



**An empirical study of purchase behaviour on social platforms:
The role of risk, beliefs and characteristics**

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The role of risk, beliefs and characteristics

Abstract

Purpose - Social media users' purchasing behaviour is yet to be fully understood by research. We investigate how purchase intention is affected by social media user traits, cognitive factors (such as perceived control and trust) and individual beliefs, such as risk propensity and trustworthiness.

Design/methodology/approach - We propose and empirically test a model of purchase intention on social platforms. Our study of over 500 active social media users finds the links between risk propensity, trust, technical efficacy and perceived control and explores the moderating effect of age and gender.

Findings - Purchase intention on social platforms is influenced by demographic factors, cognitive factors and beliefs. Both age and gender moderate the effects of beliefs and cognitive factors: age is a determinant of purchase intention for men, while beliefs are significant for younger women and cognitive factors are significant for older women.

Research limitations/implications - This study involved a cross-sectional design via online survey of social networking users. Gender differences in purchase intentions are found which are in turn influenced by age. Further empirical testing of social purchase intention could include less experienced users or non-users.

Practical implications - The results of this study provide guidance for SNS providers and technology developers in social networking commerce in terms of the different drivers of purchase intention.

Originality - Social media users' purchasing behaviour is yet to be fully understood. Our study shows that purchase intention antecedents vary between genders and age groups of users. The identified connection between users' perceptions of social networking services (SNS) usage of personal information and purchase behaviour has an impact on the likelihood of user engagement in social transactions.

1. INTRODUCTION

While originally created as a peer-to-peer communication medium, social networks have become a platform for realising commercial opportunities (Im *et al.* 2008; Miller *et al.*, 2009; Zheng *et al.*, 2015). This has created a variety of implications for information systems research, including how ecommerce and social networks are converging. Social commerce can be regarded as a new dimension of e-commerce in which consumers use Social Networking Sites (SNS) to engage in purchase behaviour (Hajli, 2015).

There are two key business models that are typically used by SNS in this context. The first is where the purchase is routed through the SNS, but does not rely on the network of users to mediate the purchase. In this case the SNS can provide a link to a merchant (usually paid for advertising). The targeting of the advertising is likely to be driven by the users' social media behaviour, but the purchase isn't typically influenced by other users. The closest business model description for these types of transactions is *Brokerage*, where the SNS acts as an intermediary to the transaction. The second model is where the purchase is influenced by the views of other users (for instance reviews). This second model is typically referred to as *Social Commerce*. As with any typology there are examples of practices that don't fall neatly under either categories and business models that draw from both 'brokerage' and 'social commerce' including group buying models (Kim, 2013) or the collection of fans and followers.

Brokerage can take many forms on SNS, ranging from helping the customer search for a vendor or a product through to more passive mediation by the SNS such as the display of links on a specific interest group page. It may also help vendors identify groups of potential customers that may have a specific need or a high propensity towards their products or services (Afrasiabi Rad and Benyoucef, 2011). Regardless of the depth of the brokerage and

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3 the form it actually takes, it is reasonable to assume that the very fact that the brokerage is
4 mediated by the SNS will have an influence on its impact. Purchase behaviour in Social
5 Commerce has distinctive characteristics. Users provide social support for each other via
6 interconnectivity afforded by SNS as such engendering trust into the specific social platform
7 itself or social platforms in general. This interconnection creates opportunities for the co-
8 creation of value by customers and SNS service providers (Hajli, 2014) and opens up
9 business opportunities supported by the business model including Marketing and Sales,
10 Enterprise Management, Knowledge work and Staff recruitment, to name a few (Liang and
11 Turban, 2011).

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23 Many factors underpin the value proposition to customers, both in the 'brokerage' model and
24 the 'social commerce' model used by SNS. Some will be social, some will be technical and
25 others will be at the interface between the two domains (Gorner, Zhang *et al.*, 2013). Going
26 back to ecommerce research is especially useful to understand purchase behaviours in the
27 'brokerage' model. Purchase behaviour has been explored in depth and shown as
28 significantly associated with control over information, privacy and risk (Brown and Muchira,
29 2004; Zorotheos and Kafeza, 2009; Basheer and Ibrahim, 2010; Baek and Morimoto, 2012;
30 Tucker, 2012; Ponte *et al.*, 2014). Ponte *et al.* (2014) found that trust, privacy and risk are
31 among the variables affecting purchase intention. Also, trust perceptions and their influence
32 on purchase have been shown to be related to group (Lowry *et al.*, 2011) and gender
33 differences (Jarvenpaa *et al.*, 1999). Solove (2008) has long contended that difficulties
34 involved in discussions of personal information privacy are amplified by technology, in this
35 case by the move from e-commerce to social technology. Chang *et al.* (2016) show that
36 purchase intention in ecommerce is affected by security and privacy perceptions and
37 influenced by the perceived benefits of transacting in ecommerce. As 'social commerce' as a
38 model is a relatively new phenomenon, the relationship between user perceptions and
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3 purchase intention is yet to be fully understood (Dehghani and Tumer, 2015). This is of
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5 particular interest in light of the cyber security threats increasingly targeting SNS and the rise
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7 of perceived risks associated with purchasing (Dumas, 2013; Coopamootoo and Ashenden,
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9 2011).

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12 This leads to two important research questions: (1) What drives purchase intentions in
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14 SNS? and (2) How do these drivers vary in their effects across genders and ages? In order to
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16 answer these questions we explore the constructs affecting purchase intention on SNS,
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18 namely; perceived ability to control submitted information, risk propensity, personal trust,
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20 perception towards site trustworthiness, and technical efficacy of users. In the next sections,
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22 we present a review of literature on risk, control and trust behaviours on social platforms and
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24 purchase intention. We draw from the literature to then develop the research hypotheses and
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26 propose a model of purchase intention on social platforms. This is followed by the
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28 methodology section, data analysis and the results interpretation. The paper concludes with a
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30 discussion of findings and their implications for theory and practice. Future directions for
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32 research conclude the paper.
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37 **2. LITERATURE REVIEW**

38 ***2.1 The transactional SNS paradox***

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41 The advantages offered by SNS in commercial settings are based on the benefits
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43 yielded by personal information disclosure (Waters and Ackerman, 2011), enabling
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45 personalised experience (a benefit to the customer) and the gathering of market intelligence
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47 (a benefit to the retailer). Some warn of the online medium having a detrimental effect on
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49 privacy as the public information views are changing (Lessig 2006). In his view technology
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51 takes control over personal information eroding the notion of “fair use” of information. This
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53 is particularly pertinent for social network sites. Privacy has been one of the pressing aspects
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3 associated with digital media and social networks in particular (Nissenbaum, 2010). Through
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5 the lens of the contextual integrity theory, user behaviour evolves over time and ethical
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7 concerns mutate. In the case of SNS, social norms shape the ways users behave, including
8
9 purchase intention, through the effects on interests and preferences of transacting parties.
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11 However, privacy remains the cornerstone of the debate about the ownership of the control
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13 over personal information and value/function that users see in the digital medium. Extant
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15 research has made great efforts to seek explanations of the reasoning behind individuals
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17 withholding or disclosing personal information, explored in detail in the e-commerce context.
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19 On the other hand, benefits drawn from the use of SNS by individuals tend to be driven by
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21 self-disclosure. In fact, disclosure enables individuals to build and maintain relationships on
22
23 SNS as they actively disclose and share information about themselves with other members.
24
25 SNS offer additional value to users; it has been shown that social networkers see three types
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27 of benefits of belonging to an SNS: social, hedonic and epistemic (Yiang and Lin, 2014).
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29 This explains why information disclosure on SNS is driven by socialisation-related factors,
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31 such as the need to belong together (social value), the necessity to interact and peer pressure
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33 (Chiu, Hsu, and Wang, 2006; Chang Lee and Kwon, 2008). The intrusive and aggressive
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35 nature of commercial data collection has contributed towards a heightened sense of privacy
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37 invasion online. Some argue that users have lost control over their personal information,
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39 especially on social platforms (Xu and Bélanger, 2013).
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45 Where payment transactions are concerned, SNS are distinct to e-commerce. Their
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47 original idea encouraged self-disclosure of personal information, yet when payment
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49 transactions take place they require as much confidentiality as possible. Extant research
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51 identified five other types of information that are found on SNS including service data,
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53 entrusted data, incidental data, behavioural and derived data (Schneier 2010), highlighting
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55 that behavioural data is 'the critical part of a social networking site's business model' (p. 8)
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3 used for targeted and customised advertising and is increasingly sold to third parties.

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5 However, others argue that individuals using SNS are ‘uncertain about the consequences of
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7 privacy-related behaviours and their own preferences over those consequences’ (Acquisti *et*
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9 *al.*, 2015 p. 509). Social networking sites lack much of the offline social granularity which
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11 give rise to many privacy issues (Terranova, 2004). Applications subliminally share users’ as
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13 well as their connections’ information with third parties which allegedly violates standard
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15 norms of information flow (Hull *et al.*, 2010). Some believe that SNS users are technology
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17 savvy and able to protect their personal information which is accessed and shared by online
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19 vendors and third-party companies (Osatuyi, 2015). While users view SNS as the responsible
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21 agent in ensuring security, SNS themselves argue that the information security breaches are
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23 caused by individual user behaviour (Stuzman *et al.*, 2013).
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28 In trying to understand the paradox identified above we follow prior studies which
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30 draw from two bodies of literature and their supporting theoretical frameworks. The first is
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32 the literature on technology adoption, the Technology Acceptance Model (TAM) and its
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34 extensions (Davis, Bagozzi, and Warshaw 1989; Ajzen, 1985; Fishbein and Ajzen, 1975)
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36 based on the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980) and the Theory
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38 of Planned Behaviour (TPB) (Conner and Armitage, 1998). This group of theories describe
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40 the psychology of user acceptance and bring out key variables pertaining to *beliefs and*
41
42 *attitudes* about technology environments. The second body of literature we draw upon is on
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44 the situational cognition of whether to transact (or not). This follows on from the findings that
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46 beliefs and attitudes and situation specific cognitive appraisal are the drivers for intention to
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48 transact in e-commerce (Pavlou, 2003). Similar conclusions are reached by other researchers
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50 indicating that cognitive attitudes significantly affected purchase intention in e-commerce
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52 transactions (eg. Chang *et al.*, 2016).
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2.2 Beliefs and attitudes

A number of 'user attributes' have been identified as key antecedents of SNS behaviour where privacy was at stake (Ngai, 2015). Drawing on similar theoretical basis, the belief of self-efficacy (a concept related to perceived ease of use) as an independent variable influencing user behaviour (Collignon *et al.*, 2013; Tamjidyamcholo *et al.*, 2013). Our model (see Figure 1), therefore, includes technical efficacy as a key construct, which describes users' belief about their general level of technology aptitude and confidence in computer use. The second user attribute in our model is user's attitude to risk, and risk propensity. According to TRA, beliefs influence attitudes and there is substantial evidence in the literature, such as for information disclosure (see for instance Dhillon and Backhouse, 2001) that perceptions of risk influence behaviour which had been shown as lacking in the SNS context.

The third user attribute we include is trust towards SNS provider. Sociological theories lend themselves to thinking of trust as something that a user feels about a specific SNS or a vendor (Pavlou, 2001). However, trust is something that will be felt towards the general technology environment in SNS. This is an important distinction that leads Lee and Turban (2001) to suggest the need for two factors comprising trust in the e-commerce context. The first is the sociological basis of individual trust and the second is trustworthiness, the perception that users place in the technology provider, linked to the reliability of the medium.

2.3 Cognitive appraisal factors

Studies of information security have identified factors appraised by users ahead of sharing confidential information as perceived control of information and perceived risk (Hajli and Lin, 2016). A number of studies have successfully integrated the literature on perceived

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3 risks with TAM (Featherman and Pavlou, 2003). The argument is that perceived risks will
4 influence, and be influenced by perceived usefulness and perceived ease of use which in turn
5 influence behavioural intentions. Further, in the context of online transactions (Pavlou, 2001;
6 Tucker, 2012), linked perceived risk and behavioural intention. When considered in a specific
7 situation, perceived risks are accounted for by users and balanced against the trust they have
8 in the SNS. Perceived risk and trustworthiness of the service provider are common and
9 interlinked antecedents of purchase intention in most theoretical models of purchase intention
10 that emphasise situational cognition (Gefen, Karahann, and Straub 2003; Pavlou and Gefen,
11 2004; Lee and Turban, 2001; Kim, Ferrin, and Rao, 2008; Zimmer *et al.*, 2010). Liu and
12 Goodhue (2012) and Yoon (2002) explored online user behaviour and the formation of
13 perceived trustworthiness. Once users decide that a site is trustworthy enough, they then drop
14 trustworthiness as a concern.

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30 As pointed out in the ecommerce literature ‘consumer trust is a degree of the risk
31 involved in a situation’ (Pavlou 2003). We have therefore included a measure of risk
32 propensity alongside the measures of trust. The formation of trust in e-commerce have been
33 examined in depth (e.g. Corritore, Kracher, and Wiedenbeck, 2003; Dinev and Hart, 2006;
34 Keith *et al.*, 2013), concluding that perceptions of credibility, ease of use and risk play a
35 major role in the formation of consumer trust online, which are influenced by user
36 demographics.

37 38 39 40 41 42 43 44 45 ***2.4 The influence of user demographic characteristics in online behaviour: age and*** 46 47 ***gender differences.***

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50 Demographic characteristics have been found to influence technology acceptance and
51 are incorporated in later technology acceptance models such as the Unified Theory of User
52 Acceptance of Information Technology (Venkatesh *et al.*, 2003). Demographic factors have
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3 been found to influence online purchase behaviour, both directly and as moderators of the
4 effects of other factors. For instance, it has been shown that many online consumers are older
5 in age (Bellman et al., 1999; Donthu and Garcia, 1999; Weiss, 2001). Also, older consumers
6 search for fewer products they purchase as much as the younger customers (Sorce *et al.*,
7 2005). The continuing increase of the Internet use by older adults establishes this
8 demographics as the new sector of growth for commercial opportunities (Lian and Yen,
9 2014).

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19 Gender is another factor that affects online purchase behaviour. For example, women
20 find online shopping experiences less satisfying than men and hence, this could affect their
21 purchase behaviour (Rodgers and Harris, 2003). Similarly, it emerged that men make more
22 purchases online than women (Garbarino and Strahilevitz, 2004; Korgaonkar and Wolin,
23 1999, Slyke *et al.*, 2002). In addition, compared to traditional shoppers, online shoppers are
24 better educated (Swinyard and Smith, 2003), wealthy and high in computer literacy skills as
25 also supported by (Bellman *et al.*, 1999; Ganesh and Agarwal, 2014).

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35 The study of the demographic variables such as age and gender in social media settings is
36 well documented in literature (Maaz, 2011; Madden, 2012; Ng, 2013). For instance, that
37 introversion and neuroticism is higher among women and as a result, they tend to find
38 Internet and social media services more appealing (Hamburger and Ben-Artzi, 2000).
39 However, such gender effects are not observed among teenage social media users (Gross *et*
40 *al.*, 2002; Joiner *et al.*, 2005). The purpose for which SNS are used differ between teenage
41 males (entertainment) and females (relational activities) (see e.g. Barker, 2009). Such
42 findings suggest that both gender and age affect social media use but whether gender
43 differences become more prominent during adult years is yet to be explored in depth.
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3 A further open question, which informs our study, is the extent to which age and gender
4 influence behaviour on commercial social media platforms. Prior research suggests that age
5 differences in social media users are significant; according to recent data from 89% of social
6 media users are between the ages of 18–29 years Pew Research (2016). Researchers believe
7 that young social media users are vulnerable to online privacy losses and are prone to
8 developing addiction to Internet applications (Patchin and Hinduja, 2006; Christakis and
9 Moreno, 2009). The effects of age on social media user behaviour provides an impetus for
10 further research. This is particularly important for gaining a better understanding of user
11 behaviour on commercial social media platforms across different age groups.
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23 **3. CONCEPTUAL FRAMEWORK**

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26 Further to the exploration of purchase intention in e-commerce settings by Chang *et*
27 *al.* (2016) there is a strong rationale to explore purchase intentions on SNS through the lens
28 of cognitive appraisal perspectives. Cognitive factors reflect that SNS users' purchase
29 intentions are influenced by judgements about the vendor. We bring in user beliefs and
30 attitudes affecting purchase intention, which are the factors describing user beliefs affect
31 intentions and therefore behaviour. The hypotheses formation is presented in the section
32 which follows.
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42 ***3.1 Hypotheses development.***

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45 According to Dinev *et al.* (2009) awareness about emergent technology takes central
46 stage in determining users' behavioural intentions. While there is a growing body of research
47 regarding online purchase behaviour; there is a definite lack of validated measures which
48 specifically examine purchase intention in relation to SNS (Landoll *et al.*, 2013). In our
49 study, we were interested in exploring the behaviour of individual users on SNS and how this
50 impacts their intention to purchase through social media platforms.
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3 A study by (Foxman and Kilcoyne, 1993) uncovered that users constantly assess the
4 value of their personal information. They also evaluate how much control they think they
5 have over it, which has been termed as the ‘perceived ability to control submitted
6 information’ (Dinev and Hart, 2006). On social media platforms control over information has
7 been associated with how privacy control settings are used to limit third-party access to
8 personal data and how profile tracker plug-ins are used to harvest profile views information
9 (Reyns, 2013). When users perceive they have a reasonable level of control over information
10 submitted to SNS in a purchase transaction, then their SNS information is better protected by
11 SNS and they will be more willing to transact on social media platforms. Based on this
12 argument, we derive our first hypothesis:
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25 **H1:** *Users with higher perceived control over personal information collected by SNS have higher*
26 *purchase intention.*
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30 Online purchase intention in traditional e-commerce has been explored in-depth in the
31 information systems and marketing literature. An important construct of purchase intention is
32 the level of trust between the vendor and the buyer (Liu *et al.*, 2005; Anderson and Agarwal,
33 2010). More broadly, trust is seen as a ‘behavioural intention or a willingness to depend on
34 another party, coupled with a sense of vulnerability or risk if trust is violated’ (Grabner-
35 Kräuter and Bitter, 2013:p. 4). In online purchasing, trust is considered the most important
36 factor, even more so than price (Reicheld and Schefter, 2000; Wang *et al.*, 2000). Some
37 research shows transacting online (both commercial and self-disclosure) may be influenced
38 by trust in the vendor (Liu *et al.*, 2005), while other studies highlight that trust is dependent
39 on the level of personalisation afforded by the e-commerce site (Xu *et al.*, 2011). We propose
40 the following hypothesis to test this conclusion in social media settings:
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3 **H2:** *Those users with higher levels of trust in the SNS have higher purchase intentions on social*
4 *media platforms.*
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7 In information security research, the concept of risk has been central to user behaviour
8 (Dhillon and Backhouse, 2001). Here we focus on the concept of risk propensity, which is an
9 action state that determines how much risk an individual is inclined to take. According to
10 (Cases, 2002) risk propensity depends on sources of risk and online activity is a source of risk
11 to individuals. Risk propensity is associated with the willingness to assume risk (Luhmann,
12 1988; Mayer *et al.*, 1995; Rousseau *et al.*, 1998; Sheppard and Sherman, 1998) or “the
13 tendency of a decision maker to take or avoid risks” (Sitkin and Pablo, 1992:p. 12).
14 According to (Trimpop, 1994) risk propensity represents the action stage that follows the
15 decision to take or avoid risk and is seen by some theorists as the result of attitudes and
16 perceptions influencing individual actions or behaviour (Liu *et al.*, 2005).
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30 By participating in the purchase process on social media platforms, individuals
31 engage in risk taking behaviour such as communication with unknown entities and entering
32 security sensitive information (Whittle *et al.*, 2012). Those who are more prone to risk taking
33 will be at ease transacting on social media platforms. Hence:
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39 **H3:** *Social media users with high risk propensity have higher purchase intention.*
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42 In an online environment, technology artefacts play an important role in the formation
43 of attitudes towards computing systems and service provider (Nickel, 2013). Brown and
44 Muchira (2004) highlight that service providers should offer artifacts to enable customers to
45 appraise their trustworthiness as users entrust vendors with their personal information. Higher
46 trustworthiness into technical capabilities of the service provider has been shown to
47 encourage information disclosure by users. Customers are more likely to provide personal
48 information without fabrication to those service providers they see as trustworthy as they
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3 believe that the information will be processed and transmitted securely (Grabner-Kraeuter
4 2002). Use of encryption by online vendors signifies “a safe environment for online
5 transactions” and therefore positively affects behavioural intention (Wakefield, 2013).
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7 Trustworthiness of provider has been linked to perceived security of transactions and
8 personal information sharing in the context of online auctions (Barnes and Vidgen 2001).
9
10 Service providers historically used technical artefacts, such as security notices and third party
11 seals, for legal reasons. As shown by (Coopamootoo and Ashenden, 2011) some of these
12 privacy notices (e.g. privacy policies) are “too legalistic and complicated for end-users to
13 read and understand”(p.316). However, technical capabilities and their third-party assurance
14 have been shown to increase trustworthiness of vendors (Pollach, 2007; Orito *et al.*, 2013).
15
16 SNS on the contrary have been censured for avoiding engagement with security notices and
17 seals of assurance, while social platforms have been criticised for the lack of security
18 (Michaelides and Hosszú, 2009; Grabner-Kräuter and Bitter, 2013). We therefore set the
19 following hypothesis:
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34 **H4:** *Social media users who regard SNS as more trustworthy have higher purchase intention.*

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37 Researchers are gradually gaining an insight into how individual user characteristics,
38 including technical efficacy, influence online behaviour (Burns and Roberts, 2013). Some
39 argue that the technical efficacy of SNS users is associated with the intuitiveness and ease of
40 use of social media platforms. According to Anderson and Agarwal (2010) technical efficacy
41 is an individual’s understanding of their personal competencies. Others attribute efficacy to
42 the computer skill set necessary to operate a computer system and software packages
43 (George, 2002). Connolly and Bannister (2006) find that the technical efficacy of users is
44 positively related to trust in technology, but the relationship of efficacy and purchase
45 intention in the social networking context remains unclear. We propose to examine the
46 relationship between technical competency of individuals and purchase intention by means of
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3 the following hypothesis:

4 **H5:** *Users with higher technical efficacy have higher purchase intention on SNS.*

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8 Demographics (such as age and gender) have been found to influence online purchase
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10 intention (Rogers and Harris, 2003; Lowry *et al.*, 2009; Lian and Yen, 2014) and moderate
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12 the effects of other drivers of purchase intention. Consequently, we estimate the model for
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14 male respondents and for female respondents which will allow any moderating effects of
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16 gender and age on the hypothesised relationships to be identified.
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19 In summary, in the current research the authors have chosen five variables: perceived
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21 control, risk propensity, trustworthiness in vendor, trustworthiness of technological artefacts,
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23 and technical efficacy as independent variables affecting the outcome variable, purchase
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25 intention. It can be argued that these variables cover the socio-technical aspects discussed
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27 previously by Dhillon and Blackhouse (2001) and Siponen (2005).
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30 Figure 1 represents the proposed research model, along with the expected direction of
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32 relationships between the constructs.

33
34 <FIGURE 1 GOES ABOUT HERE>

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36 The model depicts the theoretical constructs representing user behaviour on social
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38 media, perceptions of risk, trust and control, along with the hypothesised causal associations
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40 between the constructs. The following section describes the method of this study.
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45 **4. METHOD AND DATA COLLECTION**

46 47 **4.1 Sampling and design**

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50 The research population included social media users with purposeful (non-
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52 probability) sampling and volunteer panels of social platform users were employed to collect
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54 data for this study. Our proposed model consists of eight variables: the five constructs
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3 included in the proposed hypotheses plus three age dummies. Applying a ratio of 15–20
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5 observations per variable (see e.g. Hair *et al.*, 2010) this translates to a minimum sample size
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7 of 120–160 observations. As we estimate two models (one for male respondents and one for
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9 female respondents) the total minimum sample size is 240–320.

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11 <<TABLE 1 GOES ABOUT HERE>>
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16 The questionnaire was developed using Qualtrics software, and then administered to
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18 the target sample through web postings (e.g. on popular SNS like Facebook, LinkedIn,
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20 Twitter, etc.). In the survey invitation, a criterion was imposed to eliminate any non-social
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22 media users who might come across the survey's bypassing restrictions. Overall, 769
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24 individuals responded to the survey invitation. Distributed via social networking channels,
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26 the eligibility of respondents has been determined by the affirmative answer to the question
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28 of SNS usage. However, no restrictions were imposed on the origins of the respondents,
29
30 therefore yielding a sample that was predominantly Anglophone and European. Incomplete
31
32 responses have also been eliminated, which yielded 514 usable questionnaires registering a
33
34 completion rate of 67%.
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37 ***4.2 The dependent variable: social purchase intention.*** 38 39

40 The *social purchase intention* (spi_i) was measured through a seven-point scale (1 =
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42 strongly disagree, 7 = strongly agree), where respondents were asked whether they preferred
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44 shopping on SNS, whether they intended or were willing to purchase from SNS in the future
45
46 or were worried about security when purchasing from an SNS. The items and their sources
47
48 are shown in table 6 in the appendix.
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51 ***4.3 The independent variables.*** 52 53

54 The variable, *perceived control over personal information* (cpi_i), was measured using
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56 four items: capturing ability to control access, and information released, used and provided.
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3 As with all of the other independent variables, the responses were measured on a seven-point
4 scale from strongly disagree (1) to strongly agree (7).¹
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7 The *risk propensity* variable (rpr_i) was measured with five items asking respondents
8 about their willingness to take and accept risks. Trust in SNS was measured using three items
9 which covered how much SNSs were trusted by respondents. This is distinct from the
10 trustworthiness of the SNS service provider (which we denote as ‘trustworthiness’) which
11 covers the technical ability of the SNS to protect itself and its members from hacking or other
12 forms of data interception. Trustworthiness was measured by a further three items.
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20 The final explanatory variable captured respondents’ experience and confidence in
21 using computers (user’s technical efficacy) and was measured using four items. Reliability
22 measures (Cronbach’s alpha, Composite Reliability and Average Variance Extracted) are
23 shown in table 2.
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28 <<TABLE 2 GOES ABOUT HERE>>
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31 We also assess the discriminant validity of our constructs by comparing the square root of the
32 Average Variance Extracted (AVE) with the correlation between the constructs. Following
33 the Formell and Larcker criterion, discriminant validity is established for a construct if the
34 square root of its AVE is greater than its correlation with other constructs. The results are
35 shown in table 3 – all of the square roots of the AVEs are greater than the cross-construct
36 correlations.
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44 <<TABLE 3 GOES ABOUT HERE>>
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48 ***4.4 Model formulation*** 49

50 The model in Figure 1 is estimated using ordinary least squares regression. Given that our
51 model involves a single dependent variable, purchase intention, we adopt a regression
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54 ¹ Since our study is cross-sectional, changes in perceptions over time cannot be observed. For example,
55 perceptions may change if an individual experiences victimisation. However, this issue goes beyond the scope
56 of this paper.
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3 approach to the analysis rather than e.g. Covariance-Based Structural Equation Modelling
4 (CBSEM) or Partial Least Squares Structural Equation Modelling (PLS_SEM)². This also
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6 allows us to incorporate dummy variable coded variables such as age and gender. Validated
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8 measures for online behaviour have been applied. Respondents' ages were incorporated into
9
10 the model through three dummy variables (18–28, 29–38 and 39–48) with the age group 49
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12 and over acting as the base category.
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16 17 18 **5. FINDINGS**

19 20 21 22 23 24 **5.1 Regression results**

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26 Regression analysis requires that the residuals (the difference between the predicted
27
28 and observed values of the dependent variable) are normally distributed and have constant
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30 variance (homoscedasticity) and that the independent variables do not overlap with each other
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32 (i.e. do not display multicollinearity). Test of these assumptions and the results from the
33
34 regression analysis are shown in table 4.
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38 <<TABLE 4 GOES ABOUT HERE>>
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41 We find no evidence of non-normally distributed residuals (the skewness and kurtosis
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43 values lie within accepted ranges) or any evidence of multicollinearity (the Variance Inflation
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45 Factors are all below the standard benchmark of 10) – see e.g. Hair, Black, Babin and
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47 Anderson (2010). There is however, some evidence that the residuals are not homoscedastic.
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49 Consequently, we used robust Standard Errors to calculate the significance values.
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² Ordinary Least Squares (OLS) regression and PLS-SEM are closely related – a PLS-SEM model with single
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57 indicators for each construct is indistinguishable from OLS (see Gefen et al., 2000 for review of SEM
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59 techniques)
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3 Similar to results obtained in studies of e-commerce users (e.g. Hwang, 2010), we
4 find that gender acts as a moderator for social purchase intention. As table 4 shows,
5 antecedents of purchase intention on social media platforms for females differ to those for
6 male users.
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12 The results show that perceptions of exercising control over personal information
13 have a positive and significant effect on purchase intention for female users. Hence, this
14 finding provides partial support for hypothesis 1. Social media activity results in the
15 generation of vast amounts of information which may be commercially sensitive or
16 considered private. Current research (Bertot *et al.*, 2012) indicates a general lack of
17 understanding by the social networking users regarding the ways in which their information
18 is used by the SNS. When social media users feel assured that they have more control over
19 their personal information, they are more likely to purchase through social media platforms.
20 This is particularly important for female users on SNS.
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33 Our results suggest that trust in the online vendor (e-commerce or social media) is an
34 important factor influencing purchase behaviour. In the full sample model and the female
35 respondent model, trust is significant; in the male model the significance value is just above
36 the 5% benchmark. Therefore, when social media users perceive that a social networking
37 service can be trusted, they are more likely to transact with the site. Hence, hypothesis 2 is
38 partially supported.
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47 We also found a positive significant relationship between risk propensity and
48 purchase intention for women, but not for men, thus, supporting hypothesis 3 for the female
49 population. This outcome has significant implications for user awareness programmes. SNS
50 should be more transparent about the risks associated with the purchase process in the social
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3 transaction ecosystem and ensure that appropriate safeguarding measures are in place to
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5 protect users' security.
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8 Trustworthiness, has been linked to a single point in an online decision making
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10 process (e.g. Liu and Goodhue, 2012) of online user behaviour. However, the results are not
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12 clear-cut. We find that trustworthiness of SNS is significant in the full sample, however, for
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14 women only it is not significant ($p=0.150$), while for men it is the significance value is
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16 slightly higher than 5% (0.057). Hence hypothesis 4 is not supported .
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19 Technical efficacy has no significant association with purchase intention and this is
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21 true for both genders. However, social media users in our sample already possess a sufficient
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23 level of technical skills, which is appropriate for conducting purchases on social media
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25 platforms – once a threshold level of experience is reached, further experience may not
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27 influence purchase behaviour.
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34 ***5.2 Age and gender differences***

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37 The literature (e.g. see Sorce *et al.*, 2005; Barker, 2009), suggests that younger users (18–28)
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39 tend to have higher online purchase intentions than older age groups. The results in table 4
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41 however, suggest that the age effect on SNS purchase intention holds more strongly for males
42
43 than females. Younger (18–28 years old) male users have significantly higher purchase
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45 intentions compared to other male age groups. We explore this by estimating our model
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47 again for younger and older male and female respondents separately, to identify any potential
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49 moderating effects of age and gender on the relationships in figure 1. The results are shown
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51 in table 5.
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55 <<TABLE 5 GOES ABOUT HERE>>
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3 Some interesting results emerge for younger female users. For them risk propensity is
4 significant for the younger group (18–28 years old) while control and trust are significant for
5 the 29 and older group. However, in the regressions for the male groups the picture is less
6 clear-cut. For the over 29 male group, trustworthiness would only be significant at the 10%
7 level. Surprisingly for the younger (under 29 group) males we did not identify significant
8 relationships. It suggests that of the younger male age group there may be other influences
9 which drive their decisions. Therefore this area merits further investigation.
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18 The results of our study confirm that control over personal information matters to
19 women participating in social media transactions. When female social media users feel
20 assured that they have more control over personal information, they are more inclined to
21 purchase through social media platforms.
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31 **6. IMPLICATIONS**

32 **6.1 Implications for research**

33 Purchase intention is a key outcome variable for the study of social commerce adoption,
34 yet there is much work to be done still to understand how to measure the construct as well as
35 its antecedents (Friedrich, 2017). Here we have chosen to measure purchase intention with
36 scales derived from the consumer behaviour literature rather than that from the technology
37 acceptance literature which is more commonly used (see e.g. Teh and Ahmed, 2012; Akman
38 and Mishra, 2017). Some studies have used very specific scales asking respondents whether
39 they would be prepared to pay membership or credit card fees (Hajli 2015; Dashti *et al.*
40 2016). However, such scales would not work for more general surveys such as that used here.
41 The scale used in this study shows excellent values for Cronbach's alpha, composite
42 reliability and discriminant validity. Such scales have proved very useful so far as consumer
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3 behaviour online has been linked to three groups of influences (Vazquez and Xu 2009),
4 namely (a) attitudes towards online shopping, (b) motivations and (c) information search. In
5 the context of purchase behaviour on social platforms, the technical capabilities of the
6 platform and its chosen business model for transacting (brokerage, social commerce or a
7 combination of both) will determine the influence level potential of these three groups.
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14 An important implication for research from our work relates to understanding of the
15 antecedents of this construct and in particular the moderating impact of gender. There is a
16 dearth of studies in the context of e-commerce (Van Slyke *et al.* 2002), let alone SNS
17 (Thompson and Lougheed 2012), on the platforms where there is a social dimension to the
18 purchase decision (Zhang *et al.* 2014). Our study highlights that gender differences not only
19 do exist, but the way they manifest themselves may differ across age groups. We suggest
20 therefore that studies that investigate gender differences should control for age differences
21 and vice-versa.
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32 **6.2 Implications for practice**

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35 With the rise of commercial opportunities on social networks, it is important to
36 understand purchase behaviour of their users. We investigate how purchase intention is
37 affected by user traits, cognitive factors (such as perceived control and trust) and individual
38 beliefs (such as risk propensity and trustworthiness). Our study carries a number of very
39 important implications for practice. As the number of registered users and the proportion of
40 time spent by people using social media continue to increase year on year, the commercial
41 value of personal information and commercial opportunities on social networks continues to
42 rise. It is only a matter of time before monetisation of social media through transactions
43 reaches prevalent levels. Therefore, this study is very important in understanding social
44 media user behaviour and the impediments to social commerce development.
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3 A key implication for practice is the difference between gender groups. Our study
4 suggests that the messaging around control over personal information and risks (for instance)
5 may need to be different for women compared to that for men. While it is necessary for SNS
6 vendors to ensure that this messaging is strong, our study suggests that if an SNS is able to
7 target their messaging around the controls it offers over personal information towards women
8 it may have a positive impact by influencing the cognitive factors at play.
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16 Previous studies (e.g. Madden, 2012) have suggested that women pay greater
17 attention than men to privacy issues on social media and that they are more influenced by
18 recommendations (Sia *et al.*, 2009). It may therefore be possible to influence female users'
19 purchase intentions on SNS through peer or recommendation based reassurance about control
20 over personal information.
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28 This further contributes to the understanding of to what extent current theoretical
29 perspectives on user behaviour online explain purchase intentions in application to social
30 media. Findings of this study will help inform development of social media user awareness
31 practices and enhancement of trust formation mechanisms implemented on social networking
32 platforms. Further, the results are important to future researchers and scholars who may wish
33 to test similar relationships in different contexts.
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42 7. LIMITATIONS

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45 Despite every effort taken by the researchers to achieve objectivity, our study is not
46 without its limitations. The target population of this study is online social media users. For
47 the sample size, literature recommends approximately 400 participants for a population of
48 over 100,000 (Krejcie and Morgan, 1970; Isaac and Michael, 1995). There is still a dearth of
49 literature on effective sampling frames in social platforms. According to Duffy (2002),
50 unrestricted internet samples, or self-selection may not be reliable. Nevertheless, research
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3 finding shows that self-selected samples are clearer and more complete than targeted samples
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5 (Gosling *et al.*, 2004). We acknowledge that the data used in this research is self-reported.
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7 Also, it is conceivable that a different set of results may emerge using a different sampling
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9 technique. We therefore offer our proposed model for further empirical testing by
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11 researchers. One potential avenue would be to test the model's ability to explain purchase
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13 behaviour as opposed to intention. A second avenue would be to explore if the findings hold
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15 for other regions of the world.
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18 **8. CONCLUSIONS**

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21 With the proliferation of social media applications across personal and commercial
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23 activities, the transactional potential of social platforms is yet to be realised. Through a
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25 review of literature, we explored why social media environments are somewhat different than
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27 e-commerce and warrant specific attention towards social media users attitude, cognitive
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29 appraisal and their purchase intentions. We proposed a theoretical model which explains the
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31 relationships between perceived control over information, risk and trust which have an
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33 impact on the purchase intentions on social media and found that these relationships differ
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35 depending on the age and gender of the social media user. Specifically, we find that for
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37 women, perceived control, trust and risk propensity predict purchase intention. These
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39 relationships are moderated by age – for younger women risk propensity is significant; for
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41 older women perceived control and trust are significant. For men, age is the only significant
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43 predictor; younger men are more likely to buy via an SNS than older men are. The
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45 implications for practice of the research findings are threefold. We identified that while the
46
47 role of the individual user in understanding risks is important, it cannot be the only protective
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49 measure for safe activity on social networks. The results of this study help enhance the
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51 theoretical understanding of the effects of user behaviour on social technologies.
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Our findings provide guidance for SNS providers and technology developers seeking to explore new horizons in social networking commerce. Social media services need to take a lead on individual user information controls and protection in order to convey trust and reduce risks, to realise the potential of social commerce and increase the volume of social media transactions. Further, there is a potential avenue for research exploring the influences on male users and buying via social media platforms, as their behavior and differences between age groups are areas for emerging research.

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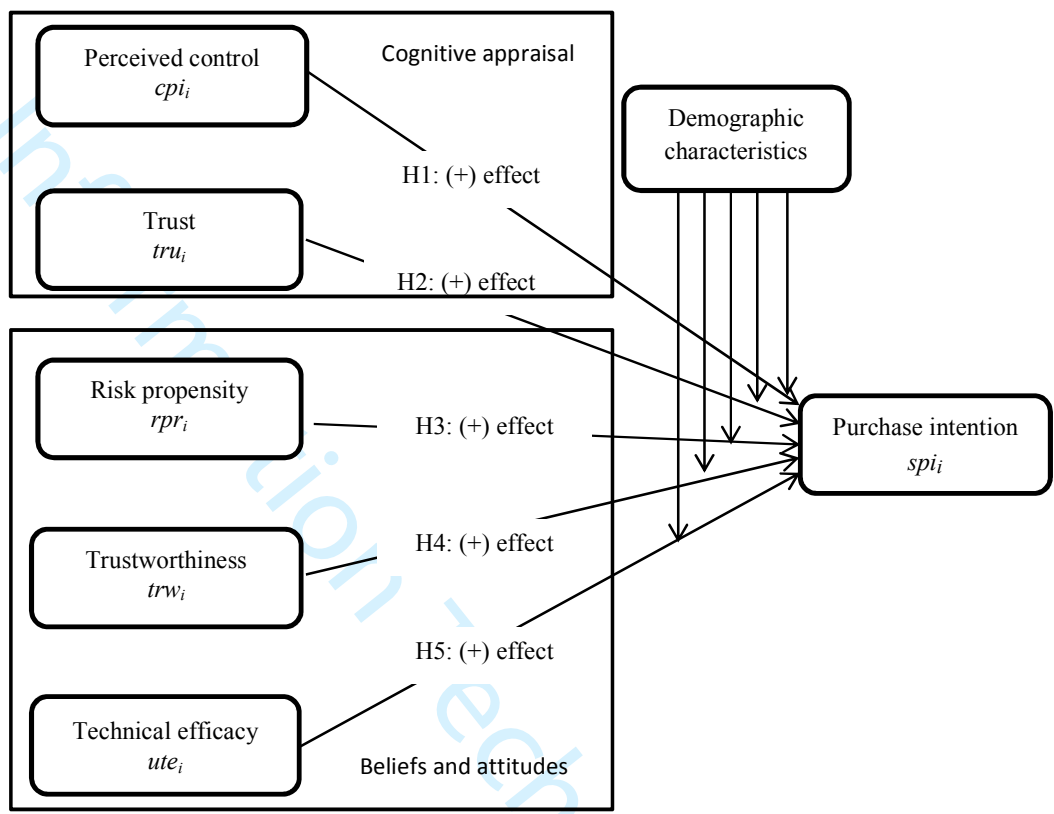
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17 **Appendix**

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20 <TABLE 6 HERE>

Figure 1. Proposed Model of Social Purchase Intention.



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Table 1. Demographics profile.

	Frequency	Percent
<i>Gender</i>		
Female	325	63.2
Male	189	36.8
<i>Age</i>		
18-28	211	41.1
29-38	140	27.2
39-48	86	16.7
49-58	60	11.7
59-68	17	3.3
<i>Education</i>		
Lower Secondary Level	21	4.1
Upper Secondary Level	34	6.6
Bachelor's Degree	191	37.2
Master's Degree	179	34.8
Doctoral Degree	46	8.9
Other	43	8.4
Total	514	100

Table 2. Cronbach’s alpha and Composite reliability

	Cronbach’s alpha	Composite Reliability	Average Variance Extracted
Purchase Intention <i>spi</i>	0.899	0.928	0.729
Risk Propensity <i>rpr</i>	0.792	0.836	0.634
Technical Efficacy <i>ute</i>	0.916	0.938	0.792
Trust <i>tru</i>	0.738	0.845	0.65
Trustworthiness of the SNS <i>trw</i>	0.918	0.949	0.86
Perceived control <i>cpi</i>	0.896	0.927	0.762

Cronbach’s alpha and Composite reliability should be above 0.7. The Average Variance Extracted should exceed 0.5

Table 3 Discriminant validity

	Purchase Intention	Risk propensity	Technical Efficacy	Trust	Trustworthiness	Perceived control
Purchase Intention <i>spi</i>	0.854					
Risk Propensity <i>rpr</i>	0.191	0.796				
Technical Efficacy <i>ute</i>	-0.07	-0.065	0.89			
Trust <i>tru</i>	0.326	0.15	0.006	0.806		
Trustworthiness of the SNS <i>trw</i>	0.258	0.157	0.041	0.485	0.928	
Perceived control <i>cpi</i>	0.245	0.134	-0.062	0.439	0.36	0.873

No high correlations between constructs found. We also test for multicollinearity, reporting the Variance Inflation Factors (VIF) along with the regression results

Table 4. Estimated coefficients.

	Full sample			Female			Male		
	Coeff	<i>t</i>	Sig	Coeff	<i>t</i>	Sig	Coeff	<i>t</i>	Sig
Perceived control <i>cpi</i>	0.072	1.44	0.151	0.119	2.05	0.041	-0.005	-0.06	0.953
Trust <i>tru</i>	0.206	3.41	0.001	0.194	2.73	0.007	0.203	1.78	0.077
Risk propensity <i>rpr</i>	0.058	1.33	0.183	0.119	2.11	0.035	-0.028	-0.41	0.683
Trustworthiness <i>trw</i>	0.099	2.20	0.029	0.071	1.44	0.150	0.170	1.91	0.057
Technical efficacy <i>ute</i>	-0.056	-1.07	0.286	-0.065	-0.88	0.378	-0.011	-0.14	0.892
Age 18 to 28	0.510	2.83	0.005	0.244	1.10	0.271	0.974	2.96	0.003
Age 29 to 38	0.266	1.54	0.125	0.134	0.68	0.500	0.610	1.87	0.064
Age 39 to 48	-0.032	-0.17	0.867	-0.306	-1.40	0.163	0.645	1.82	0.071
_cons	1.382	3.30	0.001	1.416	2.57	0.001	1.025	1.59	0.114
R ²		0.1374			0.1474			0.1566	
Diagnostics:									
Skewness		0.379			0.332			0.452	
Kurtosis		-0.181			-0.276			0.032	
VIF ^a range		1.040–2.409			1.039–2.164			1.068–2.777	
Heteroscedasticity test Chi ²		25.87(<i>p</i> =0.000)			23.08 (<i>p</i> =0.000)			4.95 (<i>p</i> =0.026)	

Table 5. Estimated coefficients by age groups and gender.

	Female 18–28			Female 29 and over			Male 18–28			Male 29 and over		
	Coeff	<i>t</i>	Sig	Coeff	<i>t</i>	Sig	Coeff	<i>t</i>	Sig	Coeff	<i>t</i>	Sig
Perceived control <i>cpi</i>	-0.029	-0.266	0.791	.199	2.944	0.004	-.083	-0.718	0.475	0.118	1.152	0.253
Trust <i>tru</i>	0.219	1.585	0.116	.161	2.019	0.045	.251	1.541	0.126	0.202	1.598	0.114
Risk propensity <i>rpr</i>	0.243	2.399	0.018	.032	.535	0.593	-.064	-0.595	0.553	-0.032	-0.389	0.698
Trustworthiness <i>trw</i>	0.157	1.357	0.178	.038	.631	0.529	.147	1.142	0.256	0.195	1.910	0.060
Technical efficacy <i>ute</i>	-0.030	-0.246	0.806	-.126	-1.314	0.190	-.059	-0.499	0.619	0.064	0.672	0.503
<i>_const</i>	1.149	1.380	0.171	2.013	2.782	0.006	2.561	3.001	0.003	0.647	0.916	0.363
R ²		0.165			0.122			0.064*			0.188	
Diagnostics:												
Skewness		0.311			0.365			0.419			0.497	
Kurtosis		-0.397			-0.090			-0.202			0.210	
VIF ^a range		1.093–1.626			1.025–1.288			1.049–1.506			1.019–1.567	

* Denotes non-significant at the 5% level

a: Variance Inflation Factor

Table 6. SNS Constructs exhibit.

Construct	Original Source
<i>Purchase Intention (spi)</i>	Vazquez and Xu, 2009
...I will buy from SNS in the future	
...I often consider buying from SNS	
...I have strong intentions to purchase from SNS in the future	Novak et al., 1999
<i>Technical Efficacy (ute)</i>	
...I am extremely skillful at using the Web	
...I know somewhat more about using the Web than most people	
...I feel confident working on a personal computer	
...I feel confident understanding terms/worlds relating to computer hardware	
...I feel confident understanding terms/worlds relating to computer software	
<i>Risk-taking propensity (rpr)</i>	Chang and Chen 2006
...I am willing to take substantial risks to do online shopping.	
...I am willing to accept some risk of losing money if online shopping is likely to involve an insignificant amount of risk.	
...I am willing to accept some risk to my personal information if online shopping is likely to involve an insignificant amount of risk.	
<i>Trust (tru)</i>	Jarven paa et al 2000
...I trust that SNS keeps my best interests in mind	
...SNS can be trusted	
...I trust SNS as one who keeps promises and commitments	
<i>Trustworthiness of technology (trw)</i>	Flavian and Guinaliu, 2006
...I think that SNS have sufficient technical capacity to ensure that no other organisation will supplant its identity on the Internet.	
...I think that SNS have sufficient technical capacity to ensure that the data I send will not be intercepted by hackers	
...I think that SNS have sufficient technical capacity to ensure that the data I send cannot be modified by third party.	
<i>Perceived Control (cpi)</i>	Xu et al, 2008
...I believe I have control over who can get access to my personal information collected by SNS	
...I think I have control over what personal information is released by SNS	
... I believe I have control over how personal information is used by SNS	
---I believe I can control my personal information provided to SS	

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