

# Investigating the intentions of tourism providers and trade exhibition visitors to use technology: A technology acceptance model approach

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**Orientation:** This article considered the use of technological tools by tourism trade exhibition visitors from a marketing perspective.

**Research purpose:** The main aim of this article was to investigate the adoption and use of technology by tourism providers within the context of business events and exhibitions.

**Motivation for the study:** To inform the tourism business practitioners about the efficient and appropriate uses of technological platforms in connecting and interacting with potential stakeholders at tourism events or exhibitions.

**Research design, approach and method:** A conceptual model was suggested and four hypotheses were advanced and empirically tested for the prediction of a business tourist's intention to accept technology (BTIAT) model. The target population was professional exhibition visitors – consisting of six groups: hunters, sport shooters, gun collectors, game farmers, professional hunters and anglers – who attended HuntEx 2015 (sample size = 403). A quantitative, inductive research approach was adapted, while general linear modelling (GLM) was applied to analyse the data.

**Main findings:** The study's findings indicate that business tourists' intention to use online technology was explained when the interaction between business tourists' perceived usefulness of online technology and business tourists' perceived ease of use of online technology are entered into the equation.

**Practical/managerial implications:** The providers of business tourism services (owners and managers) should consider the development of mobile applications to enhance the overall experience of business tourists when attending an event or exhibition, on condition that the application is relevant to the event and easy to use.

**Contribution/value-add:** The study suggested the adequate adoption and efficient uses of mobile applications by business tourism providers as a tool in improving and rendering more attractive the tourists' experience.

**Keywords:** technology acceptance; intention to use; ease of use; technology usefulness; business event tourism; exhibition.

## Introduction

Tourism and travel-related industries are one of the world's largest economic sectors. In total, travel and tourism industries generated US\$7.6 trillion (10.2% of global gross domestic product [GDP]) and 292 million work positions in 2016, equivalent to one in 10 jobs in the global economy (WTTC 2017). The World Travel & Tourism Council (2017) indicated that the growth of the tourism industry would be steady and expected a growth rate of 3.6% for the year 2018. The growth and expansion of technology and the usage thereof among tourists are adding to the tourism industry, which is becoming more technology friendly and using it as a means of increasing revenue and opportunities (Kennedy-Eden & Gretzel 2012).

With the increase in the availability of mobile applications, such as Picksie and TouristEye, the providers of tourism services could use mobile applications as a form of interacting and connecting with consumers even if the mobile application is not tourism specific (De Oliveira Nunes & Mayer 2014; Dinh et al. 2011; Kennedy-Eden & Gretzel 2012). According to De Oliveira Nunes and Mayer (2014), the use of a mobile application within the tourism industry could enhance the tourist experience as well as increase the level of activity and interaction between tourists and service providers. Mobile applications could be used by tourism providers in ensuring that consumers are continuously updated and informed (Gavalas et al. 2012; Xia, Zhang & Zhang 2018) about the

services and products available, as well as to communicate with consumers to promote services and special offers.

The challenge for tourism providers is to comprehend in which ways technology could be used to influence tourist decision-making and behaviour, to adopt appropriate approaches and implement suitable strategies within the digital environment (Kennedy-Eden & Gretzel 2012).

Furthermore, the review of literature indicated that this topic has not been sufficiently researched and explored by academic research. Academic scholars such as Sigala, Gretzel and Christou (2012) and Wang et al. (2016) indicated that future research should focus on better understanding the ways in which the Internet and Web 2.0 affect travel planning behaviour.

Ayeh (2015) and Huang et al. (2013) pointed out that some studies were performed in the following contexts of tourism and hospitality industries:

- Hospitality industry: the employees' acceptance of information technology in upmarket hotels (Lam, Cho & Qu 2007), the front-office systems in hotels (Kim, Lee & Law 2008b), various information systems (Huh, Kim & Law 2009), restaurant computing systems (Ham, Kim & Forsythe 2008), adoption of biometric systems in hotels (Morosan 2010) and self-service hotel technology adoption by tourists (Kaushik, Agrawal & Rahman 2015; Xia et al. 2018)
- Other tourism settings: reservation systems used by travel agencies (Lee, Kim & Lee 2006), and mobile social tourism shopping (Hew et al. 2018).

It is believed that very little research has been conducted within the tourism and hospitality contexts and settings regarding technology acceptance models (see, for instance, Kim et al. 2008b) and not all research within the context of an emerging demand and supply market, an inbound and outbound tourism destination, such as South Africa. There is limited empirical investigation of the adoption of the technology acceptance model (TAM) within a South African context, specifically in the context of business event tourism.

Business events include meetings, conventions, conferences, trade shows, exhibitions and incentive travel. Exhibitions are events in which products, services or promotional materials are displayed to attendees visiting exhibits on the show floor. These events focus primarily on the business-to-business (B2B) relationships and therefore are mostly closed to the public. However, to build the relationship between business and consumers, certain days of an exhibition are opened for the public to attend (Morrison 2019).

A business provider travels for work-related purposes, for example to attend a conference, trade show or exhibition (Swart & Roodt 2009). Recently, Swart and Engelbrecht (2017) investigated the moderating effect of market segmentation among factors determining expo technology acceptance in

the context of exhibitions, suggesting that the predictive nature of these variables requires further investigation.

A knowledge gap highlighted by Cheung and Vogel (2013) indicates the limited number of researches on tourist behaviour towards technology acceptance models, such as mobile applications, which supports the reasoning for conducting this research. Furthermore, the studies by De Oliveira Nunes and Mayer (2014), Huang et al. (2013) as well as Kennedy-Eden and Gretzel (2012) suggest that because of the rapid change in the usage of mobile technologies by consumers and other users, tourism providers should reconsider their approach. The software developers should design and implement mobile applications for specific segments of the tourism industry, such as the tourism business event providers, tourists visiting professional exhibitions and events in South Africa.

The present article reports on a study that explored the adoption and use of technology by tourism providers in the context of business event tourism. It capitalises on extant literature and previous studies conducted by Acarli and Saglam (2015), Ayeh (2015), Davis, Bagozzi and Warshaw (1989), Huang et al. (2013), Jongchul and Sung-Joon (2014), Kim et al. (2008b), Kim, Park and Morrison (2008a) and Teo, Luan and Sing (2008). Based on the extant literature, a research project was designed and carried out with the aim of investigating the key aspects of the adoption and use of mobile applications by tourism providers and tourism trade exhibition visitors. Previous research (Davis 1989; Rodrigues & Carvajal-Trujillo 2014) suggests the three main constructs in the TAM: (1) ease of use, (2) perceived usefulness and (3) behavioural intentions.

Therefore, the purpose of this article was to investigate the need for the development of a TAM for business event tourism as an enabling technology to adopt technology. The remainder of the article is structured as follows. In the next section (Review of literature and theoretical background), a review of the related literature and the theoretical background are discussed and a conceptual model along with the advanced hypotheses is presented. We then present the study or empirical investigation ('Research design and methods' section), encompassing the research design, methodology applied, analysis of results and study's findings. The article is completed with the conclusion and implications, and limitations and avenues of the study for future research.

## Review of literature and theoretical background

The TAM is generally accepted by academic research and has been widely used in various fields and contexts as outlined below. Firstly, in the education and information technology: the study by Teo et al. (2008) investigated the intention of Singaporean and Malaysian pre-service teachers to use the TAM within a school and/or teaching environment. A similar study was conducted by Acarli and Saglam (2015) in which

pre-service teachers' intention to use social media in teaching activities was investigated using the TAM. The study by Cheung and Vogel (2013) focused on predicting the user's acceptance of collaborative technologies. In this research, the authors investigated how the usage of technology in e-learning can be incorporated and introduced to people wanting to complete an online course.

Secondly, in the context of tourism industry, a number of studies were conducted, for example Huang et al. (2013), Ayeh (2015), De Oliveira Nunes and Mayer (2014), Herrero and Martin (2012), Kennedy-Eden and Gretzel (2012), Kim et al. (2008a, 2008b) and Xia et al. (2018). These studies adopted and applied the TAM in the field of tourism, indicating interesting findings and recommendations, which are discussed in the following paragraphs.

Ayeh (2015) investigated the acceptance of user-generated content (UGC) by tourists. This study particularly focuses on the increasing growth of social media for tourism purposes, such as information gathering and sharing, sharing of experiences, and discusses related aspects. It was found that the perceived usefulness had both a direct and indirect impact on the intention of tourists to use technological tools. Furthermore, the usefulness of UGC is influenced by the intention to use the technology by tourists for planning purposes if they have the perception that it is useful. It can therefore be argued that the perceived ease of use (PEU) is determined by the ease or friendly use of technologies.

It should be pointed out that the model developed by Ayeh (2015) has three insignificant relationships. Firstly, there is no direct relationship between perceived trustworthiness and usage intention. However, the impact of perceived trustworthiness on the attitude and usefulness has been investigated throughout the study. Secondly, the perceived expertise has neither a direct effect on perceived usefulness nor a direct effect on usage intention. Thirdly, attitude constitutes the main factor influencing the intention of using technology. Therefore, it could be argued that tourists' attitude determines the adoption, use and development of technology. The study by De Oliveira Nunes and Mayer (2014) found that the introduction of a mobile application within a nature-based tourism destination had significant impact on the tourists' experiences. The study's findings suggest that tourists who used a purpose-designed mobile application experienced it as being fun, useful, easy and compatible with the destination.

The studies by Kennedy-Eden and Gretzel (2012) and Kim et al. (2008a) suggest that the extensive usage of mobile applications plays a significant role in the development of mobile applications in the tourism industry. This suggestion is supported by Neuhofer, Buhalis and Ladkin (2012), adding that new technologies for tourism destinations had valuable contribution to tourists' experiences. Tourism destinations and providers should, therefore, adopt and use new technologies in order to improve the level of customisation of experiences and increase the resulting satisfaction.

The study by De Oliveira Nunes and Mayer (2014) indicated that the main drivers behind the extensive spread and usage of mobile applications are usefulness, compatibility and perceived enjoyment. It was found that people who are using mobile applications in their everyday life (personal and/or professional), as well as the younger generation, consider the usefulness as a very important factor. If tourists do not find mobile applications easy to use, they will not adopt and use them. The study by De Oliveira Nunes and Mayer (2014) concluded that the introduction of a destination mobile application is valuable for public tourism organisations and private businesses in two fields, namely the provision of relevant information and promotion of engagement, and interaction between tourism providers and tourists.

The use of mobile technology in the tourism industry could provide exceptional opportunities for organisations and businesses in capturing the attention of their targeted market segments and enhancing loyalty. The study by Kim et al. (2008b) developed a model that explains how tourists accept the usage of technology when travelling. The findings indicated that the majority of tourists have a positive experience when using mobile applications and need tools that are more similar. Developers of mobile applications for the tourism industry should understand that there is a demand for effective mobile applications that offer a wider variety of mobile scope and services within tourism destinations as the demand by tourists using mobile applications is increasing. Furthermore, Kim et al. (2008a) indicated that the factors PEU and perceived usefulness are key to the development of mobile applications for tourist consumers. Perceived usefulness also showed a significant relationship ( $p < 0.01$ ) with the attitudes of tourists in using the mobile devices.

The study conducted by Xia et al. (2018) about Macau confirms that perceptions about using mobile applications are similar to that of computer-based technologies. This study confirmed the effectiveness of destination marketing organisations' (DMOs) mobile applications, which were proven the most influential antecedents of the potential tourists' cognitive beliefs. The study suggests that DMOs should find ways in which the mobile applications should be managed more effectively and efficiently in order to enhance the visitors' online experience.

The three constructs, along with the resulting research hypotheses advanced by the present study, are discussed in the following subsections.

### **Business event tourists' perceived usefulness of online technology (BT\_POU)**

Scholars such as Davis (1989), Kim et al. (2008a) and Pearson and Grandon (2004) suggest that individuals should believe that the use of mobile applications would be beneficial to their life; otherwise, they will not use them. Furthermore, it is believed that the use of mobile applications across the tourism industry could be very effective if tourists and

employees are aware of the resulting benefits in their travelling experiences and work (Teo et al. 2008). The study by Oh and Yoon (2014) indicates that the confidence in the usage of a mobile application is resulting in higher probabilities of usage by consumers.

In the context of business events tourism, a mobile application could increase clientele loyalty and promote the business offerings and interaction with tourists and providers of business events tourism services. It is believed that the implementation of a mobile application in the business events tourism industry could add additional value to the event (De Oliveira Nunes & Mayer 2014). Perceived usefulness is the belief by tourists that using the application for an event or conference would improve their event experience (De Oliveira Nunes & Mayer 2014). A key aspect that tourism providers should consider is that the mobile application must be enticing, informative and interactive and must offer online services which are efficient and effective (Fernandez-Cavia & Lopez 2013; Han et al. 2016).

The usage of new mobile applications would allow providers of business events tourism services (i.e. events planners and conferences organisers) to create not only memorable tourist experiences within the physical setting but also an extended or augmented experience in the virtual space (De Oliveira Nunes & Mayer 2014). However, the crucial point for tourism providers is to design and implement properly the innovative technologies in order to achieve higher perceived usefulness compared to other technological tools, such as Skype and other messaging applications. This, in turn, could lead tourists to fully realising the benefits and advantages of using mobile technology and its perceived usefulness (Herrero & Martin 2012; Oh & Yoon 2014). Based on the latter, there is sufficient theoretical evidence to formulate the following hypothesis (H<sub>1</sub>):

H<sub>1</sub>: Business event tourists' perceived usefulness of online technology can be reliably and validly measured.

### Business event tourists' perceived ease of use of online technology (BT\_PEOU)

According to Oh and Yoon (2014), there is a steady growth of people being confronted with large amounts of information and not knowing always how to handle this information. Therefore, there is a need for introducing Haptic Enabling Technology, which assists people in this task. This particular technology is also embedded into various applications to enhance the transfer of information between a virtual environment and a human environment, and vice versa (Oh & Yoon 2014). When the developers of applications create a new mobile application purpose-designed for a specific industry, they must have a consumer-driven approach and must ensure that consumers (in this case tourists) will be able to use the application for achieving the expected benefits (De Oliveira Nunes & Mayer 2014).

Scholars such as Ayeh (2015), Oh and Yoon (2014) and Cheung and Vogel (2013) suggest that the dimension 'PEU' has significant influence on whether a tourist believes that

the usage of the mobile application would be effective or not. The study by Oh and Yoon (2014) indicates that the consumers' attitude depends on whether they would intend to adopt and/or buy the mobile technology and later on actually use it. By using a mobile application in the context of a business event, the providers of tourism services would be in a position to promote innovative products and services effectively, which may increase the business tourists' perceived usefulness of the application (Oh & Yoon 2014). Based on the above discussion, there is sufficient theoretical evidence to formulate the following hypothesis (H<sub>2</sub>):

H<sub>2</sub>: Business event tourists' PEU of online technology can be reliably and validly measured.

### Business event tourist's intention to use online technology (BT\_OIU)

The behaviour of tourists using a new technology or tool is based on their perceptions regarding that technology or tool, and the perception is determined by two main factors: attitude and perceived usefulness (Herrero & Martin 2012). The study by Herrero and Martin (2012) suggests that the perceived usefulness of new technology has an influence on tourists' attitude and perceptions of ease of use. Ayeh (2015) and Kaplanidou and Vogt (2006) share the same opinion, indicating that tourists' attitudes towards new technology could have a positive effect on its adoption and usage on a trip or tour. Therefore, it could be argued that we should consider the influence of external variables related to new technological developments on the tourists' perceptions about usefulness and ease of use.

The aim of the TAM is to determine whether the consumer and/or user behaviour will switch into using the new technology based on the perceived usefulness and ease of use (Amaro & Duarte 2015; Ayeh 2015). It was found that the provision of information to tourists is aiming at influencing their perceptions of usefulness of the new technology; this will have an impact on their attitude and intentions of using the new technology when travelling (Kim et al. 2008a). Cheung and Vogel (2013) argue that influence along with attitude is an important factor to consider in determining tourists' behavioural intention to use new technology. Huang et al. (2013) indicate that tourists' perceptions of ease of use and usefulness determine whether they would share information regarding their tourism experiences on websites (online reviews). However, Kim et al. (2008a) argue that a low quality of information and communication technology services (mainly speed) might have a significant (dissuasive) influence on the usage of a mobile application. Hence, it can be argued that in order for tourist behaviour to change into action, the technology should ensure that the ease of use and usefulness of the technology is to the benefit of the tourists, not knowing that it enhances the tourism provider as well.

Based on the above discussion, there is sufficient theoretical evidence to formulate the following hypothesis (H<sub>3</sub>):

H<sub>3</sub>: Business event tourists' intention to use online technology can be reliably and validly measured.

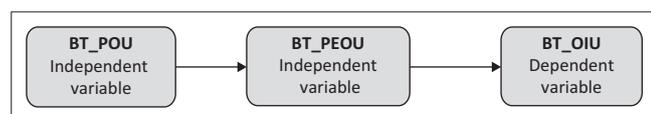
## The prediction of business event tourist's intention to accept technology

Apparently, the technological developments result in an imperative for the tourism destinations and providers, that is, the incorporation of more technology-based products and services to enhance tourists' experience (Neuhofer et al. 2012). Various scholars, such as Natarajan, Balasubramanian and Kasilingam (2018), Tan et al. (2018), Ayeh (2015), Cheung and Vogel (2013), Herrero and Martin (2012) and Huang et al. (2013), have pointed out the importance of closely monitoring the mobile application users' perceptions about its usefulness and ease of use; this perception is the main factor influencing the intention to use the technological tool. The intention to accept mobile technology is based on the lesser efforts required by users to learn how to use the technology as the ease of use influences user's confidence levels of using the mobile technology (Tan et al. 2018). If the ease of using mobile technology conveniences users' lives, the intention to use and accept the mobile technology is higher (Natarajan et al., 2018). In the context of business tourism, the intention to use can enhance and facilitate interactive conversations and engagement in collaborative discussions between stakeholders involved (organisers and/or providers, exhibitors and professional visitors). Nevertheless, the investigation towards prediction was of use and intention to use is not the focus of this study.

**H<sub>4</sub>:** The scores on the business event tourists' perceived usefulness of online technology, scores on business event tourists' PEU of online technology, can serve in a prediction model of business event tourists' intention to accept technology (BT\_IAT).

This hypothesis was formulated to determine if BT\_POU (independent variable) or BT\_PEOU (mediating variable) would emerge as an independent predictor of BT\_IAT (dependent variable), when all these variables were simultaneously entered into the equation, as illustrated in Figure 1.

Figure 1 was designed based on the guidelines and suggestions formulated by Kennedy-Eden and Gretzel (2012) for further investigations into designing mobile applications to support tourism industry in delivering more efficient and effective services. Ayeh (2015) points out that the TAM factors, perceived usefulness, ease of use and intention to use, are critical in determining tourists' intention to use consumer-generated media (CGM) to plan their trips. Herrero and Martin (2012) indicate that the ease of using



Source: Adapted from Ayeh 2015; De Oliveira Nunes and Mayer 2014; Herrero and Martin 2012; Kennedy-Eden and Gretzel 2012; Kim et al. 2008a; and Xia et al. 2018.

Note: Please see full reference list of the article, Swart, M.P., Sotiriadis, M.D. & Engelbrecht, W.H., 2019, 'Investigating the intentions of tourism providers and trade exhibition visitors to use technology: A technology acceptance model approach', *Acta Commercii* 19(1), a693. <https://doi.org/10.4102/ac.v19i1.693> for more information.

**FIGURE 1:** Theoretical (prediction) model.

websites to access accommodation information is determined by the perceived usefulness of the tourists before using the website. Kim et al. (2008a) found that during tourists' travels, the perceived usefulness of a mobile application is higher and the adoption of mobile application is facilitated only if the mobile application is easy to use. A direct relationship exists between perceived usefulness and behavioural intention, as well as PEU and perceived usefulness, between tourists travelling to virtual tourism websites as suggested by Huang et al. (2013). This aspect supports the suggestion by De Oliveira Nunes and Mayer (2014) that the younger generation is keener to use technology in their everyday life activities.

The use of technology in the tourism industry provides two benefits: (1) improvement of the competitive advantage that tourism organisations can achieve on the premise that the technology is easy to use and (2) provision of evidence of usefulness in the work place that ultimately leads to intention to use because of its functionality allowing improvement of work performance (Kim et al. 2008b). The latter is further supported by Xia et al. (2018), suggesting that if there is a high level of perceived usefulness and quality of information provided together with easy navigation of DMO websites and mobile applications, it leads to tourists using the available mobile technologies to access information.

A study was designed and carried out aiming at empirically investigating the suggested theoretical model for prediction of the intentions of tourism providers and tourism trade exhibition visitors to use technology in the context of business events tourism. The following section deals with this empirical study.

## Research design and methods

The main elements of the empirical study and its findings are presented in the following subsections.

### Research approach and method

This study adopted a quantitative, inductive research approach. Data were analysed through the application of general linear modelling (GLM) procedures. The research method applied is outlined below by presenting the sampling and participants, research procedure, measurement instruments and the statistical analysis performed.

### Sampling and participants

The study was conducted on a population of tourism trade exhibition visitors who attended HuntEx 2015 ( $n = 403$ ). The sample consisted of six groups: (1) hunters, (2) sport shooters, (3) gun collectors, (4) game farmers, (5) professional hunters and (6) anglers. Based on the empirical nature of the study, a purposive, non-probability sampling technique was selected to explain the selected target population. Tourism trade exhibition visitors were sampled based on their attendance of HuntEx from 24 to 27 April 2015. Hair et al. (2010) provide a guideline as follows: for every one item in the measurement instrument,

a minimum of 5–10 respondents are required if multivariate data analysis techniques are used. In this study, four items per construct were included in the measurement instrument, which required a minimum of 120 responses. The 403 collected questionnaires exceeded the minimum requirement and supported the results from the multivariate data analysis.

### Research procedure

Question format items in a newly developed questionnaire measured constructs. After obtaining the respondents' consent, an e-survey, using Lime Survey, was administered by trained fieldworkers to collect the primary data. All completed questionnaires ( $N = 403$ ) were submitted online by the fieldworkers. The latter could not submit the online questionnaire if the questionnaire was not fully (100%) completed, which improved the response rate and supported the researchers in validating all the responses.

### Measuring instruments

To explore the constructs of the business events tourists' intention to accept online technology model, hypotheses were formulated and tested using a three-step process. Firstly, the theoretical model was developed to depict the relationships among perceived usefulness, PEU and online intention to use. Secondly, the model was benchmarked with similar online models. This resulted in three measuring instruments: the perceived usefulness of online technology, perceived ease of use of online technology, and intention to use online technology, which were included in the construction of the final instrument. The BT\_POU Scale (Acarli & Saglam 2015; Ayeh 2015; Herrero & Martin 2012; Huang et al. 2013; Jongchul & Sung-Joon 2014), the BT\_PEOU Scale (Acarli & Saglam 2015; Ayeh 2015; Herrero & Martin 2012; Huang et al. 2013; Jongchul & Sung-Joon 2014) and the BT\_OIU Scale (Acarli & Saglam 2015) consisted each of four items.

A seven-point intensity scale was used to measure responses on each item for all three scales. This Likert-type scale was anchored at extreme ends. Supported by the measurements test (Hair et al. 2010), all three instruments proved to be reliable and valid (Acarli & Saglam 2015; Ayeh 2015; Herrero & Martin 2012; Huang et al. 2013; Jongchul & Sung-Joon 2014). Finally, the prediction of BT\_IAT was tested by comparing path differences among the model's results for the constructs, as suggested by Hair et al. (2010). These three steps were all performed through a GLM procedure using IBM SPSS 24.0, which is a family of models consisting of variables, a random component and a link function to indicate the type of conversions needed to accommodate the different model formulations (Hair et al. 2010). The use of GLM is consistent with the investigation of technology acceptance in studies related to education (Visser 2011) and retail (Ezeh & Olawale 2017).

### Statistical analysis

An exploratory factor analysis (EFA) and a confirmatory procedure are the two factor-analytical approaches used

to examine the interrelationships in the measure. The confirmatory procedure is used to investigate the unidimensionality and construct validity, and indicates how well the theoretical specifications of each construct match the data. All the items of each construct had to be inter-correlated and tested for factor analyses. An inferential analysis yielded the numerical properties of the population, which were used to inform the researcher in predictions about the population and in assigning probabilities to these predictions. The Pearson product-moment correlation coefficient ( $r$ ) reveals the strength and the direction of the relationships.

General linear modelling was used to determine the role of the perceived usefulness of online technology (BT\_POU) in predicting the intention to use online technology (BT\_OIU). Multivariate GLM has become a popular means of estimating analysis of variance (ANOVA) models, which are useful for the development of theories from newly generated predictive models, as in the case of this study. A confirmatory procedure and the examining of the structural relationships in terms of the model fit and the structural parameter estimates (Pallant 2007) validate theories. A multi-factor ANOVA was performed to ascertain if the BT\_POU and the BT\_PEOU variables can predict BT\_OIU, either jointly or separately. This process aimed at identifying the main and interactional effects of the factors (categorical independent variables) on an interval (Hair et al. 2010) dependent variable. A regression analysis was used to undertake a correlational analysis. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, homoscedasticity, linearity and multi-collinearity. Three steps were proposed for the GLM construction using IBM SPSS Version 24.0 (Hair et al. 2010).

In building the most parsimonious predictive model of business event tourists' intention to accept technology was to enter the BT\_POU together with BT\_PEOU stepwise into the equation in order to attain residuals through the Durbin-Watson statistic. This presented an initial model of variables explaining BT\_OIU. This model summary highlighted the  $\Delta R^2$  and the coefficients with  $\beta$ -values.  $R^2$  is the portion of variance in  $Y$  (BT\_OIU) explained by the regression equation (predictors). The main results are presented and discussed in the following section.

### Ethical consideration

Ethical clearance was obtained from the University of South Africa (Unisa) College of Economic and Management Sciences (CEMS) ethics committee (Reference number: 2013\_CEMS\_014).

## Results and discussion

### Reliability and validity

Based on the EFA, the three measurement instruments were proven reliable and valid. The overall significance of all correlations was supported by the Bartlett's test of sphericity ( $> 0.6$ ) and Kaiser-Meyer-Olkin (KMO) measure

of sampling adequacy (MSA) ( $> 0.3$ ) (Hair et al. 2010), when a test was conducted on BT\_POU, BT\_PEOU and BT\_OIU. All the three constructs were significant ( $\rho \leq 0.05$ ), namely (1) BT\_POU ( $H_1$ ) Bartlett's test of sphericity ( $X^2_{(df=6; \rho \leq 0.01)} = 808.33$ ) and KMO MSA (0.83) supported the significance of the construct ( $\alpha = 0.87$ ), with one factor explaining 72.71% of the variance (four items); (2) BT\_PEOU ( $H_2$ ) was significant ( $\alpha = 0.85$ ) where the Bartlett's test of sphericity ( $X^2_{(df=6; \rho \leq 0.001)} = 727.35$ ) and KMO MSA (0.78) indicated a one factor solution explaining 69.67% of the variance (four items); lastly (3) the Bartlett's test of sphericity ( $X^2_{(df=6; \rho \leq 0.01)} = 725.02$ ) and KMO MSA (0.79) indicated the overall significance ( $\alpha = 0.84$ ) of BT\_OIU ( $H_3$ ), where this one factor explains 69.28% of the variance. Following these results, the three hypotheses ( $H_1$ ,  $H_2$  and  $H_3$ ) are supported and can be accepted.

A Kolmogorov–Smirnov test was conducted to statistically determine the normality of the distribution on all the three constructs (Pallant 2007). BT\_POU, BT\_PEOU and BT\_OIU were significant ( $\rho \leq 0.05$ ), but the Kolmogorov–Smirnov test is sensitive to larger samples ( $n = 403$ ). As sample size was relatively big ( $> 200$ ), the test normality is not critical and is regarded as an underestimation of the variance (Tabachnick & Fidell 2007). Following these results the relationships between the constructs must be significant to allow for the testing of the final parsimonious model. Therefore, the Pearson product–moment correlation was conducted to determine the inter-correlation of the constructs. The scores between BT\_POU and BT\_PEOU were statistically significantly positively related. The Pearson product–moment correlation coefficient was  $r = 0.63$ ,  $n = 403$  ( $\rho \leq 0.01$ ), with a large effect size. The BT\_PEOU and BT\_OIU scores were  $r = 0.57$ ,  $n = 403$  ( $\rho \leq 0.01$ ), indicating a statistically significant positive relationship, with a medium effect size. The significance of the data was supported as  $r = 0.57$ ,  $n = 403$  ( $\rho \leq 0.01$ ) were statistically significantly positively related, indicating that scores between BT\_PEOU and BT\_OIU had a medium effect size. As all the relationships between the constructs were significant, the possibility of a business event tourists' intention to accept technology model can be explored.

In building the most parsimonious predictive model of BT\_OIU (dependent variable) was to enter the two independent variables, BT\_POU and BT\_PEOU, stepwise into the equation, in an attempt to achieve residuals through the Durbin–Watson statistic. Table 1 outlines a summary model of BT\_POU and BT\_PEOU when entered into the equation, as well as the coefficients of the variance, explaining the variance in BT\_OIU.

Based on the results shown in Table 2, the BT\_POU explained the most variance in BT\_OIU at 32%. If BT\_PEOU was included in the model, an additional 7.5% (39.3% – 31.8%) was added than what BT\_POU already explained. The interaction between BT\_POU  $\times$  BT\_PEOU explained the same variance in BT\_OIU at 39.3%, as what the BT\_POU and BT\_PEOU already explained, as BT\_POU  $\times$  BT\_PEOU is the average difference between BT\_POU and BT\_PEOU. However, when BT\_POU and BT\_PEOU together with BT\_POU  $\times$  BT\_PEOU are entered as independent variables of the model, BT\_POU is omitted and BT\_PEOU is insignificant ( $\rho = 0.52$ ). There is no statistical difference between BT\_POU and BT\_PEOU when entered into an equation with BT\_POU  $\times$  BT\_PEOU. As BT\_POU and BT\_PEOU were omitted from the model with BT\_POU  $\times$  BT\_PEOU, the model remains the same as additional degrees of freedom are added to BT\_POU  $\times$  BT\_PEOU to ensure that the overall degrees of freedom and model fit do not change.

Thus, 39.4% of the variance in BT\_OIU was explained by entering BT\_POU  $\times$  BT\_PEOU (independent variables) into the equation. The Durbin–Watson statistic had a value of 1.96, which was within the required range of 1.00–2.00. The  $\rho$ -value was significant ( $\rho \leq 0.01$ ) for most of the variables in the three models. The GLM equation for the business event tourists' intention to accept technology model was as follows:

$$\text{Business event tourists' intention to accept technology} = 2.02 + 0.62 (\text{BT\_POU} \times \text{BT\_PEOU})$$

Data from the above discussions support the hypothesis, stating that scores on the BT\_POU and BT\_PEOU scales

**TABLE 1:** A summary general linear modelling for predicting business event tourist's intention to use online technology† (initial model to obtain residuals).

Model	R	R <sup>2</sup>	UnStd Coeff			Std Coeff	t	$\rho$	Durbin-Watson
			$\Delta R^2$	B	SEB	$\beta$			
<b>Predictors: (Constant)</b>	-	-	-	3.09	0.190	-	16.11	$\leq 0.01$	
BT_POU‡	0.57‡	0.32	0.32	0.51	0.040	0.57	13.73	$\leq 0.01$	1.95
<b>Predictors: (Constant)</b>	-	-	-	2.02	0.240	-	8.59	$\leq 0.01$	
BT_POU§	0.63§	0.40	0.39	0.31	0.045	0.34	6.82	$\leq 0.01$	
BT_PEOU§				0.37	0.052	0.36	7.08	$\leq 0.01$	1.96
<b>Predictors: (Constant)</b>	-	-	-	2.02	0.230	-	8.59	$\leq 0.01$	
BT_PEOU¶	0.63¶	0.34	0.39	0.06	0.090	0.05	0.64	0.52	
BT_POU $\times$ BT_PEOU¶				0.62	0.090	0.58	6.82	$\leq 0.01$	1.96

R, correlation coefficient; R<sup>2</sup>, coefficient of determination;  $\Delta R^2$ , adjusted coefficient of determination; B, unstandardised coefficient and constant for linear regression equation;  $\beta$ , the standard regression coefficient; SEB, standard error of B;  $\rho$ , probability value, Std, standardised; UnStd, unstandardised, coeff, coefficient; BT\_POU, business event tourists' perceived usefulness of technology; GLM, general linear modelling; BT\_PEOU, business event tourists' perceived ease of use of online technology; BT\_OIU, business event tourist's intention to use online technology.

†, dependent variable: BT\_OIU.

‡, predictors: (Constant), BT\_POU.

§, predictors: (Constant), BT\_POU, BT\_PEOU.

¶, predictors: (Constant), BT\_PEOU, BT\_POU  $\times$  BT\_PEOU.

**TABLE 2:** Factor matrix for business event tourists' perceived usefulness of technology, business event tourists' perceived ease of use of online technology and business event tourists' intention to use online technology.

Items	BT_POU†	BT_PEOU‡	BT_OIU§	Reliability
B8_How effective are mobile applications during the purchasing process	0.87	-	-	0.87
B7_In your opinion, is it quicker to use mobile applications to purchase products	0.81	-	-	
B6_How useful are mobile applications when making purchases	0.77	-	-	
B9_Do mobile applications assist you in planning your online purchases	0.74	-	-	
B12_How easy is it for you to learn how mobile applications work	-	0.85	-	0.85
B13_How skilful do you consider yourself in the use of mobile applications	-	0.81	-	
B11_How easy is it for you to interact with other people through mobile applications	-	0.72	-	
B10_How convenient is it for you to use mobile applications	-	0.71	-	
B15_Will you use the mobile application	-	-	0.92	0.84
B17_Will you use the application to plan your visit to HuntEx	-	-	0.78	
B14_Do you agree that the use of a mobile application will enhance your experience of HuntEx in future	-	-	0.70	
B16_Will you use the mobile application to make purchases	-	-	0.68	

Note: Extraction method: principal axis factoring; rotation method: Varimax with Kaiser normalisation.

BT\_POU, business event tourists' perceived usefulness of technology; BT\_PEOU, business event tourists' perceived ease of use of online technology; BT\_OIU, business event tourists' intention to use online technology.

†, one factor extracted, seven iterations required.

‡, one factor extracted, seven iterations required.

§, one factor extracted, 10 iterations required.

(with  $BT\_POU \times BT\_PEOU$ ) can serve in the prediction model of business event tourists' intention to accept technology. The data therefore support  $H_4$ .

## Findings and discussion

This study has developed and suggested a modified TAM model suitable to the business events tourism industry. This arises from the challenge faced by providers of tourism services in understanding the relevance and impact of technology in consumer behaviour and decision-making processes. The design and development of mobile applications are expensive. That is the reason why it is necessary to establish if there is a need for such a technological tool among business event tourists when they visit an exhibition or other similar events.

The latter is supported by studies carried out by De Oliveira Nunes and Mayer (2014), Neuhofer et al. (2012) and Kaushik et al. (2015), indicating that purposeful mobile technology is designed with two aims: convenience and added value to business event tourists' experience. Three constructs were proposed for the development of a business event tourists' intention to accept technology model, namely BT\_POU, BT\_PEOU and BT\_OIU. De Oliveira Nunes and Meyer (2014) emphasised the usefulness of a mobile application in the tourism industry, while Kim et al. (2008a) supported this notion as the usefulness of the technology can stimulate loyalty among tourists. BT\_POU supported the findings of De Oliveira Nunes and Meyer (2014) and Kim et al. (2008a) as the four items selected in the measurement of construct were supported by the data ( $H_2$ ) with a significance of  $\alpha = 0.87$ .

Kim et al. (2008a) highlighted the necessity to include technology usefulness in the investigation of technology acceptance among tourists. BT\_PEOU was developed and consisted of four items, which has a significant measurement ( $\alpha = 0.85$ ) for the construct supporting  $H_2$ . The results of this study are consistent with the findings of Kim et al. (2008a, 2008b), making a contribution to the body of knowledge that

the ease of technology use is important to the overall acceptance of a technology tool in the business tourism context. Davis (1989) investigated the intention to accept technology as part of the TAM. This was later supported by research in the tourism field, such as Rodrigues and Carvajal-Trujillo (2014), among passengers travelling with a low-cost airline. BT\_OIU was developed and had a significance of  $\alpha = 0.84$  ( $H_3$ ), supporting all four items included in the construct. BT\_OIU, as a newly developed construct, addresses the gaps in the current literature as it highlights the necessity to consider the intention of business tourists to use a technology tool.

The relationships between the three new constructs were examined in support of the development of the final business event tourists' intention to accept technology model. A Pearson product-moment correlation coefficient was calculated for all the three relationships. The relationships between BT\_POU and BT\_PEOU, BT\_POU and BT\_OIU, and BT\_PEOU and BT\_OIU ( $\rho \leq 0.01$ ) were statistically significantly positively related, making a contribution by supporting the inclusion of usefulness, ease of use and intention to use the mobile application in a business events tourism context.

Finally, the most parsimonious model of business event tourists' intention to accept technology was investigated using GLM, where 39.4% of the variance in BT\_OIU was explained by entering  $BT\_POU \times BT\_PEOU$  (independent variables) into the equation with a Durbin-Watson statistic value of 1.96 ( $\rho \leq 0.01$ ). The GLM equation for the business event tourists' intention to accept technology model was calculated as  $2.02 + 0.62 (BT\_POU \times BT\_PEOU)$ , which supported  $H_4$ .

The results of this study provide evidence about the perceptions and the interrelationships between the determining factors. The usefulness, ease of use and the intention to use technology among business event tourists are positive and effective factors, and all add value to the

overall experience, confirming the suggestions of previous studies investigating the same topic in other contexts and settings (Ayeh 2015; De Oliveira Nunes & Mayer 2014; Kim et al. 2008b; Neuhofer et al. 2012).

## Conclusion and implications

Tourism providers and destinations are facing new types of issues and challenges in the digital era and information and communication-dominated markets. The use of mobile technology has become one of the most essential tools for business tourists to communicate with (Dinh et al. 2011). The purpose of this study was to investigate the key aspects of the adoption and use of mobile application in its simplest form (Mortenson & Vidgen 2016) by business event tourists. The reasoning driving our choice for the TAM model in determining the level of acceptance of technology by business event tourists in the events industry was based on the prominence of the TAM theory and its adoption and empirical investigation in the various tourism-related contexts and settings.

This study firstly suggested a conceptual (prediction) model based on four hypotheses of interrelationships. Against this background, a prediction model of business event tourists' intention to accept technology has been developed as informed by the TAM approach. This model was empirically investigated in the context of business event tourism, a professional exhibition. The results support the development of a predictive model of business event tourists' intention to accept technology consisting of BT\_POU, BT\_PEOU and BT\_OIU. This final multivariate and empirical business event tourists' intention to accept technology model confirms that the purpose of the study has been achieved. This addresses a recommendation made by Xia et al. (2018) that further investigations should be carried out on the opportunities available for researchers to expand the TAM model on the perceived usefulness of mobile applications within the business event tourism industry.

This study contributes to our knowledge from a theoretical, methodological and practical perspective. Firstly, the suggested conceptual model for prediction incorporates three newly developed constructs, BT\_PEOU, BT\_POU and BT\_OIU, and provides guidance on how business event tourists (tourism providers and tourism trade exhibition visitors) intend to accept technology. This study supports the inclusion of the usefulness of technology when the acceptance of technology is studied in a business event tourism context, contributing to the current literature field.

Our research extends existing theory by incorporating new elements and empirically investigating them within a new context. The innovative element of this approach is the integrated consideration, the simultaneous examination of these constructs and the investigation of their interrelationships. Secondly, a significant methodological contribution was made through the testing of the intention of

business event tourists to accept technology through GLM, revealing and identifying critical aspects of their intentions.

Thirdly, it is believed that the study's findings are valuable to industry practitioners. In the development of mobile technology for the business event tourism industry, the three constructs are valuable guidelines about the factors determining the acceptance and adoption of the specific technology. These factors – usefulness, ease of use and the intention to adopt and use technology – have to be taken seriously into account in the marketing management plans aiming at influencing the tourists' decision-making process. In the formulation of business and marketing strategies, the usefulness, ease of use and intention to use online technology can inform decisions and the justification of the cost associated with the development of technological tools and applications.

These findings are of practical importance to managers, marketers and owners of enterprises of business event tourism, such as exhibitions and conference organisers and events planners, in the sense that they indicate the adequate approach they have to adopt – consumer/user centric – and the strategies – interactive communication and friendly use – to influence the acceptance and use of these technological tools. The same stands for the software developers of mobile applications and similar communication tools; when they design these tools, they must bear in mind the factors determining the adoption and the purposes of use by the targeted consumer market segment.

Ultimately, the positive relationships between the factors investigated by this study demonstrate that information and communication technology has significant potential and provides opportunities for the tourism providers to enhance the online experience and to add value to the whole experience of business events and leisure tourists.

## Limitations and avenues for future research

This study contributed to our knowledge of the technology acceptance in the field of tourism; however, it entails some limitations. Firstly, as for the research design, this study was limited to one tourism business event (a professional exhibition) in South Africa and interviews were conducted during a specific time period. The testing and development of the business event tourists' intention to accept technology model was limited to one exhibition held in Gauteng province, and may be reinforced by involving more business tourist events held at local and international destinations.

Secondly, non-probability sampling techniques were used. These techniques may make the BT\_POU, BT\_PEOU and BT\_OIU results vulnerable. As technology tools enable data analytics, future studies may consider stratified or cluster sampling, once the mobile application has been developed and its actual use is investigated. Structural equation modelling is a popular data analytic method in the investigation of TAM (Al-Gahtani 2016; Chin & Lin 2015;

Ibrahim 2014; Park & Kim 2014; Wallace & Sheetz 2014) and can be used in the statistical analyses of future business tourism events-related studies. Ayeh (2015) and Kim et al. (2008a, 2008b) highlight the importance of user attitude in technology acceptance. The offering of personalised user experiences through the mobile application and its interactive function with the user may also add value to similar future investigations. These dimensions were not investigated in this study and are likely to influence the acceptance of technology among business event tourists. It is further suggested that business event tourists' behaviour is closely monitored in similar studies by incorporating embedded theories such as the behavioural intention theory (Fishbein & Ajzen 1975) and the theory of planned behaviour (Ajzen 1991). These suggestions constitute interesting avenues for future research and empirical investigations.

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## Competing interests

The authors declare that they have no financial or personal relationships which may have inappropriately influenced them in writing this article. The opinions expressed in this article are the views of the researchers and not an official position of the institution or funder.

## Authors' contributions

M.P.S. was the main researcher of the project, supported by W.H.E. who assisted with the questionnaire design, data collection and the writing of the literature review. M.D.S. contributed to the sections 'Analysis of results and discussion' and 'Conclusion and implications'.

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