

Information Security and Privacy Concerns in 4IR: the moderating role of Trust in B2C e-commerce.

Abstract. The development of B2C e-commerce success depends on establishing trust and satisfaction of e-services which contributes to the long-term B2C e-commerce customer loyalty. Prior research has examined the key attributes hampering the e-commerce success and making it difficult to maintain customer loyalty. The new types of technology devices introduced are not only vulnerable to internet risks but also slower the growth of B2C e-commerce. Prior studies have proposed and empirically tested B2C e-commerce frameworks guided by the objectives of establishing trusting, satisfied, and loyal customers in many countries. The empirical data presenting these key success factors of B2C e-commerce in an emerging African countries is mainly limited. The purpose here originates on documenting the effects of information security and privacy concerns on customer trust as a moderator of the effect of satisfaction on B2C e-commerce customer loyalty. The study sinks to the depth of prior studies to construct a conceptual research model which hypothesises the relationships between the B2C e-commerce factors and their antecedents. A survey collected primary data using a self-administered structured questionnaire targeting B2C e-commerce customers in Gauteng province of South Africa. Results show that information security is a strong predictor of customer trust and a weak predictor of their satisfaction. It was found that B2C e-commerce customer loyalty is strongly determined by satisfaction and weakly determined by trust in South Africa. Trust significantly moderates the effect of satisfaction on B2C e-commerce customer loyalty. The limitations of the study, implications, and the proposed future research directions are discussed.

Keywords: Security, Privacy, Trust, Satisfaction, Loyalty, E-Commerce, 4IR.

1. Introduction

E-commerce websites are grouped in six types, such as Internet presence, online storefront, incentive website, shopping mall, content, and search agent (Yang, Cai, Zhou & Zhou, 2005:576), and the arrival of the various types of devices (Laptops, Tablet PCs, Personal Digital Assistants, Smart phones, etc.), together with mobile computing (Bluetooth and Wi-Fi), enable e-commerce to facilitate online payments through the use of credit cards which has gained popularity and intensifying websites applications. However, the arrival of these technology developments remain vulnerable to potential risks of the internet (Dlamini, Eloff & Eloff, 2009:3), and e-commerce businesses fail to simplify the B2C e-commerce processes for their consumers and do not have strategies to lower the risk of losing their customer trust (Angus, 2018:26). Website managers must start to examine each step in the online shopping process such as information searches, product orders and delivery, online payment methods, and after sales services for B2C e-commerce to achieve its success (Rahi & Ghani, 2018). Most importantly, they must improve the security and privacy features on their websites to help customers to begin trusting the website to facilitate a purchase transactions (Eid, 2011:86; Belanger *et al.*, 2002:262), which will increase their online sales.

From the global marketing perspective, in 2017, for instance, China had an estimated population of 1.404 billion and has reached \$5.8 trillion retail sales, with 19.6% of this total obtained from online shopping and the United States' global e-commerce market share is expected to decrease from 22.2% to 16.9% in 2020, which spark a shift from Western to Eastern markets in the next decade (Goldstuck, Elliott, Mathews & Pienaar, 2019:2). In South Africa, most highly populated province is Gauteng (Statistics South Africa, 2015), and the Quarterly Bulletin report (2012:12) from Gauteng province shows that the sales of online retail goods have been accelerating due to the increase in consumer spending from R470 million in 2004 and exceeding R2bn in 2010, which was an average annual increase of 29%. This has reached R2.6 billion in 2011, or a 30% increase from 2010, which was aided by the continuous growing number of experienced users of internet. It has been shown by Mkhosi (2017:11) that South African consumers who purchased from South African websites made up to 84.3% in 2017, while 27.1% purchase from the websites in United States, and 14.6% purchase from the European websites.

Although there was an acceleration growth of online shopping in South Africa from 2017 to 2018, it has been admitted that only a small reduction in the online growth rate will occur in 2019 to 2020 (Goldstuck *et al.*, 2019:2). The industry reports estimate that the e-commerce transactions will contribute 1% to total gross domestic product (GDP) in 2017, with an increase in the penetration of online consumer from 44.5% to 60.1% in 2021 (Budree, 2017:3). It was also predicted that online retail in South Africa will reach 1.4% accumulated from R1-trillion spending that is expected on traditional retail websites, and with an estimated 2% increase by 2022 (Goldstuck *et al.*, 2019:2). These growth of B2C e-commerce in South Africa has invited the entrance of online stores that compete with traditional retail websites for marketshare and profitability by striving to establish a superior image to position themselves as the market leaders in this industry. For example, a number of large e-commerce brands and businesses, such as Spree, Zando, Takealot, Superbalist and Yuppiechef have emerged to compete with well-established and recognisable South African brands such as Hyperli (Budree, 2017:3).

E-commerce businesses face pressure of strong competition since competitors are only a mouse click away (Eid, 2011:78), which makes building customer loyalty to be a biggest challenge requiring companies to develop distinguishable attributes relative to their competitors (Eid, 2011:81; Chang & Chen, 2009:416), and show that understanding of the antecedents of consumer loyalty has significant relevance for e-service website marketers (Vasic, Kilibarda & Kaurin, 2019:81; Nasimi, Nasimi & Basit, 2018:24; Faraoni, Rialti, Zollo & Pellicelli 2018), particularly through marketing efforts related to establishing trust and satisfaction as the determinants of customer loyalty. Pavlou (2003) indicated satisfaction and trust as preconditions for customer's patronage behaviour. Of the many key success factors of B2C e-commerce customer loyalty, trust and satisfaction have received attention as two key determinants of patronage behaviour (Hidayat, Saifullah & Ishak, 2016:157; Ludin & Cheng, 2014:465; Eid, 2011:86; Flavian & Guinaliu, 2006:611). Despite the essence of this topic, the existing literature suggests that research studies on B2C e-commerce customer loyalty with the South African e-commerce companies is limited (Rudansky-Kloppers, 2014; Beneke, Scheffer & Du, 2010; Brown & Jayakody, 2008), while a growing body of empirical data in e-commerce studies exist on these important key success factors of B2C e-commerce in various contexts (Nasimi *et al.*, 2018:24; Tunali & Aytakin, 2018:107; Ahmad, Rahman & Khan, 2017:258).

A large body of data concerning satisfaction as a determinant of loyalty has been reported in B2C e-commerce (Nasimi *et al.*, 2018:23; Tunali & Aytakin, 2018:107; Ahmad *et al.*, 2017:258; Jain & Sareen, 2015:10; Ismail & Safa, 2014:231; Luarn & Lin, 2003:162). Despite these studies, the important role of trust in growing B2C e-commerce customer satisfaction is strongly echoed by many researchers (Faraoni *et al.*, 2018; Anderson & Swaminathan, 2011:230; Lee & Chung, 2009:390; Cyr, 2008; Flavian *et al.*, 2006; Chiou & Droge, 2006:621). In addition, the direct effect of online customer trust on loyalty has also been identified in the e-commerce literature (Tunali & Aytakin, 2018:107; Jain & Sareen, 2015:10; Ismail & Safa, 2014:231; Kim, Chung & Lee, 2011:263; Luarn & Lin, 2003:162). Specifically, some research studies, (Faraoni *et al.*, 2018; Anderson & Swaminathan, 2011:229; Flavian & Guinaliu, 2006:611; Anderson & Srinivasan, 2003:132) confirm the important role of trust in moderating the effect of satisfaction on B2C e-commerce customer loyalty.

The study measuring the nature and antecedents of trust and its role as a moderator of the effect of customer satisfaction on loyalty, particularly among the major B2C e-commerce competitors in South Africa, is therefore essential to identify and understand the challenges in the development of the B2C e-commerce success which incorporate not only their marketing strategies but also the technology characteristics accompanied their websites (Fortes & Rita, 2016:168; Eid, 2011:80; Bulgurcu, Cavusoglu & Benbasat, 2010:524). In South Africa, Rudansky-Kloppers (2014:1189) showed that the primary reason for many consumers to avoid online shopping is attributed to the fear of fraudulent credit card usage, theft, hacking, and dishonesty sales staff. Major internet operators and suppliers should improve the security and sense of information protection by tackling promptly the issues of cybercrime and fraudulent purchases and introduce technology programmes that prevent the repetition of consumer potential negative consequences by educating them on various mechanisms of internet security to enhance their degree of confidence on website transactions (Goldstuck, 2012:50). Customers who regularly visit a website and those who visit it for the first time will be better protected when the website uses a security endorsing a mark that is well-known to consumers and inspire greater level of confidence (Al rawabdeh, Zeglat & Alzawahreh, 2012:175). Upon establishing customers' trust, there is a greater likelihood that consumers will become loyal (Angus, 2018:26), which shows that by improving securing trust, the degree of commitment (e.g., customers' brand loyalty, attitudinal loyalty, percentage of customer visits to the website, including the number of transactional exchanges), will increase significantly (Cyr, Hassanein, Head & Ivanov, 2007). Thus, by reducing the gaps in current knowledge, effective mechanisms must be identified and implemented appropriately to establish trust and improve B2C e-commerce customer satisfaction (Pavlou, 2003), and ultimately develop long-term customer loyalty (Tunali & Aytakin, 2018:107; Jain & Sareen, 2015:10; Eid, 2011:86; Kim *et al.*, 2011:263). Most importantly, distrust is the most echoed reason that discourages consumers to purchase from the websites (Oliveira Alhinho, Rita & Dhillon, 2017:153; Gupta & Dubey, 2016:228; Bin Dost, Illyas & Rehman, 2015:5).

The paper's structure is articulated as follows: in-depth review of literature is presented in Section 2, Section 3 uncovers the theory, proposed study framework and development of hypotheses, Section 4 outline the research design and methods for data collection and analysis, Section 5 indicates the statistical findings, Section 6 discusses the results, Section 7 contemplates on the limitations of this study, and Section 8 concludes the paper.

2. Literature Review

2.1 Customer Loyalty

Loyalty refers to a deep commitment by a person to repatronise or repurchase a product or a service that he or she prefers continuously in the future, which result in repetitive purchase of that brand or brand-set, despite situational or competitive marketing efforts' potential to arouse a switching behaviour (Oliver (1999). There are two

dimensions of loyalty, attitudinal and behavioural (Chaudhuri & Holbrook 2001). Luarn and Lin (2003:157) state that behavioural loyalty involves repurchases of the brand, whereas attitudinal loyalty includes a person's dispositional commitment level based on some unique value/s attached to the brand. Such a long-term consumer's psychological commitment to an e-commerce store or brand (i.e. attitudinal loyalty) can be witnessed from the value driven by the psychological involvement, favouritism, and a person's sense of goodwill on preferred products or a specific brand (Dharmesti & Nugroho, 2012:38). Therefore, online loyalty can be described as a long-term psychological attachment by a person to a particular e-service vendor or a website (Cyr *et al.*, 2007:44), which result in favourable attitude toward that e-service vendor or a website and predisposes repeat purchasing behaviour (Chang & Chen, 2009:412; Yen & Lu, 2005:135).

Developing customer loyalty has become very important in e-commerce (Bertozzi & Krishnan, 2017:112; Ahmad *et al.*, 2017:250; Wang, Wang, Cheng & Chen, 2009:204). In B2C e-commerce, customer loyalty is seen from a person's intention to repeat visits and repurchase the products from the website of a specific e-retailer (Anderson & Srinivasan, 2003), an one of the key principle that remain important in the management issues in online settings, especially in area of online shopping, is the understanding of how or why a consumer develop a sense of loyalty, since the success of e-commerce partly rely on whether consumers could become loyal to a particular e-service provider they cannot interact with in a face-to-face setting (Luarn & Lin, 2003:156). In the traditional marketing literature, Aaker's (1991) brand equity process discusses the role of loyalty and with specific emphasis on ways that brand loyalty translate into marketing advantages such as lower marketing costs associated with the acquisition of new customers and greater leverage of trade. At a broader view, loyal customers spend more money, which strongly support the growth and profit of a firm in the long-term (Eid, 2011:78).

2.2 Antecedents of Customer Loyalty

This research study adopts Anderson and Srinivasan's (2003) definition where B2C e-commerce customer loyalty refers to a person's intention to repeat visits on the website of a specific e-retailer and repurchase the product. In this perspective, customers evaluate the e-service websites based on the consumption experience which is influenced by their willingness to be vulnerable and to rely on e-service marketer's promise to satisfy their needs better than competitor, which influence both the attitude and intention to repeat purchase on the same website consistently in the future. From this perspective, customer trust is views as a moderator of the effect of the satisfaction on B2C e-commerce customer loyalty.

Rooted in traditional marketing, the empirical data on B2C e-commerce has revealed that satisfaction has direct and positive effect on a person's trust towards e-service vendor or a website (Goutam & Gopalakrishna, 2018:1153; Pratminingsih, Lipuringtyas & Rimenta, 2013:108; Dabholkar & Sheng, 2012:1441; Kim *et al.*, 2011:263; Kim, Zhao & Yang, 2008:13; Ha & Perks, 2005:447; Ribbink, van Riel, Liljander & Streukens, 2004:453; Yeh & Li, 2009:1077), and therefore, remaining competitive in the market will require e-retailers to adopt effective measures that will improve satisfaction of their customers' needs and wants (Jain & Sareen, 2015:2). However, to achieve this objective, a growing body of empirical data in e-commerce, (Faraoni *et al.*, 2018; Anderson & Swaminathan, 2011:229; Flavian & Guinaliu, 2006:611; Anderson & Srinivasan, 2003:132) has confirmed a significant contribution of the adoption of effective measures such as the moderation role of trust on the effect of satisfaction on B2C e-commerce customer loyalty. Prior studies, (Faraoni *et al.*, 2018; Kurt, 2013:60; Chen, Ling, Ying & Meng, 2012:174; Lee & Lin, 2005:170) have emphasised that customers' trust in the online store strongly influence their satisfaction of online shopping. Customer satisfaction is closely associated with interpersonal trust (Eid, 2011:80). Gummerus, Liljander, Pura & van Riel (2004:181) report that satisfaction is determined mainly by trust. Faraoni *et al.* (2018) found that online customer trust plays a significant role in growing e-satisfaction, which supports the results in previous studies (Anderson & Swaminathan, 2011:230; Lee & Chung, 2009:390; Cyr, 2008; Flavian *et al.*, 2006; Chiou & Droge, 2006:621).

High levels of trust in the website stimulate the consumers' good experience which improve their satisfaction (Dharmesti & Nugroho, 2012:40), which shows that acquiring buyer's trust is the successful strategy for e-businesses and the e-commerce growth (Vos, Marinagi, Trivellas, Eberhagen, Skourlas & Giannakopoulos, 2014:421), as consumer who do not trust e-services are unlikely to repurchase on the website in the future even after a satisfactory e-shopping experience (Anderson & Srinivasan, 2003). Hence, trust is viewed as a key determinant of e-commerce growth (Fortes & Rita, 2016:168). The better way to improve online consumer's satisfaction is to develop the trust by meeting customers' shopping needs or expectations (Goutam & Gopalakrishna, 2018:1151), which makes it important for website marketers to invest in designing solutions that could encourage customers to purchase on their websites, in which building trust is the first step in the development of customer satisfaction (Goutam & Gopalakrishna, 2018:1150; Luarn & Lin, 2003:162; Berraies, Chtioui & Yahia, 2015:915), since website users associate a perceived significant risk and uncertainty on the e-

service firms (Mitaki & Ondiek, 2018:3; Fortes & Rita, 2016:168; Roca, Garcia & de la Vega, 2009:100). Trust helps to minimise this consumer's perception of risk in interacting with the website and the higher the risk, the greater importance is the role of trust on the e-service provider or a website (McKnight, Choudhury & Kacmar, 2002:299-300). However, only few studies in e-commerce, (Faraoni *et al.*, 2018; Anderson & Swaminathan, 2011:227; Anderson & Srinivasan, 2003:132) have emphasised the role of trust in moderating the significant effect of satisfaction on B2C e-commerce customer loyalty. This impose gaps in understanding the nature of trust as antecedent of B2C e-commerce customer loyalty. This further limits the opportunities for website managers to gain insights on how to improve customer trust as an instrumental factor in the development of customer satisfaction, hence making it difficult to develop and maintain customer loyalty in the long-term.

2.2.1 Customer Satisfaction

Satisfaction refers to a person's summary evaluation of psychological behaviour resulting from the condition when he or she evaluates the emotion accompanied by disconfirmed expectations with the feelings prior the consumption experience (Oliver, 1997). Customer satisfaction includes affective responses to a purchase, and it is a primary objective of marketing (Chang & Chen, 2009:412). In B2C e-commerce, satisfaction refers to overall customer's contentment with his or her online consumption experience, from the access to website information, a positive experience on website navigation, and perception of a high quality designed website (Cyr, 2008:51; Anderson & Srinivasan, 2003). Customer satisfaction involves two important different concepts, such as (1) the transaction-specific concept, which reflects the emotional response of a person to his or her specific website transaction experience with a e-service provider, and (2) the general or cumulative concept, which reflects on the customer's overall experience in interacting with a website of a particular e-service provider over time (Dharmesti & Nugroho, 2012:38; Chang & Chen, 2009:412). Satisfaction involves an emotional or cognitive customer response to a stimuli (i.e. customer expectations, product or service, consumption experience, etc.), at a particular point in time (i.e. post-consumption of a product or after the accumulation of a service experience, etc.) (Dharmesti & Nugroho, 2012:39). Oliver's (1980) Expectancy Disconfirmation Theory (EDT) explains that if the experience with the service greatly meets or exceeds the expectation a customer had about the service, then satisfaction will be high (Guo, Ling & Liu, 2012:40-41). It is the customer's evaluation of consumption experiences with the various encounters of the website, together with the repeated discrete website transactions that will create an overall customer's perceived satisfaction with the e-services (Massad, Heckman & Crowston, 2006:75).

If a customer has experienced a series of discrete satisfying online shopping experiences, he or she will elevate into the stage of loyalty (Massad *et al.*, 2006:73). Anderson and Srinivasan (2003) found that e-commerce relationship satisfaction had a positive relationship with customer loyalty. Eid (2011:80) confirms that a high level of satisfaction will contribute strongly to B2C e-commerce customer loyalty. It was found by Cyr (2008) that satisfaction is strongly correlated with customer loyalty of the Canadian, German, and Chinese. Previous studies, (Nasimi *et al.*, 2018:24; Tunali & Aytakin, 2018:107; Ahmad *et al.*, 2017:258; Jain & Sareen, 2015:10; Ismail & Safa, 2014:231; Eid, 2011:86; Kim *et al.*, 2011:263; Chang & Chen, 2009:415; Yen & Lu, 2008:140; Luarn & Lin, 2003:162) show that satisfaction significantly impact B2C e-commerce customer loyalty. In general, loyalty leads to satisfaction, but satisfaction does not necessarily means loyalty because unsatisfied customer can buy from competitors, hence, e-stores must satisfy customers and make them loyal (Shafiee & Bazargan, 2018:30).

2.2.2 Customer Trust

Trust defines a person's willingness and confidence to rely on an exchange partnership in which he or she feels confident (Moorman, Zaltman & Deshpande, 1992). Morgan and Hunt (1994) define to trust as a confidence of a person in the reliability and integrity of an exchange partnership. Doney and Cannon (1997) define trust as a person's perceived credibility and benevolence on an exchange partnership. In B2C e-commerce, trust refers to a person's beliefs that allow him or her to be willingly vulnerable to an online retailer, after considering the circumstances and the channel in which transactions are facilitated (Pavlou (2003). Online trust is described as "a person's attitude of confidence in the expectation surrounding an online situation of risk that his or her vulnerabilities will not be exploited" (Bertozzi & Krishnan, 2017:113). While trust has been researched in the previous studies measuring brand trust (Delgado-Ballester & Manuera-Aleman, 2001:1245; Chaudhuri & Holbrook, 2001:83), however, the role of trust has only received an average consideration in the online shopping context. First, development of trust in B2C e-commerce faces a number of obstacles and involves specificities that cannot be overlooked, such as the lack of touch and directly evaluate the product and the non-existence of face to face interaction with e-service provider, which lead to consumers feeling uncertain and a perceiving a huge risk in their purchasing decisions (Mitaki & Ondiek, 2018:3; Fortes & Rita, 2016:168). Pavlou (2003) shows the evidence of trust in successfully removing uncertainty and risk. Second, a customer's interaction with a website has some similarities to his or her interaction with a physical store, as a consumer will develop a perception of trust based on the interaction with the website, and the extent to which customer develop positive impressions and

accept vulnerability, helps them to develop trust in that website (Bart, Shankar, Sultan & Urban, 2005:134), which makes trust a key success component for online stores (Farah, Ahmad, Muqarrab, Turi & Bashir, 2018:229).

Establishing trust in a website is a serious problem facing many websites as consumers tend to purchase only from and remain loyal to websites they are willing to trust (Bilgihan, 2016:111). It has been emphasised that trust is of great value in B2C e-commerce as customers have to devote their vulnerabilities in the behaviours of the e-service provider (Moorman *et al.*, 1992), because customers interact only with the website without any opportunity to interact with the e-service provider (Fortes & Rita, 2016:168; Bart *et al.*, 2005:134; McKnight *et al.*, 2002:299). This interactivity concept of B2C e-commerce applications have a strong relationship with customer loyalty (Eid, 2011:80). Trust towards e-retailers is a strongly predicts B2C e-commerce customer loyalty, which suggests that if customers trust the website and the e-service provider, they develop greater willingness to become loyal to that particular e-retailer, which shows that e-trust have a direct effect on e-loyalty, hence, they develop loyalty when they are satisfied and have trust in a website and e-service provider (Bertozzi & Krishnan, 2017:113). It has been shown, (Tunali & Aytakin, 2018:107; Luarn & Lin, 2003:162) that trust has a significant positive effect on loyalty.

2.2.3 Relationship between Information Security, Privacy, Trust and Satisfaction

Privacy concerns refers to a person's beliefs concerning the risks and potential negative consequences related with sharing his or her personal information on the website (Baruh, Secinti & Cemalcilar, 2017). Security, on the other hand, refers to a person's beliefs concerning the protection of his or her financial data that it will not be made available and used by unauthorised parties (Flavian & Guinalú, 2006). In the literature, there is an ongoing debate about the distinction, if any, between privacy and security (Gogus & Saygin, 2019:2; van den Braber, Singaram & van Reekum, 2016:3; Smith, Dinev & Xu, 2011:992). Belanger *et al.* (2002:262) show that presenting security attributes on the website to the consumers was most relevant than the privacy statements. They recommend that security and privacy should be treated as distinct factors. Using the distinction approach, The research questions in the current study are (1) how can website marketers position their websites as secured in terms of protecting consumers' personal information (e.g., privacy) from unauthorised parties; (2) are these factors the determinants for consumers to begin trusting the e-service vendor, and (3) will this trust improve their satisfaction in the transaction process and help to build loyalty.

Few studies examined the general nature of online trust, such as (Goutam & Gopalakrishna, 2018:1153; Martin, 2018:110; Mitaki & Ondiek, 2018:12), however, there is dearth of studies presenting a specific theoretical framework that illustrates the effect of information security on privacy concerns. Little insights exist on how security and privacy issues relate (Smith *et al.*, 2011:995). It has been found by Shin (2010:433) that there is a strong positive significant effect of privacy on information security, and a weak reversed influence of perceived security on privacy concerns was identified. In current study, the interest is on the reversed effect of information security on privacy concerns which confirms that security is significantly and positively influencing the users' perceived privacy concerns (Shin, 2010:434; Kim, Steinfield & Lai, 2008). While the literature has focused strongly on the direct effect of security and privacy concerns on e-trust (Pi, Liao & Chen, 2012:108; Vos *et al.*, 2014:418) and the direct influence of security and privacy concerns on e-satisfaction (Vasic *et al.*, 2019:74; Wang & Le, 2015:2; Ludin & Cheng, 2014:465; Liu, He, Gao & Xie, 2008:930), there is a growing interest on the researchers to extend this investigation further by incorporating the effects of e-trust and e-satisfaction on e-loyalty (Nasimi *et al.*, 2018:21; Hidayat *et al.*, 2016:157; Eid, 2011:87). Empirical evidence shows that security and privacy significantly and directly influence online trust (Faraoni *et al.*, 2018; Fortes & Rita, 2016:170; Kim *et al.*, 2011:262; Eid, 2011:86; Ganguly, Dash & Cyr, 2009:35; Belanger *et al.*, 2002), and information security significantly impact users' satisfaction (Vasic *et al.*, 2019:74; Szymanski & Hise, 2000:137; Chang & Chen, 2009:415). However, many studies that confirmed a significant effect of customer satisfaction on trust, (Dabholkara & Sheng, 2012:1438; Yeh & Li, 2009:1077; Kim *et al.*, 2008:13; Ha & Perks, 2005:447; Ribbink *et al.*, 2004:453), used the measurements that did not incorporate both the individual factors of security and privacy.

When the objective is to gain insights on the effects of e-commerce security and privacy, it has been shown in the prior studies examining security and privacy effects on customer satisfaction (Eid, 2011:86; Brown & Buys, 2005:34), that these factors become increasingly unreliable and instead they tend to show a significant contribution on customer trust (Faraoni *et al.*, 2018; Berraies *et al.*, 2015:918; Kim *et al.*, 2011:258). It has been found by Eid (2011:86) that customers' perceptions of security and privacy risks were strong determinants of e-trust but weak antecedents of e-satisfaction. The direct influence of customers' perceived security on trust is significant and echoed in many studies (Faraoni *et al.*, 2018; Kim *et al.* 2011:263; Smith *et al.*, 2011:1000; Eid, 2011:86; Ganguly *et al.*, 2009:35; Flavian & Guinaliu, 2006:611; Bart *et al.*, 2005). As the fundamental topics in marketing literature in online shopping, the key strategy of e-service providers is to improve trust by showing security and privacy seals on their websites (Subramaniam & Andrew, 2016:185; Vos *et al.*, 2014:420). Durable e-business models strongly rely on trust since perceptions of security and privacy are essential factors in building customer loyalty

(Farah *et al.*, 2018:229). A betrayal of personal privacy can lead to customers' defection (Mpinganjira, 2014:123). Bertozzi and Krishnan (2017:113) show that privacy positively impact B2C e-commerce customer loyalty.

3. Theory, Research Model and Hypothesis Development

The Information System (IS) Success Model was designed by DeLone and McLean (1992) explaining that businesses can measure their investment in information technologies and e-commerce investment. DeLone and McLean (2004) revised IS Success Model to incorporate dimensions of quality system, quality information, quality service, usability, customer satisfaction and the size of business' net profit. The quality system refers to a person's perception of a website's performance in retrieving and delivering information, and is a system attribute involving the physical structure of website system such as security features, website page loading speed, and other components that operating independently of the website information (Azam, Qiang & Abdullah, 2012:20). The ease access, interaction, page navigation, hyperlinks, online entertainment, and security and privacy were identified as the measures of IS success or customer satisfaction that are most frequently researched (Yang *et al.*, 2005:579). Tunalı and Aytekin (2018:109) adopted the IS model to develop conceptual e-loyalty models that measure consumers' perceptions of a website's performance in facilitating activities related to online transactions. Lee and Chung (2009:386) proposed that the IS success model when merged with website interface design and trust can improve customer satisfaction in the mobile banking industry. The IS Success (IS) theory is adopted in this research to examine the effects of information security and privacy concerns on trust as moderator of the effect of satisfaction on B2C e-commerce customer loyalty. This study proposes the following hypotheses:

- H1.** Information security has a significant positive effect on privacy concerns.
- H2.** Information security has a significant positive effect on customer trust.
- H3.** Information security has a significant positive effect on customer satisfaction.
- H4.** Privacy concerns have a significant positive effects on customer trust.
- H5.** Privacy concerns have a significant positive effects on customer loyalty.
- H6.** Trust has a significant positive effect on customer satisfaction.
- H7.** Trust has a significant positive effect on customer loyalty.
- H8.** Satisfaction has a significant positive effect on customer loyalty.

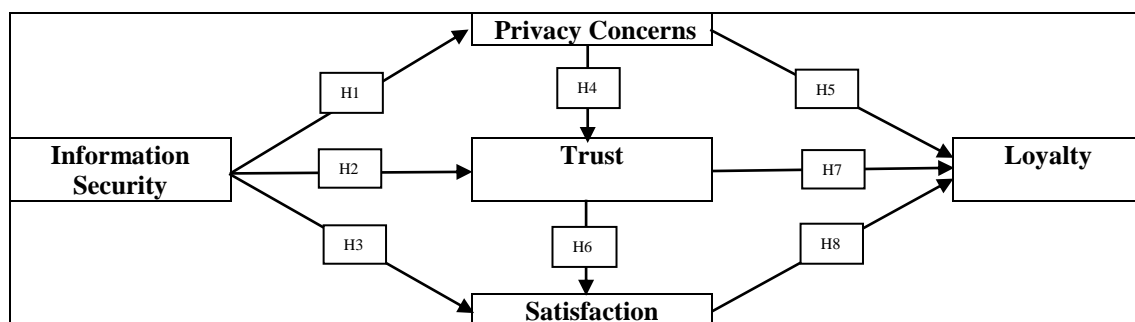


Figure 1: Conceptual framework

Researcher's own construct

4. Research Methodology

To acquire holistic ideas about B2C online shopping factors, pre-survey data was gathered, which sought to cross-validate the selection of factors in the B2C ecommerce literature, improve knowledge on contextual key factors, and provide direction of the method of survey. The respondents were selected from Johannesburg in Gauteng Province as a host of the majority of the population in South Africa (StatsSA, 2015). Screening questions were used in major shopping centres to identify a sample of the study (Hawkins & Tull, 1994:362). The selection of respondents followed the purposive sampling, in which insights can be gathered from respondents selected using a specific criteria or requirement (Hair, Celsi, Ortinau & Bush, 2017:147), such as being an online shopper living in Gauteng province, South Africa. This sought to ensure that the respondents are similar to online shoppers from

a holistic view (Dillion, Madden & Firtle, 1993:229). Male and female respondents ranging from 18 to 60 years of age were selected in the sample.

Prior the main survey, the draft questionnaire (N = 50) and sample errors were pre-tested for validity and reliability of the survey. Respondents were briefed on the objectives of the study and were asked to brainstorm and write down notes about their thoughts with regard to security, privacy, trust, satisfaction and loyalty toward the websites of the traditional retailers and those of online stores, and then group and connect the five concepts of the study. Constructive feedback was gathered from pre-test on the difficulties encountered in the study participation (length, ambiguous terms, and double-barrel questions) including general opinions on the survey. This information was used to develop a questionnaire for the main survey. Finally, the discipline experts and quantitative study experts reviewed and simplified the sequence, wording and logic of each scale item based on the findings from survey pilot testing. Following the pre-test phase, a face-to-face survey was used for two weeks to collect the actual data to examine the research model. Respondents were given a questionnaire to participate after they provided a verbal consent for participation in the survey. They were required to score each scale item on a five-point Likert scale, ranging from one meaning strongly disagree to five meaning strongly agree. The fieldworkers collected 250 responses. In total, 201 valid and usable data responses were processed (response rate was 80.1%) after discarding irrelevant responses through filtering data. SPSS version 25.0 was used for multivariate data analysis techniques.

4.1 Measurement

The measurement instrument used in this research study included validated item-scales from the prior studies and are considered reliable. Privacy, Trust and Satisfaction were measured with items used by Chen *et al.* (2012:173). To diagnose the issue of Security, the study used scale-items from Guo *et al.* (2012:45). Loyalty was measured with items from Eid (2011:93). These item-scales were modified to fit the purpose of the study. All the constructs were tested for reliability, and convergent and discriminant validity. The Cronbach alpha coefficients tested the reliability of the factors whereby an alpha above 0.7 indicates a good reliability. It has been recommended by Hair, Wolfinbarger, Otinau and Bush (2010:157) that the value of 0.7 shows acceptable reliability. The coefficient alpha values exceeding 0.8 level show a high internal consistency reliability (Wiid & Diggines, 2015:249). As summarised in Table 1, the coefficient alpha of all the factors in the conceptual model are greater than 0.7 and meet this requirement. Descriptive statistics of the factors were tested to determine the values of mean, standard deviation, skewness and kurtosis. These values are relevant in the measuring of parametric statistic techniques assessing t-test values and analysis of variance (ANOVA) (Pallant, 2010:56-57). Multiplication regression analysis tested the relationship between the independent factors and dependent factors (Hair *et al.*, 2017:332), whereby the tolerance and variance inflation factor were tested multicollinearity of the factors (Pallant, 2010:158).

5. Results of the Study

5.1 Descriptive profile

Statistics of 201 valid and usable responses showed that there were many female respondents (N = 117; 58.2%) than male counterparts (N = 83; 41.3%), and the majority of them (N = 125; 62.2%) are between 18 – 24 years of age. Many respondents (N = 58; 28.9%) indicated that they spend between R 1000 – R 2000 on online shopping, and a large percentage of them (N = 78; 35.9%) show that they prioritise to purchase from Takealot.com website, and although majority (N = 64; 31.8%) have less than six months purchasing experience from their favourite websites, most respondents (N = 95; 47.3%) indicate that they frequently purchased clothing on their favourite websites.

5.2 Descriptive data of the Factors and Reliability Test

Table 1 shows the mean values of the factors which are above the mid-point value of 2.5, with the standard deviation values of ranging from .66306 to .88157, thus showing a strong convergent validity. This indicates that the values are symmetrical distributed around the mean. Satisfaction (M = 4.1144; SD = .81007) has the highest mean value, followed by trust (M = 4.0836; SD = .70977), and privacy (M = 4.0448; SD = .66306). Loyalty had a low mean value (M = 3.9353; SD = .82662), and the mean value of security was the lowest (M = 3.7935; SD .88157). Values of skewness ranged from -.407 to -1.194 and values of kurtosis ranged from -.072 to 2.026. In a perfect normal distribution, the skewness and kurtosis values will be equal to 0, and when the values are positively skewed, the scores cluster to the left hand margin with lower values but when values are negatively skewed, the scores cluster at the highly on the right hand side of a distribution (Pallant, 2010:57; Wegner, 2000:267). Values of skewness ranged from privacy (SK = -.407), security (SK = -.483), trust (SK = -.905), loyalty (SK = -.947) to satisfaction (SK = -1.194). Values of kurtosis ranged from security (KT = -.072), privacy (KT = -.374), loyalty (KT = 1.208), trust (KT = 1.405), to satisfaction (KT = 2.026). The kurtosis with positive values show a peaked distribution (i.e. the scores cluster at the centre of the graph), and caring long thin tails, while the kurtosis with

values lower than 0 show a flat distribution (i.e. the scores pare on many cases). A larger sample size (200+ cases) may be used to lower the risk of kurtosis to result in an underestimation of the variance (Pallant, 2010:57). Reliability analyses a Cronbach alpha by calculating the average of all possible slit-half coefficients of multi-item scale to assess the internal consistency (Hair *et al.*, 2017:174). Satisfaction had a high coefficient of alpha ($\alpha = 0.923$), followed by security ($\alpha = 0.894$), trust ($\alpha = 0.874$), loyalty ($\alpha = 0.860$), and privacy ($\alpha = 0.725$). Using the recommendations made by Pallant (2010:6) and Briggs and Cheek (1986) that the inter-item correlation coefficients must range from .2 to .4, the inter-item correlation of the factors showed that privacy (.468) falls in the acceptable range, however, and other factors ranged from trust (.590), loyalty (.614), security (.688) to satisfaction (.752). The item-total statistics showed the level in which one item correlates with the others in the total scale, and most construct had values less than (.3) showing that the item measures a different question from the total scale (Pallant, 2010:100).

Table 1. Descriptive Statistics and reliability

Factors	Items.	Min.	Max.	Mean	Std. Dev.	Skewness	Kurtosis	Reliability/ Cronbach α
Security	4	1.00	5.00	3.7935	.88157	-.483	.172	.894
Privacy	3	2.00	5.00	4.0448	.66306	-.407	.172	.725
Trust	5	1.00	5.00	4.0836	.70977	-.905	.172	.874
Satisfaction	4	1.00	5.00	4.1144	.81007	-1.194	.172	.923
Loyalty	4	1.00	5.00	3.9353	.82662	-.947	.172	.860

Results of descriptive statistics of the constructs

5.3 Multiple Regression Analysis

The outcomes of the four regression equations are outlined on Table 2. Because multiple regression analysis do not accept multicollinearity, which exists when the independent factors strongly correlate ($R = .9$ and above) and result in singularity (e.g. one independent factor interacts with other independent factors) (Pallant, 2010:151), assessment of multicollinearity shows ($R = .517$) for the first regression equation, ($R = .447$) for the second regression equation, ($R = .737$) for the third regression equation, and ($R = .757$) for the fourth regression equation, thus showing that multicollinearity does not exist. The Variance inflation factor (VIF), which implies the difference of the tolerance value (dividing 1 by value of tolerance), suggests that values higher (or exceeding 10) show the existence of multicollinearity of the factors in the model (Pallant, 2010:158). The first regression equation tests the relationships between a dependent factor of information security and the three independent factor of privacy concerns, trust, and satisfaction. Results show that the R-square is = .267. It reveals that 26.7% of the variation in information security (dependent factor) is explained by the three dependent factors (privacy concerns, trust, and satisfaction). The ANOVA shows that the R-square significantly varies from 0 ($F = 23.914$; probability level (Sig.) $< .000$). To determine if three independent factors are significant predictors of customers' information security perception, trust showed a coefficient of .287 that is significant at (.001), satisfaction had a coefficient of .206 that is significant at (.016) and privacy had a coefficient of .115 (Sig. $< .094$). This means that H1 is rejected while H2 and H3 are accepted. Customers' trust and satisfaction are good predictors of information security perceptions in online shopping websites. The second regression equation tests the relationships between the dependent factor of privacy concerns and the independent factors of trust and customer loyalty. Results show that R-square is = .447. That is, 44.7% of the variation in privacy concerns (dependent factor) is explained by the two independent factors (trust and loyalty). ANOVA shows that the R-square significantly varies from 0 ($F = 23.914$; probability level (Sig.) $< .000$). To determine if the independent factors are significant predictors of privacy concerns, trust indicated a coefficient of .330 that is significant at (.000) and loyalty had a coefficient of .150 (Sig. $< .091$). It reveals that H4 is accepted while H5 is rejected. Customer trust is a good predictor of the level of privacy concerns in online shopping websites. The third regression equation tests the relationships between the independent factors of satisfaction and loyalty and the dependent factor of trust. Results show that the R-square is = .737. This means that 73.7% of the variation in trust (dependent factor) is explained by the two independent factors (satisfaction and loyalty). ANOVA shows that the R-square significantly varies from 0 ($F = 117.467$; probability level (Sig.) $< .000$). To determine if the independent factors are significant predictors of trust, results show that satisfaction had a coefficient of .373 that is significant at (.000) and loyalty had a coefficient of .413 that is significant at (.000). It reveals that H6 and H7 are accepted. Trust has a strong significant effect on

satisfaction and B2C e-commerce customer loyalty. Thus, the regression analysis confirmed that trust is a good antecedent of satisfaction and B2C e-commerce customer loyalty. The fourth regression model assesses the relationship between the independent factor of customer satisfaction and dependent factor of loyalty. Results show that the R-square is = .757. This means that 75.7% of the variation in loyalty (dependent factor) is explained by the independent factor of customer satisfaction. ANOVA shows that the R-square significantly varies from 0 ($F = 267.649$; probability level (Sig.) $< .000$). To determine if the independent factor significantly predicts loyalty, results show that loyalty had a coefficient of .757 that is significant at (.000). It shows that H8 is accepted. Customer satisfaction has a strong significant effect on B2C e-commerce customer loyalty.

Table 2. Summary results for multiple regression analysis

Hypotheses	Unstandard β	Std. Error	Standard β	t-value	Sig.	Lower Bound	Upper Bound	Tol.	VIF	Result
Privacy < Security	.154	.091	.115	1.681	.094	-.027	.334	.789	1.268	ns
Trust < Security	.356	.107	.287***	3.331	.001	.145	.567	.501	1.994	s
Satisfaction < Security	.224	.092	.206*	2.419	.016	.041	.406	.515	1.941	s
Trust < Privacy	.308	.083	.330***	3.726	.000	.145	.471	.517	1.936	s
Loyalty < Privacy	.120	.071	.150	1.698	.091	-.019	.260	.517	1.936	ns
Satisfaction < Trust	.327	.064	.373***	5.064	.000	.199	.454	.426	2.345	s
Loyalty < Trust	.355	.063	.413***	5.612	.000	.230	.479	.426	2.345	s
Loyalty < Satisfaction	.742	.045	.757***	16.360	.000	.653	.832	1.000	1.000	s

* One-tailed probabilities: $P < .05$.

** One-tailed probabilities: $P < .01$.

*** One-tailed probabilities: $P < .005$.

Information security is not a significant predictor of privacy concerns ($\beta .115$; $p < .094$), thus, rejecting H1. Information security is not significant determinant of e-trust ($\beta .287$; $p < .001$) and e-satisfaction ($\beta .206$; $p < .016$), thus supporting H2 and H3 respectively. Privacy concerns is a significant determinant of e-trust ($\beta .330$; $p < .000$), thus supporting H4, and rejecting H6 stating that privacy concerns significantly impact e-loyalty ($\beta .150$; $p < .091$). Customer trust significantly determine e-satisfaction ($\beta .373$; $p < .000$) and e-loyalty ($\beta .413$; $p < .000$), thus supporting H5 and H7. Customer satisfaction strongly predicts e-loyalty ($\beta .757$; $p < .000$), thus supporting H8. The significant effect of trust on B2C ecommerce customer loyalty ($\beta .413$; $p < .000$) shows that the significant positive effect of satisfaction on B2C e-commerce customer loyalty is moderated by trust. Customer trust had a significant effect on satisfaction ($\beta .373$; $p < .000$). In practice, privacy is a strong significant determinant of e-trust. Trust significantly and positively influence satisfaction and loyalty in the highly competitive and growing South African e-commerce market. The results support the important effects of privacy and information security in strengthening customer trust in the online purchasing process, which improve satisfactory online shopping experience. Customer trust plays a critical role determining the satisfaction of online shoppers, which in turn, this feeling of satisfaction strongly predicts e-loyalty towards the website. The results substantiate the moderating effects of trust on the influence of satisfaction on B2C e-commerce customer loyalty, as shown in Figure 2.

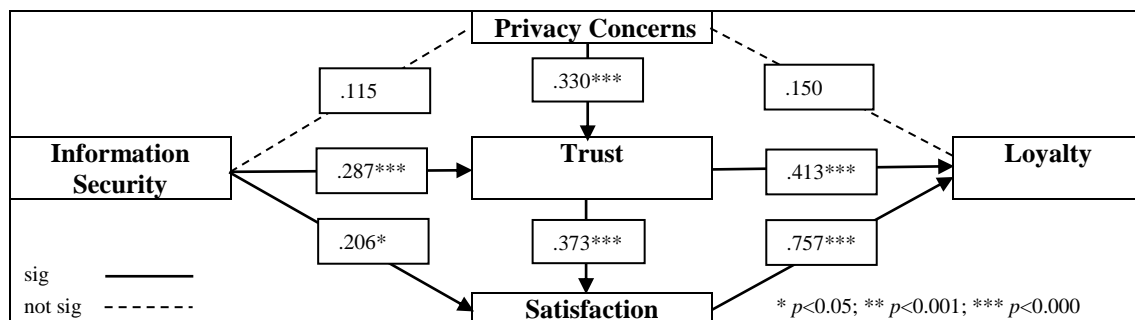


Figure 2: Findings of the conceptual model

Source: Researcher's own construct

5.4 Pearson's Correlation Analysis

Table 3 outlines the results of the Pearson correlation analysis showing that the factors in the study significantly relate (as shown in Table 2) above the p value of 0.5. The correlation coefficient value of .757 between customer satisfaction and customer loyalty shows that these factors are strongly related (p value <0.5). Since information privacy and security concerns correlates strongly with trust (p value <0.5) and information security weakly correlates with satisfaction, while trust is strongly correlated with satisfaction, then the results suggest that trust is the moderator of effects of information security and privacy concerns on satisfaction.

Table 3 Correlation matrix

Variables	Security	Privacy	Trust	Satisfaction	Loyalty
Security	1.000				
Privacy	.324**	1.000			
Trust	.478**	.434**	1.000		
Satisfaction	.449**	.408**	.685**	1.000	
Loyalty	.386**	.379**	.695**	.757**	1.000

** . Correlation is significant at the 0.01 level (2-tailed).

6. Discussion of Results and Implications

6.1. Discussion of results

The aim here was to document the effects of security and privacy on trust as a moderator of the influence of satisfaction on B2C e-commerce customer loyalty. The results show that more female between the ages of 18 – 24 years spend between one thousand rand to two thousand rands on online shopping and most of them frequently purchase clothing or apparel. These customers prioritise to purchase from Takealot.com online store and have least less than six months purchasing experience from this website.

Information security was not a significant predictor of perceived privacy, which is opposite from the results in the study conducted by Shin (2010:434). Perceived information security showed a significant effect on e-service satisfaction, thus, supporting the results from previous studies (Vasic *et al.*, 2019:74; Szymanski & Hise, 2000:137; Chang & Chen, 2009:415). Although privacy concerns show a strong significant effect on e-service trust in this study, however, privacy concerns did not significantly determine the customer loyalty, as it was indicated in the study conducted by Bertozzi and Krishnan (2017:113). The results in this study shows that privacy concerns and perceived information security are strong antecedents of e-service trust, which is similar to previous studies (Eid 2011:86; Roca *et al.*, 2009:106; Kim *et al.*, 2008; Belanger *et al.*, 2002), which show that the effects of information security on trust was higher than the effect of privacy on trust. In this study, privacy was found to lead security on their influence on trust. Customers consider privacy of their personal information as more important than security of the website. Privacy is a critical factor strongly evaluated by online shoppers in South Africa, which supports Mkhosi's (2017:11), views that the perceived fear of risk towards using e-commerce has decreased among online shoppers in South Africa as many people have learned to be the internet proficient users.

The study revealed that trust is a significant determinant of satisfaction of online shoppers. This result corroborates with the prior studies, (Faraoni *et al.*, 2018; Kedah, Ismail, Haque & Ahmed, 2015:29; Lee & Chung, 2009:390; Nusair & Kandampully, 2008:13; Lee & Lin, 2005:170; Gummerus *et al.*, 2004:182) showing that a high degree of customer trust will manifest into greater customer satisfaction. The study revealed that satisfaction of online shopping is a strong determinant of loyalty towards the website. This finding corresponds with the empirical evidence in prior research, (Nasimi *et al.*, 2018:25; Kedah *et al.*, 2015:29; Gummerus *et al.*, 2004:181), which shows that high degree of satisfaction will manifest into greater loyalty. In agreement to the traditional view that high degree of satisfaction will contribute to higher level of B2C e-commerce customer loyalty, the results of this study supports the findings of prior studies, (Anderson & Srinivasan, 2011:230; Anderson & Srinivasan, 2003:133) that have identified trust as a moderating factor that strengthen the significant effect of satisfaction on B2C e-commerce customer loyalty.

The resultant weak effect of trust on B2C e-commerce customer loyalty in South Africa corroborates with the findings by Eid (2011:86) and Cyr, 2008) who revealed the similar results for Saudi Arabian and Canadian online B2C customers, respectively. Eid (2011:87-88) suggests that a possible explanation of the weak relationship between trust and B2C e-commerce customer loyalty as opposed to satisfaction and B2C e-commerce customer loyalty could be attributed to the notion that trust is a dependent factor on the website security and privacy

concerns which could be considered by many websites users as the standard requirements and basic principles of an accepting e-commerce services usage. This shows that information security, privacy concerns, and online trust are critical determinants for B2C e-commerce success. The results show that website managers in South Africa must develop customer loyalty to the B2C e-commerce by stimulating perceptions of privacy and information security which could improve their levels of trust on the website and product or service offered by the website.

In general, the results have answered the research study questions and obtained its objectives. Results represent a critical step further to test the concise of the conceptual framework in the context of the emerging African market of South Africa. The study contributes to academic insights in terms of confirmation that privacy and information security are key factors for customer trust which moderates the significance effect of satisfaction on B2C e-commerce customer loyalty in South Africa.

6.2 Theoretical Implications

The findings of this study suggest that a possible strategy to attract more consumers to repeat purchase of a product on a specific website is based on establishing high level of trust, and to be aware that developing satisfaction is not enough. The findings offer insights to improve the understanding of the role of trust as a moderator of the effects of satisfaction on B2C e-commerce customer loyalty from global, continental and South Africa perspectives. The results offer a starting point for documenting the future related studies not only in the Emerging African markets context but also on the global e-commerce economies.

6.3 Business Implications

The findings have revealed relevant and practical business implications for the firms using B2C e-commerce applications in South Africa. It should assist website managers to improve understanding of the key factors in the areas of B2C e-commerce website applications that become obstacles in the development of online shopping success. These barriers can be overcome through establishing trust and improving satisfaction, which could result in customer loyalty thereby achieving B2C e-commerce success. It is expected that to achieve B2C e-commerce success, field academics should prioritise to teach human and computer behaviour in general and develop greater awareness of technology uses on how individuals can control the use of their private information on websites in particular. It is important to improve privacy protective perceptions to make customers feel comfortable to share the required information in the online shopping process, which could be possible through establishment of trust.

From the perspective of the Fourth Industrial Revolution (4IR), businesses that will succeed are those utilising the available opportunities to use information as a valuable resource in creating capabilities to transform and reach highest levels of competencies in the emerging global economy. To achieve this goal, it is imperative to build customer trust. The websites in South Africa must give greater attention to the privacy of online customers and avoid bombarding them with product or information suggestions and website advertisements but instead, e-service marketers must provide detailed evidence, if preferable with pictures or video demonstrations on their processes of supply value chain and fair labour practices, and stimulate customers' beliefs by accompanying third-party certification will even be more appreciated. Websites in South Africa can improve trust by quoting or showing policies of user satisfaction, product returns as well as refunds, and give consumers an opportunity of being anonymous or pseudonymous when facilitating information exchanges and website transactions. The most proficient way to build online trust is to show vulnerability and truly display the history firm and its product as well as the experiences of the customers who successfully made it. It is crucial to note that the protection of personal data, secured transaction and payment process, and maintain the privacy on the communication took place on the website are key specifics that customers expect. Therefore, trust can be built through displayed behaviour that resonates with customers' expectations, so that a track record of being trustworthy can instil trust. One of the strategies for website manager in South Africa to reduce perceived risks in online shopping is to ensure that security mechanisms are linked to user's self-data control, authenticity system and supplementary payments methods and enable customers to control the release of their personal information, which could make them feel more safe and build their confidence on the website, since they will perceive that appropriate security and privacy measures have been considered. This will not only stimulate the use of the internet for searches, but will also develop trust to motivate customers to provide the required information to complete the online transactions.

7. Conclusions, Limitations, and Future Directions

This paper examines a framework of the determinants of the B2C e-commerce customer trust as a moderator of the effect of satisfaction on B2C e-commerce customer loyalty in South Africa. The theoretical model presented has hypothesised the key success factors influencing trust as a moderator of the effect of satisfaction on B2C e-

commerce customer loyalty, and was empirically validated. Both information privacy and security perceptions were found to be the significant determinants of online customer trust, and information security was also a significant predictor of consumer satisfaction. However, it was found that information security did not influence privacy concerns. Privacy concerns had a strong influence on trust, although did not influence customer loyalty. The strong significant effects of privacy concerns and information security perception with trust and the significant effect of trust on satisfaction indicate that trust moderates the effects of satisfaction on loyalty in B2C e-services in South Africa. Customer satisfaction strongly determine B2C e-commerce customer loyalty and trust had a weak effect on B2C e-commerce customer loyalty. Privacy and information security perceptions are critical concerns for online trust and thus they are essential in the development of B2C e-commerce success in South Africa. Information security perception impact satisfaction directly while privacy concerns impact satisfaction indirectly as trust was found to be a critical moderator between privacy concerns and satisfaction. Reducing consumers' privacy concerns and strengthening information security perceptions will help to establish trust toward B2C e-commerce websites in South Africa.

Despite the broader insights discovered in this research study, there are some limitations. The study's sample is largely female respondents who reside in Johannesburg, which is not representing the entire population of B2C e-commerce in South Africa and thus, limits the opportunity to generalise the results to the broader population. Sample size used was not necessarily large enough. To strengthen validity and generalisation of the results in the future studies, larger sample size survey with proportionally equal responses from the population of South African e-commerce consumers can be conducted. It will be interesting to include other metropolitan cities in Gauteng and in other provinces of South Africa to enhance the generalisation of the findings. However, the as Johannesburg metropolitan city has the highest population and is the economic hub of Gauteng province and South Africa, the findings may be generalised to a limitations of the context of this market. The paper presents a framework that explains the determinant of B2C e-commerce customer loyalty. Despite the importance of privacy and information security, other factors such as user interface and information quality, product variety, payment methods, and delivery have been reserved from this study. Further studies may be include the effect of these factors on trust as a moderator of the effect of satisfaction on B2C e-commerce customer loyalty in South Africa. Investigation of the effects of the factors mentioned above on trust, attitudes, and purchase intentions is of interest for future research. Angus (2018:24) notes that among the top ten global trends, online customer trust issue is growing and is reaching the high levels of customer emotional involvement and action. This effect of online customer trust on emotional involvement and purchasing behaviours relating to B2C e-commerce can be examined.

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