

Backpackers' perceived risks towards smartphone usage and risk reduction strategies: A mixed methods study

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ARTICLE INFO

Keywords:

Backpackers
Perceived risk
Mixed methods
Smartphones
Risk reduction

ABSTRACT

Backpackers' travel ideology and experiences are increasingly being mediated by mobile phones (i.e. smartphones). This study explored their risk perceptions towards smartphone usage and consequent risk reduction strategies. Importantly, this paper proposes an integrated model of perceived risk combining technology and destination related risk factors. Employing a quantitative-dominant concurrent nested mixed methods approach, 567 surveys (Study A) and 15 in depth, semi-structured interviews (Study B) were conducted in Ghana. Evidently, backpackers' perceived risk towards smartphone usage is a function of both information technology and destination related risks. Their risk concerns are inhibited by trust in smartphones, innovativeness and familiarity. Levels of trust had a significant positive impact on their intentions to reuse the device, as did their satisfaction levels with the device and travel. Backpackers used a mix of both cognitive and non-cognitive measures to manage their risk perceptions. The theoretical, practical and methodological contributions of the study are discussed.

1. Introduction

Backpackers have become part of the digitally savvy natives of the world. Extant literature reports on the plurality and indispensability of mobile phones (i.e. smartphones) and the Internet in backpackers' travel expeditions (Hannam & Diekmann, 2010; Paris, 2012). The 'power' of smartphones is ascribable to the features of mobility, portability, intelligence, simultaneity, immediacy, reachability, and incessant connectivity embedded in them (Okazaki, 2012). For instance, the opportunity to be innovative and make spontaneous decisions in real-time has immensely influenced experiences and behaviours in the travel and tourism industry (Wang, Park, & Fesenmaier, 2012; Wang & Xiang, 2012). To Mascheroni (2007, p. 541), the mobile phone is a medium for the "micro-coordination of co-present interaction" among backpackers and has thus resulted in the coinage of the neologism 'flashpackers' (Dayour, Kimbu, & Park, 2017).

Notwithstanding the important role of mobile devices (i.e. smartphones) in enhancing travel experiences, the use of the technology predisposes users to several risks (Luo, Li, Zhang, & Shim, 2010; Kim, Chang, Wong, & Park, 2013). Mobile devices raise not just security and privacy concerns among users but also challenges in terms of evaluating services online before purchase – resulting in risk perception(s) in their decision-making process. Thus, backpackers may have some risk

concerns regarding the use of smartphones during travel. Distinctly, the independent and flexible nature of the backpacker segment in comparison to mainstreamers (Larsen, Øgaard, & Brun, 2011), suggest that not only would their experiences towards smartphone usage be different and but also their perceptions of risk. Yet, considering the risks induced by mobile technology (Park & Tussyadiah, 2016), tourism researchers have yet to explore backpackers' perceptions of the risks of using smartphones while travelling.

Significantly, past studies (e.g. Kim, Qu, & Kim, 2009; Park & Tussyadiah, 2016) have been principally interested in investigating perceived risk (PR) towards information technology (such as security and privacy) in travel and tourism, ignoring situational factors that reflect the contexts in which smartphones are being used. For example, lack of technological infrastructure at the destination such as the limited function of open wireless technology and slow download speeds (Pasquinucci, 2009), as well as physical risk in the usage of the smartphones at the destination including the theft of a mobile device could pose another type of risk in addition to monetary loss or exposure of classified personal data (Khan, Abass, & Al-Muhtadi, 2015). Thus, it can be argued that the integration of destination related risks (i.e., destination-infrastructure and – physical risks) with technology risks directly associated to the technological devices is critical to comprehensively understand backpackers' PR towards smartphone usage.

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<https://doi.org/10.1016/j.tourman.2018.11.003>

Received 1 March 2018; Received in revised form 12 August 2018; Accepted 5 November 2018

Available online 17 November 2018

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Importantly, however, there has been no research attempted to combine these two major risk factors in the study of PR in travel and tourism.

Regarding the features of Ghana as a travel destination, the approach used in this research, of considering both technology risks and destination risks, is particularly pertinent. Ghana has been cited as one of the West African sub-region destinations confronted with not only Internet infrastructure security and reliability challenges but also general travel security concerns, such as phone snatching (Boakye, 2010; Ministry of Communication, [Ghana] 2014; US Federal Bureau of Investigation, 2015; Adam and Adongo, 2016). This makes the destination suitable to address the research questions about PR in smartphone usage at the travel destination.

Furthermore, consumers who perceive, or experience, risks (beyond tolerable limits) in association with a product, tend either to delay their purchases, to develop measures for reducing the risk or to consider alternative products/services (Roselius, 1971). Though there exists information on mechanisms used by service providers to reduce consumers' PR towards online bookings (Kim et al., 2009), there remains a paucity of information in the tourism literature regarding personal risk-relieving strategies pursued by smartphone users.

This research is divided into two parts. Study A aims to identify a latent construct of PR comprising technology related and destination related risks, and to identify the antecedents of backpackers' risk perceptions (e.g. observability, innovation, trust, and familiarity), as well as the outcomes (e.g. satisfaction and intention to reuse the device). Employing a mixed methods research design, the first part of this study is quantitative in nature and addresses the first research purpose. Study B aims to identify risk reduction strategies adopted by backpackers, using a qualitative methodology.

More specifically, this study proposes a quantitative-dominant (QUAN + qual) concurrent embedded mixed methods design (Johnson & Onwuegbuzie, 2004; Creswell & Plano Clark, 2007) for investigating backpackers' PR towards smartphone usage (Study A) and risk reduction strategies (Study B). This design supports the collection of both quantitative and qualitative sets of data contemporaneously and then jointly analysing the data to facilitate diversity of the results (Johnson & Onwuegbuzie, 2004; Tashakkori & Creswell, 2007). This paper goes on to discuss the relevant literature, quantitative and qualitative methodologies and findings, discussion, conclusions and implications, and finally, areas of further research.

2. Literature review

2.1. Risk perception in tourism – emphasis on backpackers

The discourse about risk perceptions in the consumer behaviour literature was pioneered by Bauer (1960) who observed that consumers' purchasing decisions involved risk due to uncertain consequences or outcomes. PR is a consumer's subjective assessment of the negativity of a course of action, contingent upon negative outcomes, and the propensity that those outcomes will occur (Cunningham, 1967). In the field of tourism, Liu and Gao (2008) explain perceived risk as a tourist subjective assessment on the uncertainty of the results of tourism activities. Accordingly, embedded in PR are elements of 'uncertainty' (the subjective probability of an unknown occurrence) and 'negative outcomes' (Dowling & Staelin, 1994; Williams & Baláž, 2015). Recently, Williams and Baláž (2015) made a distinction between risk and uncertainty. For them, risks are "known uncertainties" while uncertainties are "unknown risks" (p. 273). In the past, the two terms have been used almost interchangeably in the literature.

Following Bauer's (1960) theory, a rich stream of studies (e.g. Adam, 2015; Carballo, León, & Carballo, 2017; Hajibaba, Gretzel, Leisch, & Dolnicar, 2015; Liu, Pennington-Gray, & Krieger, 2016; Quintal, Lee, & Soutar, 2010; Reisinger & Mavondo, 2005; Roehl & Fesenmaier, 1992; Wolff & Larsen, 2016) have focussed on PR in

consumer behaviour research. Notably, Roehl and Fesenmaier's (1992) study represents one of the seminal works on PR in travel and tourism. The concept of risk perception is axiomatic in tourism because services are intangible, sold without warranties, non-standardised, and usually purchased in advance of the actual experience (Parasuraman, Zeithaml, & Berry, 1985; Park & Tusseyadiah, 2016). Consequently, a large body of knowledge has been published on the nexus between tourism and PR especially following the 9/11 attack on the US in 2001 and the current terrorism onslaught across the globe (Sönmez & Graefe, 1998a; Reisinger & Mavondo, 2005; Hajibaba, Boztug, & Dolnicar, 2016; BBC.co.uk, 2018; CNN Library, 2018). More recent terror attacks including the Paris Bastille Day attack of 2016; the London bridge attack in 2017, Ariana Grande Manchester Arena concert shooting in 2017, Barcelona vehicle attack in 2017 and the Stockholm truck attack in 2017 are but a few heinous examples that had different negative impacts on the affected destinations (BBC.co.uk, 2018; CNN Library, 2018). Hajibaba et al. (2016) recognise this noting that "extreme events circumstances can have devastating effects on regions heavily reliant on tourism". For instance, in 2015, the terrorist attack in Tunisia did not only result in the removal of tourists by major holiday companies but also the cancellation of all booking in the ten days after that attack (Calder, 2015). Tourists tend to avoid places with higher likelihoods of risk while less risky destinations continue to be popular and attractive (Hajibaba et al., 2015; Lepp & Gibson, 2003). Within the context of destination selection, travel mode and decision-making, many facets of PR are well explored in the literature. These include risks, such as financial, physical, psychological, political, time and social, and/or risks associated with terrorism, health, expectations, and equipment (Roehl & Fesenmaier, 1992; Pizam & Mansfeld, 1996; Dolnicar, 2005; Adam, 2015; Badu-baiden, Boakye, & Otoo, 2016; Otoo & Kim, 2018).

The concept of PR has also been explored among specific travel segments in the literature including backpackers. Research on backpackers' role and risk-taking propensity could be traced back to Cohen's (1972) typology, which consists of the dichotomy between institutionalised and non-institutionalised tourist roles. Contrary to past studies (e.g. Elsrud, 2001) that found risk and adventure to be fundamental aspects of backpacking, more current studies report otherwise (Adam, 2015; Adam & Adongo, 2016; Badu-baiden et al., 2016). Researchers (e.g. O'Reilly, 2006; Reichel, Fuchs, & Uriely, 2009) have increasingly noted that the distinction between backpacker tourism and institutionalised tourism has become blurred in relation not only to travel characteristics but also to travel motivations. Despite this blurring, some researchers (e.g. Larsen et al., 2011) still note distinct differences between backpackers and mainstream tourists.

Larsen et al. (2011) indicate that backpackers are far less motivated by a proclivity for luxury and relaxation than mainstream tourists. Elsrud (2001) suggests this is because they are more adventurous than mainstreamers. Likewise, Maoz (2007) found that relaxation was one of the weakest motives for backpackers. Regarding risk, Elsrud (2001) and Larsen et al. (2011) realised that backpackers are significantly less risk averse than other tourists, especially regarding issues of food poisoning and incidences of terror attacks. However, both groups are concerned about crimes and traffic accidents, thus while backpackers are less risk apprehensive generally, they are not entirely without worry (Larsen et al., 2011). Also, while backpackers socially construct themselves as individualistic, mainstream tourists do not (which supports the idea that mainstream tourists are more likely to be institutionalised in nature than backpackers) be they individual or organised mass tourists (Cohen, 1972). Furthermore, backpackers are less concerned about encounters with strange cultures than are conventional tourists (Larsen et al., 2011). The tourism literature has information about backpacker-specific travel related risk concerns. For example, Reichel, Fuchs, and Uriely (2007) in their research on PR among Israeli ex-backpackers concluded that PR is a multidimensional concept, including site-related physical, socio-psychological, expectational, and socio-political risks. Similarly, their concerns about risks associated with terrorism, politics,

health, environment, and finance risks, as well as risk reduction strategies have been documented (Adam, 2015; Adam & Adongo, 2016; Badu-baiden et al., 2016; Hunter-Jones, Jeffs, & Smith, 2008). Much earlier, Reichel et al. (2009) made similar observations in their study but added that different destinations impact backpackers' risk perceptions differently. Their research showed that backpackers are increasingly concerned about risk perceptions in contrast to past studies that attempted to project them as rather risk receptive travellers.

2.2. The role of information and communication technologies (ICTs) in mediating travel experiences and risk perceptions

ICTs, such as smartphones, are now mediating the experiences of tourists making them more innovative than before (Kim et al., 2013). In particular, mobile technology and the Internet have become pivotal in reconstructing the ideology of backpackers – bringing about co-presencing and virtual nearness (Iaquinto, 2012). Virtual mobile networking has become almost indispensable in the travel culture of backpackers nowadays, mediating their experiences and sociality on the 'road' (Cohen, 2017; Mascheroni, 2007). In his study on 'hypermobility in backpacker lifestyle', O'Regan (2008) also envisioned that there will be no need to check emails on PCs when smartphones can be used to tap into high-speed WiFi connectivity while on the move. In fact, this prognosis is fast becoming a reality among current travellers especially contemporary backpackers who are now overwhelmingly reliant on their mobile phones to perform (or undertake) all these services and other transactions (Paris, 2012; Tan, 2017). The emergence of smartphones containing various travel functions enhance the experiences of backpackers throughout the different stages of their travel. Thus, with mobile phones and Internet, there has been the 'virtualisation' of the backpacker culture hence the neologism 'flashpackers' (Paris, 2012). It could be argued that the qualities of simultaneity and continuity that are embedded in mobile devices (e.g. smartphones) enable them to perform different functions at the same time on the 'road'. However, ICT, especially mobile devices, pose privacy and security concerns to users (Cunningham, Gerlach, & Harper, 2005).

Park and Nicolau (2015) argue that the online ecosystem does not permit consumers to physically inspect products/services resulting in information asymmetry and uncertainty. Related to this view, an argument in this paper is that the smartphone, which is an information system, offers similar limitations to users, resulting in risk concerns about the usage of the device. The limited interaction with service providers online, arouses a sense of uncertainty leading to risk perceptions as the users of mobile devices take full responsibility for their purchase decisions and the consequences of those decisions (Park & Tussyadiah, 2016). Essentially, this can curtail behaviour control, which can negatively affect the use of a smartphone for travel related activities. For instance, by applying the Technology Acceptance Model (TAM), researchers have proposed a multidimensional risk perception model that inhibits the adoption and usage of information technology (Featherman & Pavlou, 2003). Several studies (e.g. Luo et al., 2010; Park & Tussyadiah, 2016) support the multidimensional nature of PR and its importance in predicting activities in mobile commerce.

In tourism, while Kim, Kim, Leong et al. (2005) suggested a multidimensional risk perception model (involving six facets) and its relationship with the intention to purchase online tickets, Nunkoo and Ramkissoon (2013) also used TAM to estimate the significance of PR regarding usefulness, ease of use and trust in forming attitudes toward online bookings. More recently, Park and Tussyadiah (2016) also proposed a second-order multidimensional construct of PR in mobile travel bookings and demonstrated its inverse relationship with the intention to do mobile travel booking. All these studies have concentrated on understanding the PR of information technology, but mostly not in conjunction with other situational factors that may also have an impact on forming consumers' perceptions of risk. A detailed discussion

proposing an integrative PR measurement is presented later in this paper.

2.2.1. Perceived risk facets

The use of advanced technology by consumers comes with several risk perceptions as per the extant literature. On consumer behaviour, Jacoby and Kaplan (1972) reported five PR facets: financial, social, performance, psychological and physical risks. A later study by McCorkle (1990) included time risk while Crespo, del Bosque and de los Salmones (2009) found privacy and security risks as additional dimensions in online buying. The most comprehensive of these studies was done by Featherman and Pavlou (2003) who proposed a second-order model of PR in e-commerce including financial, performance, time, social, privacy and physical risks. They, however, suggested that social risk is not as important a risk factor as the others and argued against the inclusion of physical risk, stating that e-services have no significant negative consequences on human health.

Cunningham et al. (2005) realised that financial and performance risks were the two most crucial factors that influenced overall risk perception in e-services. In a related study, modelling perceived risks in mobile travel bookings, Park and Tussyadiah (2016) developed a second-order model comprising all the above as well as device risk. They also reported social risk as an unimportant risk dimension in their study.

As PR is situation specific, Kim et al. (2013) reasoned that consumers could face possible difficulties with the failure of a mobile technology, such as low batteries, unpermitted access to the device and interruptions. Similarly, Yang and Zhang (2009) observe that there is a dichotomy between purchasing travel products via mobile phones and from traditional 'bricks-and-mortar' outlets or web-based shopping because mobile phones have location and time aware systems, hidden and unconscious processing, smaller screens and immediacy. Furthermore, mobile phones, in comparison to PCs, are more vulnerable to threats/attacks such as: malware, spyware, botnets, sniffing, drive-by-downloads, automatic data transmission, and device theft (Markelj & Bernik, 2015). Thus, previous studies (see Lee, McGoldrick, Keeling, & Doherty, 2003; Park & Tussyadiah, 2016) confirm the appropriateness of Jacoby and Kaplan's (1972) risk dimensions (i.e. financial, performance, physical, psychological and social risks) to mobile services research (see Table 1). The foregoing conceptualisation of PR towards ICT shows that past studies have been particularly interested in understanding risks related to technology while ignoring the context within which that technology is being used. Thus, this study aims to advance the existing research by integrating both technology and destination related risks into one research programme, in order to investigate the interdependencies of these factors.

2.2.2. Integrating technology related and destination related risks

Tourism consumption, be it corporeal or virtual, occurs within a 'destination' whose characteristics can affect the tourists' perceptions of risk towards their use of smartphones. Support for this argument is found in a study by Khan, Abbas, and Al-Muhtadi (2015), which contends that a mobile user's physical location has a direct impact on the amount of risk they get exposed to. Their study shows, for example, that the unreliability of the technology infrastructure, such as open wireless technology, poses risks to users, as do slow download speeds (Khan et al., 2015; Luo et al., 2010; Pasquinucci, 2009). Situational factors, such as those mentioned previously, can result in different PR that needs to be understood by researchers. Moreover, Vanola (2013) also hints that tourism destinations can collect information about mobile users' activities, which may be highly personal (such as their exact location), using intelligent systems that could be considered a potential threat to their privacy. Hence, an evaluation of intelligent systems in tourism is required to assess not only their capacity to help people during travel but also their capacity to potentially harm users or infringe on their privacy (Vanola, 2013). It is highly likely that PR is

Table 1
Dimensions of PR adapted to the context of smartphone usage.

	Facts of PR	Definition/Description
1	Financial risk	The probability of unexpected financial loss resulting from the use of a smartphone, such as a mobile Internet fee (Featherman & Pavlou, 2003).
2	Performance risk	The probability of disappointment emanating from poor product quality (Jacoby & Kaplan, 1972).
3	Time risk	The possibility of a smartphone user losing, or wasting, time due to navigation challenges (Cunningham et al., 2005).
4	Psychological risk	The probability that using a smartphone can negatively affect a user's peace of mind and self-image – resulting in frustration and stress (Jacoby & Kaplan, 1972).
5	Social risk	The probability that using a smartphone service will make one look untrendy or foolish before peers or reference groups (Featherman & Pavlou, 2003).
6	Security risk	The probability of a smartphone user getting their credit card information compromised due to the use of a smartphone resulting in money loss or fraud (Hanafizadeh & Khedmatgozar, 2012).
7	Destination-physical risk	The likelihood of losing one's phone or of being attacked for possessing it (Khan et al., 2015; Markelj & Bernik, 2015).
8	Destination-infrastructure risk	The risk associated with the malfunctioning of Internet infrastructure or exposure to fraud/cybercrime (Khan et al., 2015; Roehl & Fesenmaier, 1992).

affected by the technology infrastructure of a place since smartphones cannot fully function without such infrastructure.

Furthermore, there is significant evidence that mobile users risk losing their mobile devices (through mobile theft) due to their portable nature (e.g. Markelj & Bernik, 2015; Khan et al., 2015). For example, Khan et al. (2015) argue that physical security risk is the most salient risk for mobile users because a pilfered device may result in the loss of sensitive information that could put the owner at risk of losing money or other confidential information. The discussion above clearly indicates that any efforts to comprehend risk perceptions towards smartphone usage should use an integrative approach to consider not only the risks of using the technology, as has been done by previous researchers (Kim et al., 2009; Park & Tussyadiah, 2016), but also the risks associated with a specific destination.

Cognisant of these findings, this study proposes that PR towards smartphones can be grouped broadly into technology risks (i.e. related to financial, social, time, psychological, performance and security) and destination related risks (i.e. infrastructure risk and destination-physical risk). Table 1 provides detailed definitions of each type of risk.

H1. PR towards the use of a smartphone is a phenomenon comprising information technology risks and destination risks – indicated by financial, performance, social, time, psychological, security, destination-physical, and destination-infrastructure risks.

2.2.3. Determinants and consequences of PR

Factors that influence PR have been identified not just within the general consumer literature but also, more specifically, within the ICT literature (Lim, 2003; Crespo, del Bosque and de los; Salmones, 2009; Chen, 2013). Evidently, PR is an intricate subject that may radiate from the consumer, product, purchasing context or underlying technology (Park & Tussyadiah, 2016). Within this intricate context, this research has focused on the influences of four factors, namely: familiarity, observability, innovation, and trust, on backpackers' PR towards the use of smartphones. The results of studying these variables should offer useful insights, not just to service marketers who are in the business of providing services to backpackers, but also to mobile marketers and to suppliers in general. The four aforementioned factors are considered next.

First, familiarity relates to the degree to which one becomes conversant with the functionalities of the mobile phone (Kim, Ferrin, & Reo, 2008). It has been proven to influence PR in information technology. Familiarity reduces not only consumer PR and uncertainty but also the complexity of a technology (Gefen, 2000) through an understanding of how to search for information and undertake a gamut of activities using ICTs. Therefore, the study conjectures that:

H2. Familiarity has a negative influence on backpackers' PR of using smartphones.

Second, observability is one of five factors previously theorised as being important elements of innovative attitudes. It is defined as “the degree to which the results of the innovation are visible to others” (Rogers, 1995 p. 16). Vishwanath and Goldhaber (2003) assert that the exposure of an innovation is enhanced by its visibility because the latter engenders discussion about the innovation by a social group, which in turn leads to the speedy diffusion of the innovation. Consequently, previous research (e.g. Moore & Benbasat, 1991) in the domain of information communication has shown an inverse relationship between visibility and PR. The more visible and communicable the innovation, the more likely it is to reduce uncertainties and risk perceptions among its users. Therefore, the study proposes that:

H3. Smartphone observability has a negative relationship with the PR of using smartphones.

Third, innovation refers to the degree to which people are ready to accept/adopt or experience new products (Aldás-Manzano, Lassala-Navarre, Ruiz-Mafe, & Sanz-Blas, 2009). In parallel, it also relates to one's risk-taking tendencies. In technology related services, studies have supported the relationship between innovation and risk-taking propensity (e.g. Gerrard & Cunningham, 2003). Aldás-Manzano et al. (2009) note that innovation is a personality trait that reduces consumers' PR of the Internet and, thus, it is a predictor of risk-taking behaviour among online consumers. Likewise, Park and Tussyadiah (2016) found an inverse relationship between innovation and PR in mobile travel booking; thus, as innovation increases, PR decreases. It is proposed hereafter that:

H4. Backpackers' innovativeness has a negative relationship with PR towards the use of smartphones.

The fourth and final factor is trust, which the extant literature confirms as having a relationship with risk taking (Luo et al., 2010). Trust is an individual's attitude based on personal beliefs about the features of another hence consumers may behave in a certain way while assuming that others will react in accordance with their expectations. Particularly, with respect to ICT systems where users are faced with the uncertainty of privacy and security, trust becomes a crucial element in ameliorating those uncertainties. Some studies have thus reported a negative relationship between trust towards online merchants and PR of using such services (Chang & Chen, 2008). Luo et al. (2010) established that trust in online banking systems reduces risk perceptions towards using such services. In addition, other studies (e.g. Jarvenpaa & Tractinsky, 1999) have demonstrated that trust positively affects intentions to use information technology. This paper thus proposes that:

H5. Backpackers' trust in smartphone services is negatively related to their PR towards the use of smartphones.

H6. Backpackers' trust in smartphone services influences their intentions to use the device for future travel needs.

Regarding the outcomes of PR, past studies have explored the effect of PR on behavioural intention (see Featherman & Pavlou, 2003; Park & Tusseyadiah, 2016). For example, Chang and Chen (2008) found that PR negatively affects the intention of online shopping. Relatedly, satisfaction has been studied as an important concept in consumer behaviour (Sohn, Lee, & Yoon, 2016), and one that is often affected by PR. Johnson, Sivadas, and Garbarino (2008) found a negative relationship between consumer PR and satisfaction. Hence, as risk concerns increase, satisfaction gets penalised. Moreover, some studies (e.g. Baker & Crompton, 2000) found satisfaction to be a significant predictor of consumer behavioural intention suggesting that the more positively consumers evaluate a service or product the more likely they are to reuse or recommend it to others. In the current study, satisfaction has been measured in two ways: 1) satisfaction with the smartphone, and 2) satisfaction with travel experience. From these, the study suggests that:

H7. There is an inverse relationship between PR and satisfaction with smartphone services.

H8. There is an inverse relationship between PR and satisfaction with travel.

H9. PR towards the use of smartphones has an inverse relationship with the intention to use the device for future travel needs.

H10. Satisfaction with travel positively influences intention of future use.

H11. Satisfaction with smartphone services positively influences intention.

2.2.4. Risk reduction strategies

Extant research on consumer behaviour suggests that consumers who perceive or experience risk (beyond containable limits) either delay their purchases, develop strategies for reducing the risk or even think of alternative product/services (Roselius, 1971). This proceeds from the premise that after consumers feel predisposed to any form of uncertainty in a purchase situation, logically they would make attempts to reduce the potential negative consequences by employing a risk reduction strategy (ies) (Mitchell, Davies, Moutinho, & Vassos, 1999). Also known as a risk-reliever, Roselius (1971) describes a risk reduction strategy as any specific strategy or action taken by a consumer to reduce the impact of an uncertainty in a decision-making process. Arguably, research on risk reduction was initiated by Cox (1967) who identified two main ways by which consumers reduce PR: 1) the search for information about the products, or 2) reliance on the experience of other people – family and friends. Congruently, brand loyalty, store image, free trials, price reduction, chatroom assistance, money-back guarantee, word-of-mouth, special offers and private testing have all been suggested as useful risk-relievers used by businesses (Cases, 2002; Roselius, 1971).

In the field of travel and tourism, some risk reduction strategies have also been reported though the literature is generally very scant with regards to information technology. Kim et al. (2009) found the reputation of web vendors, well-known brands, symbol of security approvals, recommendation of family and friends, and reading of product information as important risk-relievers in the context of online air ticket purchasing. However, they excluded ‘money-back guarantee’ as a risk reliever arguing that services are often sold out without such guarantees. Similarly, Reichel et al. (2009), in their study on backpackers, found as risk-relievers the search for information in stores, on the Internet, and from travel agents. Likewise, Adam (2015) gleaned that travelling in the company of friends, avoiding crowded areas, and using local tour guides were all important risk relievers for backpackers abroad. Regrettably, no study in tourism to date, has focussed on personal risk reduction strategies in the use of mobile technology during travel, which is probably explained by the very limited research on PR in mobile technology in tourism.

2.3. Research setting

Ghana is one of the promising tourism destinations in sub-Saharan African that endears itself to various types of travellers including backpackers (Dayour, 2013; Adam, 2015; Ministry of Tourism [MOT], 2015). Nonetheless, the country is characterised by ICT security issues and other physical-safety related issues.

This map was produced by the authors specifically for this journal article.

The unreliability and unavailability of Internet connectivity in some parts of the country, as well as the activities of cybercriminals popularly known as ‘sakawa’, have been reported (Ministry of Communications, 2014). Thus, some residents and foreigners have become victims of cybercrime activities and threats while in the country. As a result, the US Federal Bureau of Investigation (FBI), (2015) and the United Kingdom Foreign and Commonwealth Office Travel Advisory (2015) alerted their citizens travelling to Ghana and other affected countries in sub-Saharan Africa to be cautious of using mobile phones and free Wi-Fi connections. In addition, Adam and Adongo (2016) also examined issues of crime against budget travellers in Ghana and realised that the tourists suffered from fraud and larceny (especially mobile phones). This made Ghana a suitable milieu for studying both technology risk and destination related risks (Fig. 1).

3. Methodology

3.1. Research design

This study adopted a quantitative-dominant (QUAN + qual) concurrent embedded mixed methods design (involving a survey and semi-structured interviews) (Johnson & Onwuegbuzie, 2004) to study backpackers' PR towards smartphone usage, as well as their risk reduction strategies. The reason why a sequential mixed methods design was not tenable in this study was the fact that the study did not have to go through a process of developing a new survey instrument as there were existing constructs and items ready for use. Rather, this study piloted existing constructs necessary for the model and then, proceeded to conduct the main research using quantitative and qualitative methods contemporaneously. In terms of timing (Johnson & Onwuegbuzie, 2004; Creswell & Plano Clark, 2007), both methods in this study were employed at the same time. Notably, while the quantitative dimension of the study investigated backpackers' risk perceptions, as well as drivers and outcomes, the qualitative part of the study examined their perceptions (i.e. to corroborate the quantitative results) and especially risk reduction strategies. Fig. 2 depicts the research design in this study.

In using mixed methods in this study, while PR towards smartphone usage, as well as drivers and outcomes were measured (based on existing a priori theoretical constructs) and analysed quantitatively (Study A), semi-structured interviews were used to explore risk reduction strategies and to offer diversity in the results (Study B). While different methods were used in collecting and analysing the data, the discussion, conclusions and implications were jointly done based on the different data sets. The different methods used in addressing the research questions for this study are discussed as follows.

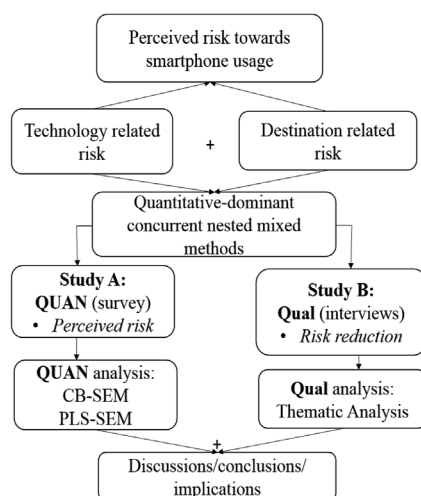
3.2. Methods for study A – quantitative approach

3.2.1. Development of research instruments

Data were collected using a structured questionnaire to measure PR as well as antecedents and outcomes. The questionnaire was developed based on a priori measurements and revised to fit the context of tourism regarding smartphone usage (using a five-point Likert scale). The instrument comprised five main parts. The first part contained measures on PR towards information technology: financial, performance, time, psychological, social, security and destination: destination-physical,



Fig. 1. Map of Ghana showing backpacker trails.



Note: Uppercase shows where emphasis lies; "+" stands for concurrent

Fig. 2. An illustration of how mixing of methods was done in the study. Source: Adapted from Johnson and Onwuegbuzie (2004) and Tashakkori and Creswell (2007).

and destination-infrastructure risks. The second part asked respondents questions about the proposed drivers of PR: familiarity (Kim, Ferrin, & Rao, 2008), observability (Park & Tussyadiah, 2016), innovation (Aldás-Manzano et al., 2009), and trust (Luo et al., 2010). The third part focussed on the consequences of PR: satisfaction with smartphone (Baker & Crompton, 2000), satisfaction with travel (Chi & Qu, 2008), and intention (Featherman & Pavlou, 2003). The fourth part looked at travel characteristics: travel party size, experiences with backpacking and smartphones. The last part of the survey contained the socio-demographic characteristics of backpackers, such as gender, age, educational qualification, and nationality. There were two screening questions to identify a valid sample – whether a potential respondent was a backpacker and used a smartphone during travel in Ghana or not.

3.2.2. Data collection and procedure

Face validity and content validity checks (Chen & Huang, 2017) were conducted before the survey. Academic experts and doctoral students in tourism were asked to assess whether the statements made sense and wielded aptness and structure. A pilot study was, then, conducted involving sixty (60) respondents to enhance the wording and relevance of questions (Dayour, Adongo, & Taale, 2016). Last, the questionnaire and interview guide were finalised and administered in English Language. Past studies (e.g. Dayour et al., 2016) argued that most tourists in Ghana read and write in English.

The target population for the study were international backpackers who visited Ghana between September 2016 and February 2017. In this study, a 'backpacker' is simply one who identifies himself or herself as such (see Adam, 2015; Hunter-Jones et al., 2008) in either a budget accommodation or at an attraction. Thus, potential respondents should have 1) identified themselves as backpackers and 2) using a smartphone for travel to qualify for inclusion (Dayour et al., 2017). Those who failed to meet the two criteria were replaced before the next count – until the sub-sample allocated for an attraction or accommodation was achieved (Adam, 2015). Convenience sampling was employed in selecting cases at every 3rd interval at reception areas of hotels and attractions (during check-out) (Adam, 2015) in Greater Accra, Central, Northern and Ashanti regions. A total of 800 questionnaires were returned between October 2016 and January 2017 out of which 567 were found useful after expunging uncompleted questionnaires.

3.2.3. Data analysis

Descriptive statistical analysis was performed to offer a general view on the sample characteristics and distribution. The study used different techniques in the validation of measurements and structural models. The Confirmatory Factor Analysis (CFA) technique in Amos 22 was used to determine how well the overall model, as well as the second-order model of PR fit the dataset. Though fit measures exist in Partial Least Squares Structural Equation Modelling (PLS-SEM) are not fully transferable to PLS-SEM (Hair et al., 2017). This made the CFA, involving maximum likelihood estimation, the best approach for validating the two measurement models of the study. Particularly, the validity and reliability tests were conducted using the aforementioned procedure. Nevertheless, PLS-SEM was used in estimating the proposed structural model due to the advantages it has over CB-SEM. First, unlike the CB-SEM which is sensitive to sample size and sample distributions (i.e. data must assume a normal distribution), PLS-SEM is relatively less sensitive to such assumptions in order to generate reliable results (Wong, 2013). In this study, the assessment of the skewness and kurtosis (using < -1 and $> +1$ threshold) confirmed that the dataset was not symmetrically distributed (see Appendices 1, 2 & 3) hence one of the justifications for using PLS-SEM to test the proposed model. Second, PLS-SEM is suitable for testing conceptual models with hypothesised complex relationships (Chin, 1998). Third, PLS-SEM is recommended when one wants to explore relationships between variables or extend an existing structural theory (Wong, 2013).

For fit indices, the following thresholds in the literature were used as benchmarks: chi-square (χ^2/df) less than 3, goodness-of-fit index (GFI) ≥ 0.90 , adjusted goodness-of-fit index (AGFI) > 0.90 , comparative fit index (CFI) ≥ 0.90 , Tucker-Lewis index (TLI) > 0.95 , standardised root mean square error residual (SRMR) < 0.08 , and root mean square error of approximation (RMSEA) < 0.08 , average variance extracted (AVE) ≥ 0.50 , factor loadings (≥ 0.50), and composite reliability (> 0.70) and Cronbach's alpha [> 0.70] (Bagozzi, Yi, & Phillips, 1991; Fornell & Larcker, 1981).

4. Findings of study A

4.1. Sample profiling

A total of 800 questionnaires were administered, out of which 567 were found usable resulting in a response rate of 70%. Female respondents (68.8%) outnumbered their male (31.2%) counterparts in the study and approximately 59.8% were between 20 and 29 years. Most of the respondents were single (87.5%) and a little more than half (55.0%) were college or university educated. As to occupation, about 59.3% were still schooling (presumably for another degree). Also, most respondents originated from Europe (71.4%) with Germans (20.6%) and

Dutch (8.3%) constituting the bulk of Europeans. The study revealed that most respondents had been backpacking for up to 5 years (63.9%) whereas another 27.7% had backpacked between 5 and 10 years. Nearly 75.7% of them used budget accommodation facilities and about 62.4% patronised the services of 'trotro' (a local public transport system in Ghana). More so, most backpackers travelled with companions (78.5%) mostly in groups of 3. Regarding smartphone usage during travel, 72.9% had used the device for up to 5 years and another 26.1% for between 5 and 10 years. The topmost activity undertaken with their smartphones was social media networking, such as Facebook, WhatsApp, Instagram, and Snapchat among others. For the in-depth interviews involving 15 backpackers, there were 7 males and 8 females aged between 18 and 35 years.

4.2. Descriptive statistics on measurements

This section presents backpackers' specific reactions regarding individual items on different risk facets used in this study. Notably, the mean scores, Standard Deviation (SD), skewness and kurtosis are presented – based on a 5-point Likert scale as follows: 1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree (see Appendices 1, 2 & 3).

4.2.1. Perceived risk of using smartphones

From Appendix 1, the mean scores of items show that backpackers were somewhat ambivalent about the risk of using their smartphones during travel, especially information technology risks. However, while the overall mean score for destination-physical risk (mean = 3.2; SD = 1.2) shows that backpackers were indifferent about it, the risk of getting one's mobile phone stolen was expressed as a concern among backpackers (mean = 3.5; SD = 1.1).

In relation to destination-infrastructure risk in general, backpackers had quite a neutral view about the risk of using their smartphones (mean = 3.0; SD = 1.2). Likewise, for technology risks, except for security risk (mean = 2.8; SD = 1.3), financial risk (mean = 2.5; SD = 1.2), and performance risk (mean = 2.7; SD = 1.2) that backpackers were impartial about, they did not show much concern about time (mean = 2.2; SD = 1.2), psychological (mean = 2.1; SD = 1.2), and social risks (mean = 2.0; SD = 1.1). Generally, the kurtosis and skewness results indicated that the data was not normally distributed (based on < -1 and $> +1$ threshold) for financial, time and security risks.

4.2.2. Antecedents of their risk perception

Akin to Section 4.2.1, the mean scores and SD for each item were reported based on a 5-point Likert scale (see Appendix 2). Excluding the general uncertainty about the innovativeness in using smartphones (mean = 2.8; SD = 1.2) and observability of its utility and features (mean = 3.1; SD = 1.0), backpackers acknowledged that they were familiar with using their smartphones (mean = 4.3; SD = 1.0) and trusted them as well (mean = 3.6; SD = 1.0). However, there were kurtosis and skewness issues in terms of familiarity.

4.2.3. Consequences of their risk perception

From Appendix 3, it is evident that though backpackers were satisfied with their overall travel experience (mean = 4.1; SD = 1.0), they were somewhat unresolved when it came to satisfaction with using their smartphones (mean = 3.4; SD = 1.2). However, most did express their intentions to reuse their smartphones for future travels (mean = 4.3; SD = 1.0). Again, the distribution of data for intentions to reuse a smartphone and satisfaction with travel appear asymmetrically distributed.

4.3. Inspection for common method variance (CMV)

CMV can lead to measurement errors, threatening the validity of

one's conclusions due to inflations in the true correlation estimates among latent constructs (Agag & El-Masry, 2016). This study checks for CMV in two (2) ways: First, as shown in Table 3, an inspection of the correlation matrix specifies values less than 0.72 which means that correlations among latent variables are not very high ($r > 0.90$) (Park & Tusseyadiah, 2016). Second, the Harman's single-factor assessment was also used as a test criterion for CMV (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The absence of CMV was apparent from this analysis as the first (largest) factor accounted for 18% which was below the cut-off point of 50%. Thus, the criteria above confirm the absence of common methods bias in this current study.

4.4. Validation of conceptual model using CFA

A fitness test for the proposed model involving all fifteen (15) constructs was performed using Amos 22. The factor correlations, loadings, model fit indices, as well as factorial validity and reliability are reported. Factor loadings were inspected for all 50 indicators in the model and loadings below 0.5 were removed (Filieri, Algezau, & Mcleay, 2015). As a result, one (1) item for financial risk (FR3), performance risk (PR1), and innovation (INO2) were removed for falling below the cut-off point of 0.5. As per Table 2, all factors loaded significantly ($p < 0.001$) between 0.50 and 0.97 which is indicative that the interrelationships between items and associated constructs were high hence unidimensionality was achieved. In addition, for the purposes of ensuring internal consistency of the measurements, the Cronbach's alpha and construct reliability values (Table 2 & Table 3) were checked against the lower limit of 0.7 (Bagozzi & Yi, 1988). The values for both composite reliability (between 0.75 and 0.95) and Cronbach's α (between 0.75 and 0.95) averaged above 0.7 suggesting that latent variables exhibit adequate internal consistency.

Table 3 shows that the indicators for various constructs correlated well among themselves as shown by the AVE scores averaging above 0.5. Likewise, discriminant validity measures how constructs are truly different from each other empirically (Hair et al., 2017). Following the Fornell and Larcker (1981) criterion, the square root of AVE for constructs as shown diagonally in boldface are higher than the inter-correlation between those constructs and others (Table 3). Moreover, items loaded better on their associated latent constructs than on other factors and are statistically significant (at $p < 0.001$) (Chin, 2010). Doubled with these criteria, was the Heterotrait-Monotrait (HTMT) ratio assessment (Henseler, Ringle, & Sarstedt, 2015) which further confirms that the confidence interval of the HTMT does not include 1 suggesting that all constructs are indeed valid measurements of unique concepts in this study.

The adequacy of the model regarding its ability to mirror variance and covariance of the dataset was validated using the goodness-of-fit in CFA (Kline, 2011). However, due to the sensitivity of chi-square (χ^2/df) to sample size (Lee, 2009), other surrogate indices in the extant literature, such as GFI, AGFI, CFI, TLI, SRMR, and RMSEA were equally assessed (Lee, 2009). In this study, the χ^2/df value was below 3 (Kline, 2011) but significant ($p < 0.001$) thus there was not 'badness-of-fit' for the proposed model. Therefore, other indices assessed (i.e. GFI = 0.90, AGFI = 0.90, CFI = 0.96, TLI = 0.95, SRMR = 0.06, and RMSEA = 0.03) confirmed that the proposed conceptual model has a good fit.

4.4.1. Second-order (mode A) hierarchical latent construct of PR

The CFA was used to confirm the suitability of modelling PR as a second-order hierarchical latent construct involving eight (8) dimensions before including into the nomological network of the structural model. This was performed using a reflective-reflective model (molecular model) in which indicators are affected by the latent construct(s) (Wetzels, Odekerken-Schroder, & van Oppen, 2009). To Becker, Klein, and Wetzels (2012, p. 363), "... this type of hierarchical latent variable model is most appropriate if the objective of the study is to find the

Table 2
Confirmatory factor analysis output.

Constructs	Indicators	Factor Loadings	S.E.	t-statistic	Cronbach's Alpha
Financial Risk (FR)	FR1	0.77	0.09	10.73	0.75
	FR2	0.78	–	–	
Performance Risk (PR)	PR1	0.75	0.05	17.44	0.78
	PR2	0.89	–	–	
	PR3	0.58	0.05	13.39	
Time Risk (TR)	TR1	0.83	0.05	17.29	0.76
	TR2	0.50	0.04	11.45	
	TR3	0.88	–	–	
Psychological Risk (PSYR)	PSYR1	0.86	0.04	25.86	0.90
	PSYR2	0.89	0.04	27.29	
	PSYR3	0.86	–	–	
Social Risk (SOR)	SOR1	0.76	0.05	18.98	0.86
	SOR2	0.90	0.05	22.03	
	SOR3	0.79	–	–	
Security Risk (SECR)	SECR1	0.87	0.04	25.55	0.89
	SECR2	0.87	0.04	25.24	
	SECR3	0.85	–	–	
Destination-physical Risk (DPHR)	DPHR1	0.77	0.05	19.033	0.85
	DPHR2	0.80	0.05	19.74	
	DPHR3	0.84	–	–	
Destination-infrastructure Risk (DINFR)	DINFR1	0.55	0.05	13.67	0.81
	DINFR2	0.93	0.04	25.94	
	DINFR3	0.86	–	–	
Familiarity (FAM)	FAM1	0.95	0.03	39.78	0.95
	FAM2	0.97	0.02	41.72	
	FAM3	0.79	0.03	30.71	
	FAM4	0.91	–	–	
Observation (OBS)	OBS1	0.78	0.06	14.33	0.80
	OBS2	0.86	–	–	
Innovation (INO)	INO1	0.66	0.06	15.09	0.80
	INO2	0.82	0.06	18.08	
	INO3	0.59	0.06	13.48	
	INO4	0.80	–	–	
TRUST (TRU)	TRU1	0.86	0.04	25.97	0.90
	TRU2	0.87	0.04	26.75	
	TRU3	0.88	–	–	
Satisfaction with smartphone (SATSP)	SATSP1	0.78	0.03	25.25	0.94
	SATSP2	0.89	0.03	33.25	
	SATSP3	0.95	0.02	38.69	
	SATSP4	0.91	–	–	
Satisfaction with travel (SATRA)	SATRA1	0.91	0.06	18.64	0.85
	SATRA2	0.80	0.06	17.68	
	SATRA3	0.71	–	–	
	SATRA4	0.97	0.032	32.59	
Intention (INTEN)	INTEN1	0.97	0.033	31.61	0.94
	INTEN2	0.95	0.033	31.61	
	INTEN3	0.78	0.038	25.19	
	INTEN4	0.84	–	–	

S.E. = Standard error; SD = Standard Deviation $p < 0.001^{***}$.

common factor of several related, yet distinct reflective constructs".

As shown in Table 4, this study supports the proposal for a second-order hierarchical latent construct of PR as indicated by eight (8) first-order latent constructs as follows: financial, performance, time, psychological, social, security, destination-physical, and destination-infrastructure risks. The CFA results demonstrate that the proposed second-order construct has a tolerable goodness-of-fit based on the cut-off points in the extant literature. The χ^2/df is lower than 3 as expected (Kline, 2011), GFI = 0.90, AGFI = 0.90, CFI = 0.94, TLI = 0.93, SRMR = 0.09, and RMSEA = 0.05. Except for TLI (0.93) and SRMR (0.09) which, as indicated earlier, varied slightly from the cut-off points (Hu & Bentler, 1999). All other indexes suggest the second-order construct of PR fit the dataset. In addition, all lower-order underlying

Table 3
Latent correlation matrix.

Construct	CR	AVE	1	2	3	4	3	6	7	8	9	10	11	12	13	14	15
1.Satisfaction with Travel	0.852	0.660	0.812														
2.Financial	0.750	0.600	−0.107	0.775													
3.Performance Risk	0.790	0.564	−0.157	0.404	0.751												
4.Time Risk	0.791	0.570	−0.108	0.354	0.255	0.755											
5.Psychological Risk	0.904	0.758	−0.184	0.330	0.269	0.394	0.871										
6.Social Risk	0.860	0.674	−0.209	0.274	0.251	0.418	0.643	0.821									
7.Security Risk	0.897	0.743	−0.088	0.387	0.547	0.219	0.417	0.360	0.862								
8.Destination-physical Risk	0.845	0.646	0.007	0.146	0.273	0.186	0.470	0.332	0.425	0.804							
9.Destination-infrastructure Risk	0.829	0.629	−0.056	0.336	0.543	0.207	0.385	0.353	0.723	0.517	0.793						
10.Familiarity	0.948	0.821	0.463	−0.058	−0.132	−0.171	−0.203	−0.201	−0.020	0.108	−0.001	0.906					
11.Observability	0.802	0.670	0.381	−0.034	−0.147	−0.114	−0.118	−0.132	−0.022	0.118	0.005	0.502	0.819				
12.Innovation	0.813	0.525	−0.056	0.072	−0.047	0.033	0.146	0.175	0.062	0.068	0.087	0.054	0.138	0.725			
13.Trust	0.903	0.757	0.220	−0.075	−0.240	−0.100	−0.086	−0.073	−0.053	−0.001	−0.060	0.351	0.424	0.329	0.870		
14.Satisfaction with phone	0.936	0.786	0.227	−0.015	−0.068	−0.072	−0.041	−0.056	−0.035	−0.005	−0.017	0.187	0.120	0.115	0.182	0.887	
15.Intentions	0.936	0.787	0.528	−0.141	−0.145	−0.150	−0.188	−0.150	−0.017	0.097	−0.008	0.522	0.476	0.161	0.352	0.285	0.887

Note: Average Variance Extracted (AVE) scores show diagonally (in boldface). Composite/Construct reliability (CR) > 0.7; AVE = > 0.5.

Table 4
CFA analysis of PR as a reflective second-order latent factor.

Paths	Factor Loadings (β)	t-statistic	p-value
Financial risk <— PR	0.47	—	—
Performance risk <— PR	0.59	7.96	***
Time risk <— PR	0.54	5.56	***
Psychological <— PR	0.73	7.85	***
Social risk <— PR	0.66	7.38	***
Security risk <— PR	0.76	8.70	***
Destination-physical risk <— PR	0.62	7.27	***
Destination-infrastructure risk <— PR	0.75	8.53	***

P < 0.001***; χ^2/df = 2.94***; GFI = 0.90, AGFI = 0.88, CFI = 0.94, TLI = 0.93, SRMR = 0.09, RMSEA = 0.05.

constructs loaded significantly (at $p < 0.001$) between 0.55 and 0.83 on PR.

The amount of variance explained in the underlying latent factors by the second-order model ranges between 23% and 59% (see Fig. 3). The results specify that security ($\beta = 0.76$; $r = 59\%$), destination-

infrastructure ($\beta = 0.75$; $r = 56\%$), psychological ($\beta = 0.73$; $r = 53\%$), social ($\beta = 0.66$; $r = 44\%$), destination-physical ($\beta = 0.62$; $r = 38\%$) and performance ($\beta = 0.59$; $r = 34\%$) risks appear to have had a relatively high influence on backpackers' risk perceptions regarding the use of smartphones than time ($\beta = 0.54$; $r = 29\%$) and financial ($\beta = 0.47$; $r = 23\%$) risks. Therefore, these results demonstrate that PR can include risk facets reflecting both technology and destination related risk.

4.4.2. Assessing the quality of the two different models

One of the major postulations of this study was that PR towards the use of smartphones involves both information technology and destination risk factors that need to be understood. Consequently, using CFA the study compares the initially proposed model of PR involving six (6) latent constructs (Featherman & Pavlou, 2003; Park & Tussyadiah, 2016) with the current model comprising eight (8) latent constructs. While the former which involves factors, such as financial, performance, time, psychological, social and security risks can generally be described as information technology (IT) risk, the latter, encompassing destination-physical risk and destination infrastructure risk can be labelled destination risk (DR). Therefore, it can be argued in this study that a combination of both IT and DR risks offer a holistic and

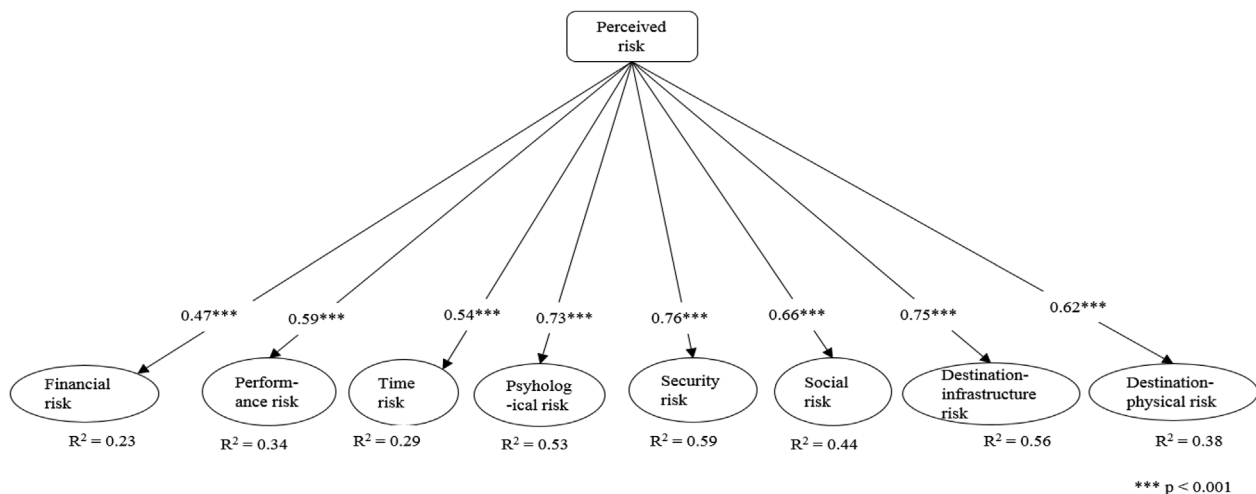


Fig. 3. Second-order CFA model of PR.

Table 5
Fitness comparison between the initial and alternate model of PR.

	χ^2/df	SRMR	CFI	TLI	RMSEA	AIC
Initial model ^a of PR with six (6) latent constructs.	3.55	0.10	0.94	0.93	0.07	419.27
Alternate model ^b of PR with eight (8) latent constructs.	2.94	0.09	0.94	0.93	0.05	826.51

Note: ^a Initial model has six (6) underlying constructs. ^b Alternate model has (8) underlying constructs.

comprehensive understanding of PR towards smartphones usage.

Table 5 shows evidence of improvement in the fit indices of the current model in terms of χ^2/df , SRMR, RMSEA and AIC while CFI and TLI remain unchanged. Notably, the χ^2/df of the revised model (2.94) appears much better than the initial model (3.55) which comprises only IT risk facets. Thus, this study empirically supports the argument that PR towards the use of smartphones is better understood using eight (8) constructs (i.e. financial, performance, time, psychological, social, security, destination-physical and destination-infrastructure risks) than the original theorisation in the extant literature.

4.5. Assessing structural model

The test results of the proposed conjectural statements are shown in Table 6. Non-significant paths are illustrated in dotted lines. In Fig. 4, the proposed model accounts for 6% of the variance in PR, 31% in intention to reuse a smartphone for future travel, 2% in satisfaction with travel, and none in satisfaction with smartphone.

The bootstrapping routine as suggested by Hair et al. (2017) was performed using a sample of 5000 to calculate the *t*-statistic and strength of relationships between predictors and endogenous variables (Table 6). The results indicate that PR towards the use of smartphones was jointly predicted by familiarity ($\beta = -0.09$, $p < 0.05$), innovation ($\beta = -0.19$, $p < 0.001$), and trust ($\beta = -0.13$, $p < 0.001$) except observability ($\beta = 0.00$, $p < 0.93$). Thus, hypotheses H2, H4, and H5 were supported. Further, intention to reuse smartphone for travel related purposes was significantly influenced by trust ($\beta = 0.22$, $p < 0.001$), travel satisfaction ($\beta = 0.40$, $p < 0.001$), and satisfaction with smartphone ($\beta = 0.15$, $p < 0.001$), except PR ($\beta = -0.02$, $p < 0.56$). Finally, PR significantly influences travel satisfaction ($\beta = -0.15$, $p < 0.001$) but not satisfaction with the smartphone ($\beta = -0.07$, $p < 0.17$) and the intention to reuse it for future travel needs ($\beta = -0.02$, $p < 0.55$). Therefore, the model also supported H6, H8, H10 and H11.

The contribution of a predictor(s) to the variance explained in an endogenous latent variable was assessed by the effect size (f^2) test in PLS-SEM (Hair et al., 2017). Using guidelines (0.02 = small, 0.15 = medium and 0.35 = large) suggested by Cohen (1988) for assessing f^2 , the results reveal no (0.00) to medium (0.21) effect size on

the variance explained by the model. While trust (0.02) and innovation (0.04) had a relatively small effect on the prediction of PR, familiarity and observability had no contribution. PR had a small (0.03) contribution to the prediction of satisfaction with travel but had no influence on satisfaction with smartphone and intention to reuse smartphone. Further, satisfaction with travel and with smartphone had medium (0.21) and small (0.03) effects respectively on intention to use smartphone. In parallel, trust had a small (0.07) contribution to the variance explained in intention.

Hair et al. (2017) also recommend the estimation of the Stone-Geisser's Q^2 value. This is an out-of-sample predictive power technique used to assess the predictive relevance of a PLS path models. Q^2 values greater than zero (0) indicate the model's predictive relevance/accuracy for a dependent latent variable. In this research, using the blind-folding routine as suggested by Hair et al. (2017), estimates were used to replace actual data points recursively at an omission interval of 5. The analysis unequivocally confirms the predictive relevance of the model for PR (0.02), satisfaction with travel (0.02), and intention to reuse smartphone (0.23).

5. Methods for study B – qualitative approach

5.1. Data collection and procedure

Using the same selection criteria as mentioned above (section 3.2.2), a total of 15 interviews were conducted separately to explore backpackers' risk reduction strategies but preceded by questions on PR. A purposive sampling technique – which deals with the selection of cases that best elicit the right information on a subject matter was used. Specifically, heterogeneous purposive sampling – which involves the deliberate selection of different subgroups (such as males and females) to garner varied opinions on the topic under investigation was employed in selecting backpackers for the semi-structured interviews (Kimbu & Ngoasong, 2013; Saunders, Lewis, & Thornhill, 2015). The study used a semi-structured interview guide and the themes under which interviews were conducted included 1) perceptions of risk and 2) risk reduction strategies. The data collection was terminated when theoretical saturation appears to have been reached (Molina-Azorín, Tarí, Pereira-Moliner, López-Gamero, & Pertusa-Ortega, 2015). Interviews lasted between 30 and 45 min, and for the convenience of respondents, took place at locations chosen by them.

5.2. Data analysis

Thematic analysis was employed to analyse the data (Braun & Clarke, 2006). This facilitated the identification and reporting of patterns (themes) within the data (see e.g. Kimbu & Ngoasong, 2016). Recorded interviews were transcribed and thematically analysed manually using an inductive (grounded analysis) coding techniques (Boyatzis, 1998). The 'member checking' method as suggested by

Table 6
Standardised path estimates and hypotheses testing.

Hypothesis (H)	Paths	Path coefficients	SD	t-statistic	p value	Result
H2:	Familiarity - > Perceived risk	-0.086	0.040	2.12	*	supported
H3:	Observability - > Perceived risk	-0.004	0.047	0.09	n.s	Not supported
H4:	Innovation - > Perceived risk	0.191	0.065	2.93	***	supported
H5:	Trust - > Perceived risk	-0.132	0.043	3.07	***	supported
H6:	Trust - > Intentions to reuse smartphone	0.221	0.038	5.82	***	supported
H7:	Perceived risk - > Satisfaction with smartphone	-0.065	0.047	1.39	n.s	Not supported
H8:	Perceived risk - > Satisfaction with travel	-0.154	0.045	3.46	***	supported
H9:	Perceived risk - > Intentions to reuse smartphone	-0.021	0.035	0.60	n.s	Not supported
H10:	Satisfaction with travel - > Intentions to reuse smartphone	0.400	0.048	8.33	***	supported
H11:	Satisfaction with smartphone - > Intentions to reuse smartphone	0.155	0.034	4.53	***	supported

SD = Standard Deviation n.s = not significant.

p0.05*; $p < 0.001$ ***.

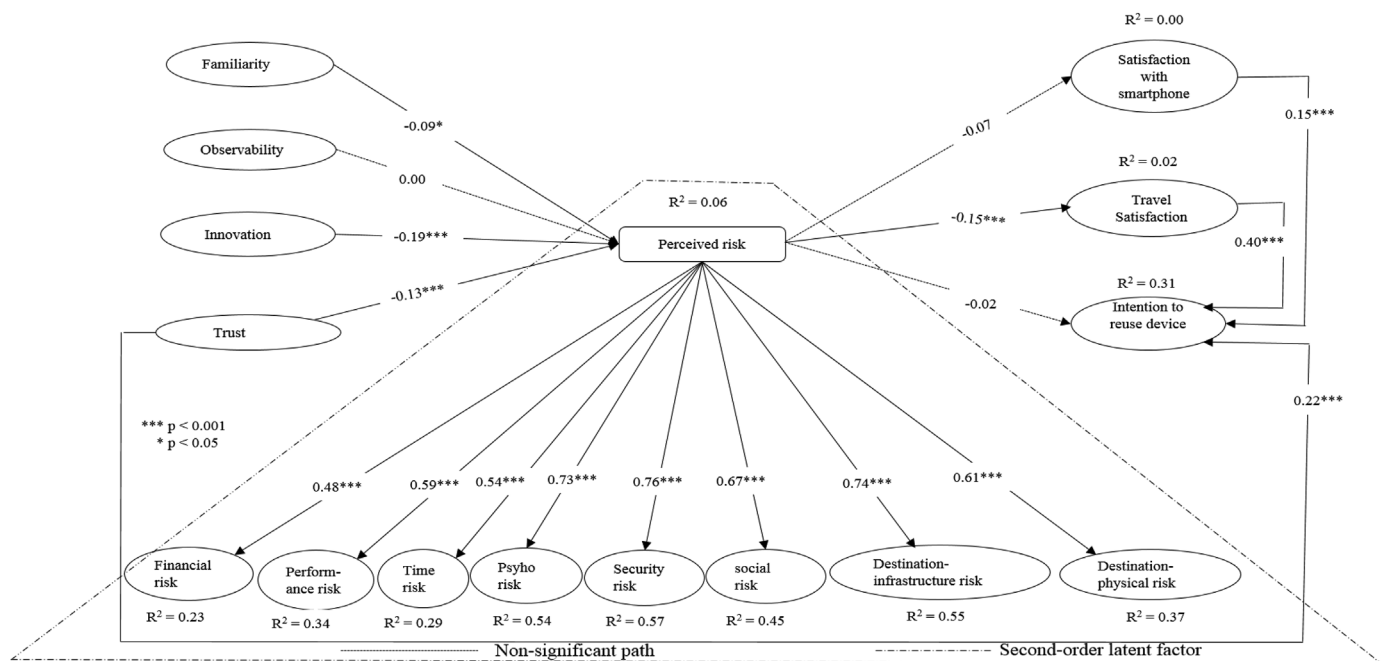


Fig. 4. Structural path model and predictive validity of PR.

Lincoln and Guba (1985) was applied to validate the qualitative results by contacting three (3) of the interviewees to validate them. In reporting this data, pseudonyms (e.g. BP1, BP2, BP3, BP4 etc.) were used in lieu of the actual identities of interviewees.

6. Qualitative findings on risk reduction strategies – study B

The findings presented here reflect the views of 8 women and 7 men across different nationalities (including Germans, British, Dutch, Danish, and Americans aged between 18 and 30 years) who were interviewed.

Notably, the concerns about some of the risk issues captured in the survey were corroborated by the in-depth interviews conducted in this study. Particularly, not only did backpackers verbalise their risk concerns in more depth but they did mention some risk reduction strategies that were in use to manage their risk concerns. These strategies can broadly be classified into cognitive and non-cognitive measures of risk reduction in this current study.

For instance, regarding security risk, the results seem to illuminate a certain sense of distrust among the respondents towards using a smartphone particularly for online banking. Not only did respondents show trepidation towards online banking, but the nature of a smartphone as a mere mobile phone might have intensified it. Yang and Zhang (2009) espouse the view that the features of smartphones such as smaller screen, unconscious and hidden processing, make users unwilling to fully utilise them for Internet related transactions. Thus, some respondents would rather do such transactions using their personal computers than smartphones. For example, BP9 (man) noted that:

... I rather use my personal computer for various important activities, such as electronic payments ... I try to avoid my smartphone, for me, it seems like just a mobile phone, not something you want to trust so much.

It was obvious that the destination's infrastructure risk regarding Internet availability and reliability was also a great risk concern to some respondents. For example, issues to do with the inability of the Internet to support searches on Google, as well as the unavailability of helpful destination apps were underscored as concerns. Hence, a strategy that backpackers used was to remain a bit passive towards depending on smartphones and the Internet for everything in the

country.

I don't have Internet in a lot of places ... it works but a few occasions and I can't connect to WhatsApp or something ... when I am connected it's always fast but in some places, I just do not have Internet. But I think that is okay ... I can be less reliant on my smartphone for information [chuckle] (BP10, woman).

Destination-physical risk of using a smartphone relates to the risk of losing the device through snatching, theft or even robbery. Accordingly, respondents gave a cognitive response to the risk of losing their phones before coming to Ghana – by accepting or coming to terms with themselves that it was a likelihood that could happen. This consciousness, accordingly, suppressed the fears of bringing their smartphones to Ghana. In the words of BP3 (woman):

Before I came to Ghana, I thought about it a lot and in the beginning, I always said it was something that can happen ... I knew it was a risk that is why at first, I didn't want to take my smartphone along with me. I had an iPad because I like to listen to music, it got stolen two weeks ago, I think it's not nice but I think if you know things like that can happen when you are going to a country you can prepare yourself for it ... you just say it is possible, that was how I stayed strong when my iPad got missing.

The findings also suggest an attempt by respondents to guard against one key element of the Routine Activities Theory as proposed by Felson and Cohen (1979). According to this theory, three elements are necessary for any criminal act to occur: a suitable target/victim, a motivated offender and the absence of a capable guardian to stop the interaction between an offender and a victim. Boakye (2010) refers to suitable targetship as the degree to which a tourist becomes an easy prey of victimisation. This may include the reckless exposure of their belongings, such as mobile phones, cameras and wallets among others to motivated offenders. The interaction with respondents showed they employed strategies that prevented them from being suitable targets of crime.

The only thing I am more aware of is that I don't usually use my phone in public, if I am in a trotro (a local public transport system), I don't want someone to take it. But it's the same way in Europe, if you are not careful about your phone in the subway or public, someone can just take it from

you. I try just to keep it ... hide under my bag because I can't afford to replace it (BP10, female).

Moreover, economic considerations also shaped the preventative measures used by backpackers. It was insightful that another way of dealing with the physical risk of losing a smartphone in Ghana was to use a cheaper surrogate. Some respondents stated that it would be more disturbing for them to lose an expensive mobile phone in comparison to a cheaper one. Moreover, holding an expensive one will predispose them to criminal attacks hence some backpackers carried other models of smartphones they considered inexpensive as evidenced in the following quote:

I had some concerns when I was coming to Ghana and just for travelling, I bought a cheap phone so that if I lose it, I wouldn't be bothered [chuckle] ... I wanted something that is cheap and not worthy so if I lose it, it would not be that bad (BP14, man).

The next part of the study discusses the results by integrating both quantitative and qualitative findings.

7. Discussion

The ensuing discussion is a critical analysis and explanation of both quantitative and qualitative findings combined. This study has determined that backpackers' PR towards the use of smartphones are multidimensional comprising of eight underlying risk constructs (listed in order of magnitude from greatest to least), namely: security, destination-infrastructure, psychological, social, destination-physical, performance, time and financial. This current study supports past studies (e.g. Luo et al., 2010; Park & Tussyadiah, 2016) that constructed PR towards information systems (e.g. smartphones) as a multidimensional, latent facet but also offers some interesting insights with regard to backpackers and the context of the study.

7.1. Perceived risk concerns

Security risk ($\beta = 0.76$; $p < 0.001$) surfaced as one of the major risk concerns for backpackers based on Study A and Study B. In the past, this risk concern has been found as one of the greatest inhibitors for consumers engaging in bookings or transactions over information systems, such as smartphones (Hanafizadeh & Khedmatgozar, 2012). Moreover, tourism services are sold without warranties (Parasuraman et al., 1985), hence the purchasers' trepidations about security risk.

Destination-infrastructure risk ($\beta = 0.74$; $p < 0.001$) was expressed as another highly important PR. This finding affirms Khan et al.'s (2015) observations that unreliable technology infrastructure can pose risk concerns among mobile users. In this study, the relatively high ranking of destination-infrastructure risk most likely resulted from the state of Ghana's Internet space, which was still evolving in terms of its WiFi coverage and requisite Internet security. Apparently, Ghana and other West African countries had been flagged for poor cyber security (Ministry of Communications [Ghana], 2014).

Psychological risk ($\beta = 0.73$; $p < 0.001$), which refers to the probability of frustrations and/or disappointment ensuing from unmet needs or the malfunctioning of systems, was also a concern. The backpackers' feelings of frustration and/or anxiety due to security or destination-infrastructure risks had the potential to result in psychological risk concerns. This finding was at odds with Featherman and Pavlou (2003) who established that psychological risk was not of much importance to consumers with respect to e-service adoption.

Featherman and Pavlou (2003) also reported that social risk was trivial in relation to mobile travel booking, whereas in this research, social risk was found to matter to backpackers ($\beta = 0.67$; $p < 0.001$). Pearce (1990) suggested that the culture of backpackers dictates a certain amount of adventure and risk. Thus, social risk may have become a concern to some backpackers because they felt they risked being

seen by friends and peers as unadventurous or showy by possessing a smartphone 'on the road'.

Backpackers did care about destination-physical risk ($\beta = 0.61$; $p < 0.001$), which is the risk of having a phone stolen or of being victimised for holding it. The findings supported both Adam (2015), who revealed that backpackers have physical risk concerns when travelling in Ghana, and Boakye (2012), who maintained that touristic areas are often more suitable for criminals to attack tourists because of their hedonistic appearance. As noted earlier (section 4.3.1), it was evident from the interviews that the risk of losing an expensive smartphone was a significant concern to backpackers in Ghana and one for which they adopted risk reduction strategies.

The low-ranking outcomes for time, financial and performance risks in this study diverged from previous studies (Luo et al., 2010; Park & Tussyadiah, 2016). Time risk ($\beta = 0.54$; $p < 0.001$) was not seen to be a concern for most backpackers presumably because of either: i) the flexible nature of their travel, or ii) their making an efficient use of their time due to being technologically savvy. It is likely that most backpackers did not harbour many financial risk concerns (0.48; $p < 0.001$) since they may not have engaged in activities that had the potential to result in them losing money. Moreover, trepidations about security risks, as discussed earlier, may have discouraged them from performing financial transactions over their smartphones.

7.2. Antecedents and outcomes of PR

Regarding the antecedents of PR, consistent with previous research (Kim et al., 2008), this study confirmed the negative effects of backpackers' innovativeness, trust and familiarity on their risk perceptions. Innovation (which reflects a consumer's proclivity to take risks regarding the use of new mobile technology services) suppressed the backpackers' risk perceptions towards smartphones, as did trust in their device. The youthful nature of most backpackers in this study suggested that most were quite innovative regarding their use of smartphone services for travel (McGlone, Spain, & McGlone, 2011). Consistent with Chang and Chen (2008), backpackers' trust in their smartphones had a negative influence on their PR but a positive effect on their intentions to reuse them for future travel. This finding corroborated Gefen's research (2000) in the e-commerce literature, which found a relationship between familiarity and PR. The tech-savvy nature of most young backpackers suggests that most are able to overcome any complications involved in using their phones and this in turn represses their associated risk perceptions. Observability was not revealed as an antecedent of PR in this study, possibly because backpackers were quite uncertain about the visibility of the outcomes and benefits associated with smartphones when used to purchase travel services.

This study found that PR had an inverse relationship with overall travel satisfaction. This was consistent with previous arguments that risk concerns held by consumers affect their satisfaction with travel experiences (Johnson et al., 2008). However, the study also found that PR had no significant effect on satisfaction with the device and intention to reuse it. This may have been due to the availability, to backpackers, of risk reduction strategies and/or due to their inherent risk resistant tendencies. This finding contravened Park and Tussyadiah (2016) who suggested that PR towards information systems diminishes the intention to use them.

The results also showed that satisfaction with both a smartphone and travel, significantly predicted the intention to reuse the device. This outcome validated prior evidence that showed that the more positively consumers evaluate a product or service, the better the chances of future use/purchase (Chi & Qu, 2008).

7.3. Risk reduction (management) strategies

In support of the theoretical argument that PR instigates risk reduction strategies (Roselius, 1971), Study B showed that backpackers

used a number of risk reduction strategies to manage their risk concerns; these were broadly classed into cognitive, and non-cognitive, measures.

Cognitively, achieving a level of mental preparedness in advance (about the possible loss of an item, or disappointment or frustration during travel) was a risk reduction strategy adopted by some backpackers. This consciousness suppressed their fears of bringing their smartphones to Ghana. This finding was in line with Miceli, Sotgiu and Settanni's (2008) view that PR could be adequately conceptualised as a complex process that includes both cognitive and affective elements. Accordingly, people cognitively react to the prospect of risk associated with an event. In addition to mental preparedness, other non-cognitive (overt) measures were adopted by the backpackers in the study, including: 1) non-exposure of their phones in public; 2) the use of cheap (and therefore more expendable) smartphones; 3) the use of more reliable alternatives (such as a personal computer) and apps for Internet banking; and 4) less dependence on the Internet for information. These could generally be considered as adjustments to behaviours to circumvent possible risk or reduce the impact (Adam, 2015). The conclusions and implications of the study are discussed hereafter.

8. Conclusions and implications

The purposes of this study were: 1) to identify backpackers' PR towards the use of smartphone by adopting an approach that integrates technology related and destination related risk factors; 2) to understand backpackers' risk reduction strategies. To the best of the authors' knowledge, this study is the first academic attempt made, in a tourism context, to propose an amalgamation of both technology and destination related risk factors to define PR towards smartphone usage; moreover, the model proposed herein demonstrates a better fit in comparison to models that include only technology related risk factors. Though earlier researchers (i.e. Kim, Chung, & , 2011; Park & Tussyadiah, 2016) have investigated PR towards information technology in tourism, they were focussed on just technology related risks, choosing not to include other situational factors, such as destination related risks, that might have been relevant to their findings. In so doing, they offered only a partial understanding of the nature of PR towards ICTs (e.g. smartphones) in the travel industry. Recognizing the theoretical gap, this study identifies and sheds comprehensive light on the sub-factors of PR towards the use of smartphones. This research also elucidates backpackers' risk reduction strategies, showing them to comprise both cognitive (i.e. mental preparedness) and non-cognitive (i.e. pragmatic) strategies.

In terms of specific risk perceptions, such as security risks, services providers could provide, for example, third-party assurance seals, encryptions, authentication systems and firewalls to prevent users from potential fraud or identify theft. Providing detailed technical and non-technical information about the aforementioned strategies will enlighten and reassure phone users. Also, there is a need for service providers to ensure the availability and reliability of Internet connectivity in their facilities while applying the aforementioned strategies to deal with potential destination-infrastructure failures. Perceived psychological risk could be handled through free samples or trials of mobile services prior to purchase, and the provision of good technological support for users of new travel services. Furthermore, to reduce perceived social risks, service marketers could use advertisements to demonstrate how the use of smartphones would lead to enhanced travel experiences. As travellers and their reference groups would become more knowledgeable about the usefulness of smartphones for travel, social risks associated with such usage would diminish. Moreover, service managers and DMOs that deal with perceived destination-physical risks could reassure backpackers and consumers by adopting strategies such as the installation of CCTV cameras or increasing police visibility around tourist facilities. Such strategies can raise additional concerns, however, such as the need for CCTV cameras to be situated in

open spaces so as not to encroach on the privacy of guests.

This study is unique in its confirmation of the positive relationship between: 1) travel satisfaction and intention to reuse a smartphone, and 2) satisfaction with the smartphone and intention to reuse it. Notably, the study concludes that the intention to reuse a smartphone is affected by the satisfaction of: 1) the experience with the device, and 2) the travel experience. Moreover, in sync with past researchers, backpackers' innovativeness, trust and familiarity with a smartphone are established as inhibitors of their PR. These findings fill another crucial gap in the backpacking literature and have important implications for service managers and mobile phone designers.

For instance, innovativeness is a distinctive, personal trait related to the risk-taking propensity of a consumer; it can serve as the basis for targeting backpackers with regard to new mobile travel services. Trust in smartphone services could be enhanced, for example, by the technology designers and service providers: 1) ensuring good reliability of service; 2) creating awareness of customer rights; 3) providing user support for new mobile services; and 4) using online security approval symbols. Offering user support and guidelines could reduce the complexities and complications of mobile travel services, which in turn, will increase familiarity and decrease perceived risk. Service marketers and mobile designers could enhance 'observability' by ensuring the outcomes and benefits associated with smartphone travel services are more visible, for example, through advertisements and free trials. As backpackers' risk perceptions did not affect their satisfaction of the device and intention to reuse it, service providers and marketers could take advantage of the resilient nature of this segment by undertaking 'push' marketing campaigns specifically targeted at backpackers. Finally, satisfaction with a smartphone could be increased by decreasing the complexities associated with its applications and providing user support services to increase trust and intention for future use.

Methodologically, the study makes a contribution to the tourism literature by employing a quantitative-dominant concurrent nested mixed-methods research design. This design was suitable for addressing two different, but related, research questions in the current study through a survey approach and interviews. Furthermore, for Study A, the CB-SEM was used to validate the measurement models while the PLS-SEM was used to assess the structural model of the study. The former was effectively used in validating all measurement models in the study followed by the latter, which was used in assessing a relatively complex structural model, which otherwise would have been challenging with the former.

9. Limitations and further research

First, this study is limited in its inability to decompose backpackers' PR towards smartphone usage based on different locations and activities in Ghana; it assumes that Ghana is an undifferentiated milieu in terms of PR. Therefore, it would be beneficial for future researchers to assess PR towards smartphone usage based on a range of locations and activities undertaken. Doing so, might offer more focussed implications for service managers and marketers. Second, the study used a non-probabilistic sampling procedure (i.e. convenience sampling) for the survey and, while it does advise that caution should be taken in the generalisation of the results, the use of online surveys in future research would be preferable.

CRedit authorship contribution statement

Frederick Dayour: Data curation, Supervision, Formal analysis, Conceptualization, Methodology, Validation, Writing – original draft, Writing – review & editing. **Sangwon Park:** Conceptualization, Methodology, Validation, Writing – original draft, Writing – review & editing. **Albert N. Kimbu:** Conceptualization, Methodology, Validation, Writing – original draft, Writing – review & editing.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.tourman.2018.11.003>.

Appendix 1. Perceived risk of using smartphones

Statement	N	Mean	SD	Skewness	Kurtosis
<i>Financial risk</i>					
1. I feel that using a smartphone for travel in Ghana may cause me to incur unnecessary costs.	567	2.4	1.2	0.5	−0.7
2. I am concerned that excessive mobile Internet fees may be charged during using a smartphone in Ghana.	567	2.7	1.3	0.3	−1.1
3. I feel using an Internet-bill service on my smartphone during travel in Ghana can expose me to potential fraud.	567	2.5	1.1	0.3	−0.7
Component score	567	2.5	1.2		
<i>Performance risk</i>					
1. I am not confident about my smartphone's ability to perform as expected during travel in Ghana.	567	2.5	1.3	0.4	−0.9
2. The systems built into smartphones are not effective/secure enough to provide secure access to my mobile banking service in Ghana.	567	2.6	1.2	0.3	−0.8
3. Considering the challenges with mobile Internet performance, a lot of risk will be involved in making transactions with my smartphone in Ghana.	567	2.8	1.2	0.0	−0.8
4. I am not confident about the ability of online vendors in Ghana to deliver products and services via mobile phones.	567	3.0	1.1	−0.2	−0.6
Component score	567	2.7	1.2		
<i>Time risk</i>					
1. I am worried that using my smartphone during travel in Ghana will lead to inefficient use of my time.	567	2.4	1.3	0.4	−0.9
2. I am concerned about the time it takes to learn how to use a smartphone in Ghana.	567	1.8	1.1	1.3	1.0
3. I worry that using my smartphone during travel in Ghana will waste my time.	567	2.3	1.3	0.6	−0.8
Component score	567	2.2	1.2		
<i>Psychological risk</i>					
1. Using my smartphone while travelling in Ghana makes me feel uncomfortable.	567	2.1	1.2	0.8	−0.5
2. Using my smartphone while travelling in Ghana gives me a feeling of unwanted anxiety.	567	2.1	1.2	0.8	−0.4
3. Using my smartphone while travelling in Ghana makes me feel nervous.	567	2.1	1.2	0.9	−0.3
Component score	567	2.1	1.2		
<i>Social risk</i>					
1. Using my smartphone in Ghana for travelling makes me think that friends will see me as being showy or extravagant.	567	2.1	1.1	0.7	−0.5
2. Using my smartphone in Ghana for travelling makes me think of it as foolish/unwise by people whose opinion I value.	567	1.9	1.1	0.8	−0.0
3. Using my smartphone in Ghana for travelling will adversely affect others' opinion about me.	567	2.1	1.1	0.8	−0.4
Component score	567	2.0	1.1		
<i>Security risk</i>					
1. I feel insecure providing my private information over my smartphone in Ghana.	567	2.8	1.3	0.1	−1.1
2. I feel insecure sending sensitive information over the web with my smartphone in Ghana.	567	2.8	1.3	0.1	−1.2
3. I am worried to use my smartphone in Ghana because other people may be able access my account information.	567	2.7	1.3	0.1	−1.2
Component score	567	2.8	1.3		
<i>Destination-physical risk</i>					
1. I am concerned that my smartphone may be stolen or snatched from me during travel in Ghana.	567	3.5	1.1	−0.5	−0.5
2. I worry that I may be physically attacked for possessing a smartphone during travel in Ghana.	567	2.9	1.2	0.1	−0.9
3. I think about the danger of holding my smartphone while travelling in Ghana.	567	3.2	1.2	−0.3	−0.9
Component score	567	3.2	1.2		
<i>Destination-Infrastructure risk</i>					
1. I worry that mobile Internet in Ghana may malfunction because of slow download speeds or network concerns.	567	3.3	1.2	−0.3	−0.9
2. I worry that mobile Internet in Ghana is not secure enough to protect my private information.	567	3.0	1.2	−0.2	−0.8
3. I feel that I may be exposed to fraud by using mobile Internet in Ghana.	567	2.8	1.2	0.1	−0.9
Component score	567	3.0	1.2		

Scale: 1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree.

Appendix 2. Antecedents of perceived risk

Statement	N	Mean	SD	Skewness	Kurtosis
<i>Familiarity</i>					
1. Overall, I am familiar with a smartphone.	567	4.4	0.9	−2.1	4.1
2. I am familiar with searching for items on my smartphone.	567	4.4	0.9	−2.0	3.8
3. I am familiar with the process of purchasing on my smartphone.	567	4.1	1.2	−1.3	0.8
4. I am familiar with the process of networking with my smartphone.	567	4.4	1.0	−1.8	2.6
Component score	567	4.3	1.0		
<i>Observability</i>					
1. It is easy for me to observe others using the smartphone during travel.	567	3.1	1.0	−0.7	0.1
2. I have had a lot of opportunity to see the smartphone being used for travel purposes.	567	3.1	1.0	−0.9	0.3
Component score	567	3.1	1.0		
<i>Innovation</i>					
1. In general, I was among the first in my peers of friends to use a smartphone for my travel needs.	567	2.5	1.2	0.3	−0.9
2. If I heard there was a new travel service on a smartphone, I would be interested enough to try it.	567	3.2	1.2	−0.3	−0.8
3. In comparison to my friends, I use many mobile travel services on a smartphone.	567	2.7	1.2	0.2	0.8
4. I would use a new mobile travel service(s) on smartphone even if none of my peers has tried.	567	3.2	1.2	−0.3	0.9
5. I knew about new mobile travel services on my smartphone before most of my peers.	567	2.5	1.2	0.3	0.8
Component score	567	2.8	1.2		
<i>Trust</i>					

1.	My smartphones have integrity.	567	3.5	0.9	−0.4	−0.1
2.	My smartphones are reliable.	567	3.7	0.9	−0.5	0.0
3.	Smartphones are trustworthy.	567	3.6	1.0	−0.4	−0.2
	Component score	567	3.6	1.0		

Scale: 1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree.

Appendix 3. Consequences of perceived risk

Statement	N	Mean	SD	Skewness	Kurtosis
<i>Satisfaction with smartphone</i>					
1. I am satisfied with my smartphone in comparison to other devices during travel.	567	3.4	1.2	−0.4	−0.8
2. My smartphone has helped me to meet my travel needs.	567	3.4	1.2	−0.4	−0.9
3. My smartphone meets my expectations during travel.	567	3.3	1.2	−0.3	−0.9
4. Overall, I am satisfied with my smartphone service(s).	567	3.4	1.2	−0.4	−0.9
Component score	567	3.4	1.2		
<i>Satisfaction with travel</i>					
1. Overall, I am satisfied with my travel to Ghana.	567	4.3	1.0	−1.5	2.3
2. I am satisfied with my trip to Ghana when I compare it to other trips.	567	4.0	1.0	−1.0	0.7
3. I am satisfied with my travel when considering the money and time spent.	567	4.0	1.0	−1.1	0.9
Component score	567	4.1	1.0		
<i>Intentions</i>					
1. I will use a smartphone for my travel needs in the future.	567	4.3	0.9	−1.5	2.3
2. I will keep using a smartphone for my travel needs.	567	4.3	0.9	−1.5	2.3
3. I will use mobile Internet for my future travel.	567	4.2	1.0	−1.4	1.6
4. I will use a smartphone for my travel arrangements in the future.	567	4.2	1.0	−1.3	1.4
Component score	567	4.3	1.0		

Scale: 1 = strongly disagree; 2 = disagree; 3 = neither agree nor disagree; 4 = agree; 5 = strongly agree.

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