454	0.372	0.474	0.290	0.704	0.381	0.271	0.379	0.270	<0.001
SC1	0.411	0.878	0.467	0.574	0.303	0.231	0.581	0.574	0.615	0.391	0.381	0.274	0.029	<0.001
SC2	0.109	0.902	0.243	0.401	0.227	0.309	0.330	0.463	0.314	0.484	0.178	0.184	0.526	<0.001
SC3	0.271	0.870	0.212	0.423	0.485	0.247	0.272	0.083	0.203	0.319	0.093	0.378	0.172	<0.001
REL1	0.360	0.473	0.917	0.318	0.261	0.323	0.628	0.387	0.610	0.519	0.461	0.279	0.371	<0.001
REL2	0.268	0.238	0.828	0.247	0.303	0.584	0.520	0.654	0.484	0.213	0.278	0.627	0.516	<0.001
REL3	0.131	0.573	0.831	0.302	0.237	0.641	0.120	0.203	0.401	0.589	0.481	0.218	0.631	<0.001
DEC1	-0.291	-0.273	-0.031	0.932	0.302	0.501	0.337	0.528	0.278	0.382	0.072	0.618	0.702	<0.001
DEC2	0.302	-0.113	-0.194	0.831	0.703	0.437	0.281	0.471	0.419	0.209	0.471	0.219	0.179	<0.001
DEC3	-0.138	0.403	0.207	0.824	0.331	0.303	0.603	0.474	0.214	0.511	0.056	0.218	0.039	<0.001
SR1	0.271	0.647	0.472	0.542	0.819	0.448	0.436	0.193	0.476	0.490	0.271	0.034	0.272	<0.001
SR2	0.231	0.183	0.041	0.409	0.838	0.284	0.130	0.505	0.607	0.345	0.371	0.461	0.293	<0.001
SR3	0.163	0.242	0.721	0.460	0.846	0.510	0.329	0.383	0.364	0.638	0.571	0.471	0.467	<0.001
SR4	0.391	0.283	0.523	0.172	0.934	0.103	0.742	0.539	0.401	0.390	0.481	0.136	0.471	<0.001
SV1	0.103	0.392	0.303	0.402	0.437	0.854	0.423	0.501	0.701	0.467	0.281	0.471	0.038	<0.001
SV2	0.240	0.229	0.562	0.352	0.409	0.912	0.536	0.278	0.532	0.573	0.037	0.236	0.467	<0.001
SV3	0.151	0.038	0.373	0.486	0.186	0.951	0.178	0.483	0.177	0.304	0.178	0.038	0.618	<0.001
COM1	0.172	0.269	0.319	0.183	0.420	0.400	0.819	0.625	0.512	0.412	0.381	0.363	0.578	<0.001
CM2	0.183	0.121	0.251	0.103	0.234	0.490	0.874	0.402	0.437	0.531	0.286	0.461	0.378	<0.001
COM3	0.250	0.402	0.366	0.273	0.357	0.291	0.841	0.208	0.449	0.614	0.027	0.371	0.617	<0.001
COM4	0.338	0.227	0.032	0.403	0.199	0.220	0.816	0.527	0.375	0.490	0.371	0.371	0.379	<0.001
RQ1	0.201	0.171	0.540	0.178	0.438	0.382	0.028	0.852	0.309	0.551	0.073	0.371	0.174	<0.001
RQ2	0.463	0.364	0.293	0.462	0.374	0.149	0.471	0.809	0.128	0.361	0.178	0.264	0.164	<0.001
RQ3	0.047	0.470	0.380	0.407	0.049	0.037	0.093	0.884	0.029	0.182	0.402	0.271	0.582	<0.001
RQ4	0.273	0.178	0.029	0.178	0.274	0.372	0.471	0.913	0.572	0.461	0.287	0.028	0.267	<0.001
REP1	0.182	0.373	0.182	0.105	0.172	0.172	0.384	0.471	0.872	0.039	0.029	0.273	0.490	<0.001
REP2	0.283	0.039	0.573	0.637	0.384	0.462	0.371	0.036	0.880	0.364	0.371	0.371	0.731	<0.001
LOY1	0.362	0.378	0.632	0.218	0.508	0.278	0.484	0.461	0.318	0.926	0.319	0.172	0.372	<0.001
LOY2	0.039	0.146	0.182	0.092	0.273	0.623	0.637	0.461	0.093	0.873	0.136	0.064	0.278	<0.001
SIZ1	0.632	0.473	0.482	0.172	0.573	0.172	0.049	0.193	0.461	0.471	0.783	0.318	0.627	<0.001
SIZ2	0.372	0.460	0.384	0.472	0.304	0.463	0.481	0.471	0.271	0.037	0.840	0.318	0.278	<0.001
SIZ3	0.620	0.189	0.571	0.027	0.140	0.179	0.518	0.371	0.271	0.471	0.831	0.371	0.178	<0.001
AGE1	0.273	0.483	0.182	0.418	0.640	0.273	0.178	0.039	0.279	0.217	0.719	0.792	0.038	<0.001
AGE2	0.419	0.028	0.472	0.182	0.273	0.538	0.473	0.029	0.471	0.461	0.371	0.827	0.190	<0.001
LEN1	0.256	0.320	0.238	0.038	0.271	0.283	0.421	0.167	0.270	0.278	0.491	0.029	0.864	<0.001
LEN2	0.481	0.203	0.364	0.462	0.164	0.378	0.618	0.170	0.375	0.473	0.047	0.165	0.785	<0.001
LEN3	0.296	0.156	0.273	0.028	0.581	0.257	0.029	0.289	0.276	0.048	0.295	0.627	0.884	<0.001

Bolded items are factor loading

PV, privacy; SC, security; REL, reliability/fulfilment; DEC, non-deception; SR, service recovery; SV, shared value; COM, communication; RQ, relationship quality; REP, repurchase intention; LOY, loyalty; SIZ, firm size; AGE, firm age; LEN, relationship length

reliability as the Cronbach alpha coefficients exceeded the 0.70 (Table 3).

The Cronbach alpha coefficient for privacy ($\alpha = 0.70$) was the weakest of all the reliability measures, but

remained acceptable (Nunnally and Bernstein 1994). All the remaining constructs showed good internal consistency reliability. The measurement model also exhibited significant convergent validity as a cross-loading matrix exhibits

Table 3 Results of composite reliability and convergent discriminant validity testing

	Construct composite reliability	Cronbach alpha	AVE*	PV	SC	REL	DEC	SR	SV	COM	RQ	REP	LOY	SIZ	AGE	LEN
PV	0.816	0.800	0.573	(0.758)												
SC	0.861	0.859	0.731	0.683	(0.817)											
REL	0.884	0.867	0.682	0.581	0.578	(0.742)										
DEC	0.891	0.851	0.626	0.723	0.589	0.694	(0.749)									
SR	0.857	0.819	0.631	0.601	0.578	0.694	0.485	(0.858)								
SV	0.872	0.832	0.620	0.717	0.594	0.495	0.496	0.584	(0.758)							
COM	0.928	0.890	0.709	0.607	0.749	0.693	0.720	0.503	0.483	(0.786)						
RQ	0.895	0.865	0.701	0.711	0.493	0.593	0.589	0.693	0.593	0.485	(0.837)					
REP	0.867	0.824	0.626	0.767	0.593	0.585	0.693	0.593	0.506	0.596	0.485	(0.812)				
LOY	0.838	0.807	0.618	0.598	0.738	0.694	0.503	0.694	0.640	0.694	0.692	0.489	(0.825)			
SIZ	0.873	0.831	0.646	0.468	0.593	0.584	0.694	0.594	0.594	0.603	0.540	0.695	0.596	(0.741)		
AGE	0.826	0.765	0.604	0.672	0.630	0.704	0.549	0.733	0.503	0.598	0.559	0.603	0.697	0.694	(0.763)	
LEN	0.890	0.738	0.716	0.478	0.561	0.485	0.603	0.583	0.684	0.634	0.802	0.593	0.820	0.504	0.572	(0.697)

* AVE average variance extract

no cross-loading that exceeds the within row and column loadings.

Discriminant validity is considered in two steps. First, the Fornell and Larcker (1981) criterion is used to test whether the square root of a construct's AVE (is higher than the correlations between it and any other construct within the model. AVE means the overall amount of variance in the items accounted for a construct (Hair et al. 2010). Second, the factor loading of an item on its associated construct should be greater than the loading of another non-construct item on that construct. Table 3 shows the results of this analysis and reports the latent variable correlation matrix with the AVE on the diagonal. Therefore, we conclude that measurement model exhibits good discriminant validity and meets the Fornell and Larcker (1981) criteria.

In order to assess potential non-response bias, we examined whether there were differences in firm size and age between respondents and non-respondents (Wagner and Kemmerling 2010); T-tests were performed to compare the medium of early and late respondents. A short survey comprising only firm and respondent characteristics was sent to all non-respondents of the original survey. The result of this survey allows one to compare characteristics of respondents with non-respondents. A total of 210 responses were received from non-respondents of the initial survey. We tested the significance of differences between averages in the main sample and a follow-up sample with regard to such factors as: firm size and firm age. The analysis did not reveal any significant differences between respondents and non-respondents across firm size and firm age. We therefore excluded the possibility of non-response bias.

Evidence of common method bias exists when a general construct accounts for the majority of covariance between all constructs. A principal component factor analysis was performed and the results excluded the potential threat of common methods bias. The largest factor accounted for 34.26% (the variances explained ranges from 17.02 to 34.26%) and no general factor accounted for more than 50% of variance, indicating that common method bias may not be a serious problem in the data set.

Structural Model Assessment

Since the measurement model evaluation provided evidence of reliability and validity, the structural model was examined to evaluate the hypothesized relationships among the constructs in the research model (Hair et al. 2013). According to Henseler et al. (2012) and Hair et al.'s (2013) recommendations, the structural model proposed in the current study was evaluated with several measures.

The model indicates 69% of variance for relationship quality, 62% for repurchase intention, and 48% for buyer loyalty. To test H1–H11, we tested the structural equation model in Fig. 2. The global fit indicators were acceptable, APC = (0.184, $p < 0.001$), ARS = (0.725, $p < 0.001$), AARS = (0.714, $p < 0.001$), AVIF = (2.341), and GOF = (0.684). Path coefficients and their significance values were estimated and the results are shown in Table 5.

The results show that all the hypothesized relationships are supported except H1. Since we wanted stronger evidence of the existence of the seven ethical dimensions, following the method utilized by Dabholkar et al. (1996), we performed CFA to compare several possible factor structures as indicated in Table 4. The results show that the ten-factor model fits the data much better than the other models. For example, the AARS difference between the proposed ten-factor model and the others models is highly significant (AARS = 0.714, $p < 0.001$).

The overall fit measures suggest that this model is a plausible representation of the structures underlying the empirical data. The APC = (0.184, $p < 0.001$), ARS = (0.725, $p < 0.001$), AARS = (0.714, $p < 0.001$), AVIF = (2.341), and GOF = (0.684). These findings suggest that BPSE comprises seven factors. This provides strong support for the seven dimensions as aspects of BPSE.

H1 examines the effects of privacy on relationship quality. Our findings suggest that privacy is not related to relationship quality ($\beta = 0.08$, $p = 0.23$). H2 examines the effects of security on relationship quality; security is shown to be significantly related to relationship quality ($\beta = 0.19$, $p < 0.001$), which supports H2. A positive and significant link between reliability/fulfilment and relationship quality was found ($\beta = 0.63$, $p < 0.001$), which is consistent with

H3. In support of H4, a positive and significant link between non-deception and relationship quality was found ($\beta = 0.41$, $p < 0.001$). A significant positive relationship was revealed between service recovery and relationship quality ($\beta = 0.31$, $p < 0.001$), which supports H5. H6 examines the effects of shared values on relationship

Table 4 Summary results of models fit indices

Models	APC	ARS	AARS	AVIF	GOF
Ten factors	0.184	0.725	0.714	2.341	0.684
Nine factors	0.187	0.708	0.693	2.850	0.701
Eight factors	0.196	0.685	0.647	2.976	0.683
Seven factors	0.213	0.658	0.627	3.244	0.651
Six factors	0.247	0.630	0.611	3.420	0.638
Five factors	0.281	0.624	0.609	3.591	0.649
Four factors	0.461	0.583	0.577	3.851	0.605

Table 5 Results of hypotheses testing

Hypotheses	Path directions	St. estimate	Result
H1	PV → RQ	0.08	Not supported
H2	SC → RQ	0.19	Supported
H3	REL → RQ	0.63	Supported
H4	DEC → RQ	0.41	Supported
H5	SR → RQ	0.31	Supported
H6	SV → RQ	0.17	Supported
H7	COM → RQ	0.04	Supported
H8	RQ → REP	0.58	Supported
H9	RQ → LOY	0.39	Supported
H10	BPSE → RQ → REP	0.08	Supported
H11	BPSE → RQ → LOY	0.03	Supported

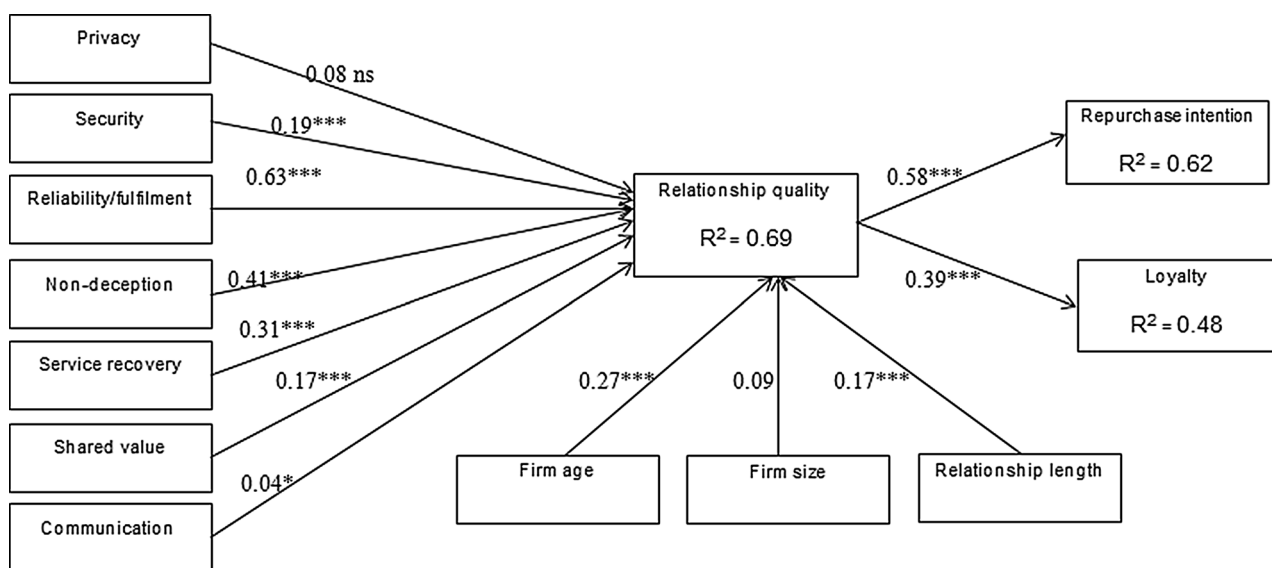


Fig. 2 PLS results of research model of main test. Note the asterisk represents the significant level of coefficient. * 0.05; ** 0.01; *** 0.001

quality; shared values are shown to be significantly positively related to relationship quality ($\beta = 0.17, p < 0.001$), which supports H6. In the case of H7, our findings suggest that communication is significantly related to relationship quality ($\beta = 0.04, p < 0.05$). In accordance with H8, our findings support the favourable effect of relationship quality on buyer repurchase intention ($\beta = 0.58, p < 0.001$). Finally, the study found relationship quality to have a significant positive impact on buyer loyalty ($\beta = 0.39, p < 0.001$), which supports H9. Also, relationship length ($\beta = 0.17, p < 0.001$) and firm age ($\beta = 0.27, p < 0.001$) were shown to play a positive role in the development of relationship quality.

Furthermore, Cohen’s (1988) effect size f^2 , defined as “the degree to which the phenomenon is present in the population”, was used to further examine the substantive effect of the research model. Cohen (1988) suggests 0.02, 0.15, and 0.35 as operational definitions of small, medium, and large effect sizes, respectively. Thus, our model suggested that both relationship quality ($f^2 = 0.74$) and repurchase intention ($f^2 = 0.65$) have a large effect size whereas loyalty ($f^2 = 0.19$) has a medium effect size.

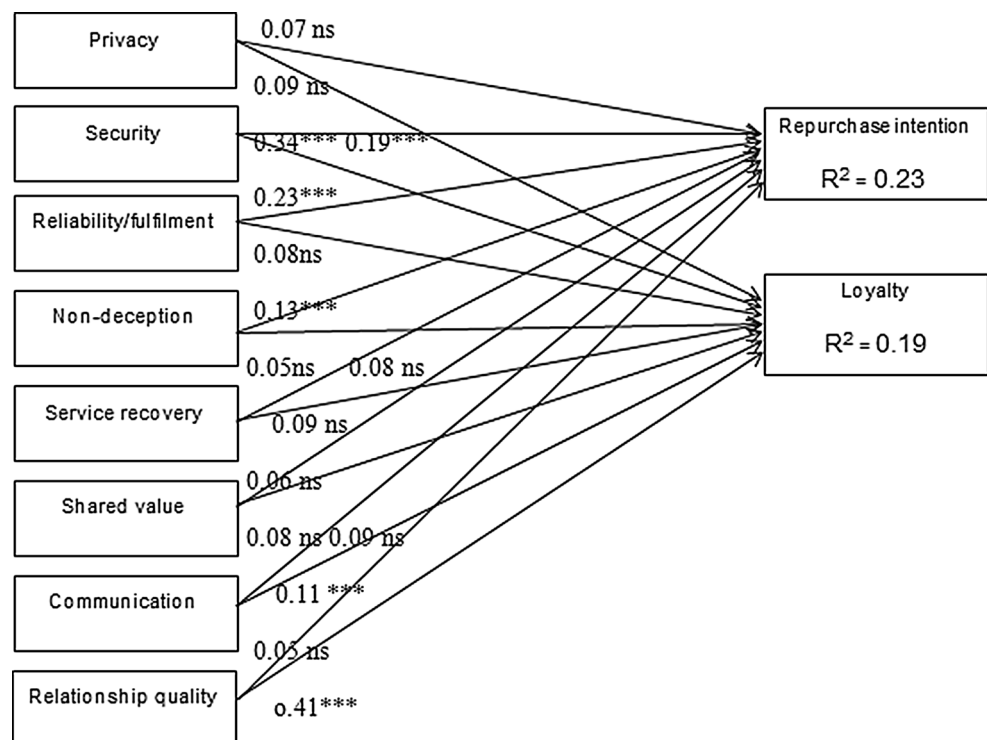
The study tests the predictive validity of the structural model following Stone–Geisser’s Q^2 . According to Roldán and Sánchez-Franco (2012), in order to examine the predictive validity of the research model, the cross-validated construct redundancy Q^2 is necessary. A Q^2 greater than 0 implies that the model has predictive validity. In the main

PLS model, Q^2 is 0.67 for relationship quality, 0.62 for repurchase intention, and 0.43 for loyalty, which is positive and hence satisfies this condition.

Rival Model

There is a consensus in using structural equations modelling technique is that researchers should compare rival models, not just test a proposed research model (Kenneth and Scott Long 1992). Based on Morgan and Hunt (1994) and Hair et al. (2010), we suggest a rival model as demonstrated in Fig. 3, where relationship quality do not act as mediators among the BPSE dimensions and positive repurchase intention and loyalty but they act as antecedents along with the BPSE seven dimensions. We ruled out several competing explanations. The selection of the rival models is rooted in the extant literature (Morgan and Hunt 1994; Sirdeshmukh et al. 2002; Luo and Bhattacharya 2006; Agag and El-Masry 2016a). We fitted a full mediation model (hypothesizing trust as a full mediator), a non-mediation model (no effects on relationship quality) and a no-relationship quality model (a model not including relationship quality). The research model (Model 2) fits the data better than the full mediation model and the non-mediation model. More criteria can be used to compare structural models, such as the percentage of significant paths and parsimony, as measured by the PNFI index (Morgan and Hunt 1994). With the exception of the full mediation model (which fits the data significantly worse

Fig. 3 Rival model



than the research model), the remaining rival models have fewer significant paths than the research model. Further the research model is no less parsimonious than the rival models.

The rival model has been evaluated on the basis of the following criteria: (1) overall fit of the model; and (2) percentage of the models' hypothesized parameters that are statistically significant (Morgan and Hunt 1994; Hair et al. 2010). The global fit indicators are as follow: APC = (0.437), ARS = (0.583), AARS = (0.562), AVIF = (4.691), and GOF = (0.573). All the goodness of fit measures fall below acceptable levels. Only six out of sixteen (37%) of its hypothesized paths are supported at the ($p < 0.001$) level. In contrast, eight out of nine hypothesized paths (89%) in the proposed model are supported at the ($p < 0.001$) level.

Testing for Mediation

To check the mediating influence of the variables on repurchase intention and loyalty through the BPSE seven dimensions, four separate analyses were performed using Baron and Kenny's (1986) approach. The results revealed that all standardized, indirect (i.e. mediated by relationship quality) effects on repurchase intention and loyalty are significant (please see Table 6). The full mediation model was supported. These findings are consistent with the path analysis results. We also conducted a Sobel test. The results also supported the mediating effects of relationship quality ($p < 0.001$).

Table 6 Mediation analysis results

Fit estimates	APC	ARS	AARS	AVIF	GOF
Model 1, full mediation	0.184	0.725	0.714	2.341	0.684
Model 2	0.242	0.706	0.683	2.901	0.634
Model 3, no mediation	0.437	0.583	0.562	4.691	0.573
Model 4, partial mediation	0.196	0.706	0.682	2.564	0.670
	Model 1, full mediation	Model 2	Model 3, no mediation	Model 4, partial mediation	
R^2					
Relationship quality	0.69	–	0.48	0.69	
Repurchase intention	0.62	0.21	0.43	0.61	
Loyalty	0.48	0.18	0.31	0.47	

Discussion and Implications

Discussion

The aim of this study was to develop and empirically test a framework that explains the impact of B2B e-commerce ethics on buyer repurchase intentions and loyalty through relationship quality.

First, our findings showed that BPSE is a multidimensional construct composed of seven dimensions: security, privacy, fulfilment/reliability, non-deception, service recovery, shared value, and communication. McIntyre et al. (1999) suggest that a unidimensional approach to measuring ethics may not be sufficient to capture its complexity and dimensionality. This may be especially true in the e-commerce context. The online environment is continually evolving and has a multifaceted nature (Gregory 2007). Therefore, it is important that BPSE are specified at a more abstract level, which implies reflective first-order dimensions.

Second, BPSE dimensions have a wide range of effectiveness in terms of generating strong relationships. Overall, reliability/fulfilment and non-deception are the most effective relationship-building dimensions. Reliability/fulfilment in the context of B2B e-commerce has not been closely studied. Still, accurate display and description of a service and the delivery of the right service within the timeframe promised appear to emerge as critical issues for B2B e-commerce. The reliability factor deals largely with perceptions of buyers regarding the accurate display and description of a service so that what the buyer receives is what he thought he was ordering, and the delivery of the right product within the timeframe promised, whereas the other dimensions of BPSE often have a different effect on relationship quality. For example, regarding perceived security, we found buyers perceptions about the security has a direct effect on relationship quality; therefore, credit card information leakage and any hacking attempts on the website may have a negative impact on buyer–supplier relationship quality.

The findings of this study pointed out that privacy has no significant effect on relationship quality; this could be due to the SMEs B2B websites, the information would need to be protected the same as how it is protected in a B2C, but B2B customers may care less about privacy and security issues because the corporate information is what is given in a transaction and not personal information about one person. A B2B website may already have the important information needed from the specific business in previous transactions since most business done on a website is to build strong relations with the other business. Until recently, the issue of privacy and security were a major

worry of the B2C area while privacy and security implications of B2B transfers had been neglected (Goodman 2000).

The findings of this study showed the direct positive effect of service recovery on relationship quality. Most buyers hope to receive some kind of compensation and clear return policy for any service failure they may experience. Our research reveals that shared values were a significant determinant of electronic trust. Shared values also lead to increased relationship quality; they enhance the feeling of association, develop a bonding and nurture an associative long-term relationship. Communication is also found to play a critical role in enhancing relationship quality. Buyers expect a high quality of response and information and speedy response from an online service provider. The SEM results support the use of a second-order relationship quality construct with trust and satisfaction as its dimensions. Most of the relationship quality research provides two primary dimensions: trust and satisfaction, e.g. (Crosby et al. 1990; Dorsch et al. 1998; Skarmeas et al. 2008; Palmatier 2008). Our analysis compares the relative effects of the different perspectives of relationship quality by analysing relational mediators separately, and as a group, the SEM results support the use of a second-order relationship quality construct with only two dimensions (trust and satisfaction). Moreover, relationship quality has the greatest influence on repurchase intention ($\beta = 0.58$) and loyalty ($\beta = 0.39$), followed by trust and satisfaction. These findings indicate that relationship marketing researchers may need to take a multiple mediator or composite view when they measure buyers' relationships to capture their impacts on their loyalty and repurchase intention. In addition, the findings of this study showed the direct effect of relationship quality on buyer repurchase intention and loyalty. These results confirm the findings of previous studies that relationship quality significantly impacts buyers' repurchase intention and loyalty (Palmatier et al. 2006; Liua et al. 2011; Hennig-Thurau et al. 2002). Thus, SME e-commerce firms with good ethics can establish a favourable relationship with buyers, thereby acquiring the buyers' repurchase intention and loyalty. Finally, the results of the study also reveal that firm age and length of relationship between the online service provider and buyers play a positive role in the development of relationship quality. These results confirm the findings of previous studies that firm age and relationship length significantly impacts relationship quality (Sarmiento et al. 2015; Skarmeas et al. 2008).

Managerial Implications

The current study, which identified the most central dimensions of buyers' concerns about the ethics of

e-commerce websites, can serve as the first step on a path of proactive e-commerce ethics management. The results of this study also indicate that buyers' perceived ethics of e-commerce websites will be positively related to buyer repurchase intentions and loyalty. It is therefore essential that enterprises do something to further ethical practices. By carefully examining the organizations' approaches to the seven dimensions of the BPSE—privacy, security, reliability, non-deception, service recovery, communication, and shared value.

This study underscores the need for e-commerce companies to develop an ethical climate and to enforce strict ethical standards within their organizations. However, it is acknowledged that managers or executives will seldom be in a position to unilaterally correct all organizational problems in these domains as they are likely to involve some degree of existing organizational policy. Changing existing policy will demand attention from general managers at a senior level. Nevertheless, managers or executives still can be aggressive in challenging organizational policies for selling products and services, and they may insist on tighter interpretations of organizational policies regarding privacy, security, fulfilment, non-deception, service recovery, communication, and shared value.

The current study suggests that BPSE can play a critical role in the formation and maintenance of long-term relationships with buyers. In order to successfully operate a commercial website from an ethical perspective, SME e-commerce firms need to understand how buyers' ethical perceptions are formed. The present study compiled a list of 23 items (grouped into seven factors) that SME e-commerce firms could use to assess such perceptions. These items would provide several suggestions to SME e-commerce firms in terms of how to shape their buyers' relationship quality. E-commerce companies should present their privacy policies clearly to increase consumer intention to shop online. Consumers' willingness to give their personal information to e-commerce websites will increase when privacy policies are guaranteed. Reliability/fulfilment can play a critical role in the formation and maintenance of long-term relationships with buyers. In order to successfully operate a website, SME e-commerce firms need to provide buyers with the right service within the timeframe promised so that what the buyer receives is what he thought he was ordering. Buyers are more willing to provide information and make online transactions with greater perceived security. Marketers can also turn to endorsement and checks by third party privacy watchdogs such as TRUSTe. An e-commerce company should publish clear security policies that can be understood easily by consumers. By informing and reassuring consumers about the security of their payments, it will likely enhance consumers' perceptions of security. An e-commerce company

should also utilize a series of specific technical mechanisms, such as data encryption, to ensure payment security during the online transaction process, as well as offering multi-payment systems such as cash paid after product or service delivery. The perception of security in interacting with an online service provider can be achieved by maintaining two conditions. First, SME e-commerce firms must address buyer concerns regarding computer crimes. Second, they must prevent invasion of privacy. Our study showed that communication between the online service provider and its buyers is a significant determinant of relationship quality. The current study urges e-commerce companies to publish a clear return policy and information about compensation when products or services are not delivered on time. E-commerce companies should handle consumer enquiries and complaints promptly during the transaction process. Service recovery is merely a part of the post-sale stage and not all consumers experience it. For initial consumers it is a post-sale issue, but for repeat consumers it is a meaningful issue because it will affect their satisfaction and loyalty. When repeat consumers are satisfied with the service recovery offered by an e-commerce company, their trust and commitment to that company can increase. A greater number of links with other established websites and the presence of a virtual advisor can improve communication and reinforce relationship quality. SME e-commerce firms should foster practices which can reliably show the honesty of products and services to buyers in order to promote favourable buyer attitudes towards SME e-commerce firms, which in turn will increase buyer repurchase intention and loyalty. Besides, from a business perspective, Luo et al. (2001) indicated that a cross-cultural study helped them to have the ability to understand the international and multinational business markets. Consumers in countries with a high individualism have positive perceptions regarding retailer provision of safe payment methods, protection of their personal information, and accuracy of quality and quantity of ordered items. Multinational enterprises may first consider entering into the online markets where consumers with these cultural patterns proliferate, to make a good impression with new/old online service providers in order to move into online sales. Additionally, corporations must understand the specific cultural context in Egypt to participate in this attractive online market. This is especially true of multinational vendors who want to enter e-commerce in Egypt in the current globalized world.

Theoretical Implications

The current study contributes to literature in three ways. First, the BPSE captures the buyer-perceived ethics in e-commerce and is a multidimensional construct consisting

of seven dimensions: privacy, security, fulfilment, non-deception, service recovery, communication, and shared value. These dimensions have significant and direct effects on relationship quality (trust and satisfaction) and indirect effect on buyer repurchase intentions and loyalty. Second, this study empirically verifies the argument by Kracher and Corritore (2004) that e-commerce ethics and brick-and-mortar business ethics are fundamentally the same. The Internet is continually evolving and multifaceted, therefore ethical issues have different manifestations in e-commerce contexts. Third, this study is the first study to empirically test service recovery, shared value, and communication as elements to be assessed when measuring buyer-perceived e-commerce ethics. It confirms privacy, security, reliability/fulfilment, non-deception, service recovery, shared value, and communication as determinants of relationship quality. Prior research identifies that business ethics play a vital role in buyer–seller relationship success. Accordingly, our study attempts to add to extant literature and knowledge by examining the perceptions of buyers regarding the ethics of online service provider in a B2B e-commerce context, which is particularly important in terms of improving the relationship between online service providers and buyers.

Our review of buyer–supplier relationship studies reveals numerous constructs and conceptualizations. With so many constructs, scholars need tangible evidence regarding which constructs they should initially consider for inclusion in future studies. In our study, we identify the fourteen most frequently used constructs in the buyer–supplier relationship literature from the ethical perspective. Given the proliferation of constructs in the buyer–supplier research, this core set of constructs can serve as the basis for developing alternative operationalizations and novel measurement scales. Our study has isolated the impact of control variables, which has permitted more useful conclusions to be made. This exercise has enabled the postulation that the findings were not due to the influences arising from other independent factors. Other researchers may consider doing likewise in comparable studies. Finally, our study confirmed that relationship quality significantly affects buyers' repurchase intention and loyalty in the B2B e-commerce context.

Limitations and Future Research Directions

Despite the contributions of this study, some research limitations need to be acknowledged. First, while this study has examined the consequences of e-commerce ethics, future study should be extended to examine the antecedents (e.g. culture and religion) that influence buyer perceptions of SME e-commerce firms' ethics. Second, we did not collect data from non-Internet users because the focus of

this study was online SMEs referring to their latest purchases online. It may be an interesting extension, however, to test this conceptual model for other populations such as non-online SME firms. It would also be helpful to apply the research in other countries to overcome potential cultural limitations. Third, the study sampled only Egyptian SMEs. Because SMEs have different sizes and characteristics compared to larger corporate buyers, we cannot generalize their buying behaviour and attitudes for the whole population of business-to-business buyers. The loyalty of larger business buyers may be different from the loyalty of SMEs, the characteristics of SMEs and different regions may affect the buyers' behaviours and attitudes. Finally, although this study has examined several key outcomes of relationship quality, future research should incorporate additional outcomes (e.g. word of mouth, propensity to leave, and uncertainty).

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