Dr Freddy Marilahimbilu Mgiba

School of Business Sciences, Department of Marketing, University of the Witwatersrand, Johannesburg, South Africa
Email : freddy.mgiba@wits.ac.za
ORCID: https://orcid.org/0000-0002-4648-3218

THE FOURTH INDUSTRIAL REVOLUTION, LOYALTY INTENTIONS AND THE MEDIATING ROLES OF REPUTATION AND PRE-VISIT EXPERIENCES FOR THE VILAKAZI STREET PRECINCT IN SOWETO

ABSTRACT

The impact of the Fourth Industrial Revolution (4IR) technologies on tourist destinations' reputation and pre-visit experiences and how these can affect loyalty intentions is receiving attention from academics and management practitioners. However, not much attention is given to the impact of these technologies, reputation, and pre-visit experiences on loyalty intentions. The purpose of this study was to investigate the direct effects of 4IR, Vilakazi Street precinct reputation, and customers' pre-visit experience on customers' loyalty intentions (LOYALT). It also investigates the mediating effect of reputation and pre-visit experience on the 4IR-LOYALT relationship. The study followed the quantitative approach, using the primary data collected from tourists (N=235) who visited the Vilakazi Street precinct between October and November 2019. Smart PLS SEM approach was used to analyse the data. The study confirmed positive direct relationships between 4IR, REPUT, and PREVISIT on loyalty intentions. In addition, reputation and customers' pre-visit experiences were also shown to mediate the relationship between the 4IR and loyalty intentions positively. The study provides a framework using constructs embedded in TAM and TPB theories, which extends the applications of these theories. The framework provides an additional tool for further investigations of the way to improve chances of predicting tourists' responses to innovations, and it can also be used to explain the adoption of technology in different industries. The study outcomes will assist in technology strategy decisions and resources deployment. Policy-makers also stand to benefit by gaining a clear understanding of how technology and industry interact.

Keywords: 4IR; marketing communication; brand communication; customer-brand relationships; reputation; pre-visit experience; loyalty; tourism

INTRODUCTION

Tourism is a significant tool for promoting economic growth (Rather *et al*. 2019) and the development of existing and new tourism destinations propels new businesses (Honey & Gilpin 2009). This industry has a positive impact on foreign exchange earnings, combating unemployment and poverty, and stimulating domestic consumption (Habibi *et al*. 2018). In developing countries, tourism accounts for 83% of export and it is the most significant foreign exchange source after petroleum (Richardson 2010). However, in the fourth industrial revolution (4IR) context, this industry is also revolutionised by technology development (Buhalis 2019). According to Sertkan *et al*. (2019), technology and tourism have a symbiotic relationship. Technology, as an interaction point between tourists and destinations, is becoming a key aspect of this industry's survival (García-Milon *et al*. 2020). Tourism service delivery has shifted from the traditional direct and contact-based modus to one of remote self-service (Opute *et al*. 2020).

The 4IR environment brings about globalised tourist markets, aggressive global competition and transformed global marketing (Vassileva 2017). It has given rise to many competing attractive offers, low switching costs, and unpredictable customer bases (Chuaha *et al*. 2017). In this context, the quest to understand tourists' loyalty intentions has become one of the most important goals for tourism researchers (Ashour 2020). Authors such as Quadri-Felitti and Fiore (2012), and Chen *et al*. (2016) confirm that understanding loyalty intentions in tourism in light of 4IR is crucial. Loyal customers are profitable (Anagnostopoulou *et al*. 2020), trust the brand, are committed to it (Lerbin & Aritonang 2017), are more likely to repurchase it, and spread positive word of mouth (Raza *et al*. 2020). Therefore, studies that interrogate the relationship between 4IR and tourism industry loyalty has become an attractive field for academic scrutiny.

Customer loyalty can be enhanced by the service provider's reputation (Khoa 2020). For the context of this study, reputation will also mean online reputation (the one facilitated by the 4IR technology). An organisation's online reputation can facilitate customers' vicarious experience of the service before they physically experience it, which can in turn produce loyal customers (Anagnostopoulou *et al*. 2020; Jin & Chen 2021). Alwi *et al*. (2017) write that customer loyalty can be a function of the service provider's reputation. Technology can be harnessed by customers to experience services virtually, such as in virtual travels (Hollebeek *et al*. 2020). ICT can render brand communication more experiential, offering a desired pre-consumption experience that can help lift brand attitudes (NYT 2017). The resultant experience can help engage customers and strengthen consumer-brand relationships (Hollebeek *et al*. 2020). Therefore, customer loyalty can be seen as a function of customers' emotional attachment (Srivastava & Rai 2018) and virtual experience (Ong *et al*. 2018; Siebert *et al*. 2020). A good brand attitude, strong consumer-brand relationships, and an emotional customer attachment are the building blocks of customer loyalty.

The brief discussion above suggests that online reputation (REPUT) and pre-visit experience (PREVISIT) can be the antecedents of LOYALT and the mechanism through which the impacts of 4IR on LOYALT are transmitted. In addition to the 4IR-LOYALT relationship, a deeper insight into the role of the 4IR environment, technology-enabled pre-visit tourists experience (PREVISIT), and technology-enhanced destination reputation on tourists' loyalty is a worthwhile venture (Tercia *et al*. 2020).

BACKGROUND AND CONTEXT

The novelty of the direct and indirect impacts on 4IR on LOYALT for a developing country's tourism industry motivated this study. Vilakazi Street precinct in Soweto township, with a population of approximately 2 million people (Coetzee *et al*. 2017), provided an ideal setting, both because of its size and its rich anti-apartheid history (Hoogendoorn *et al*. 2019). Vilakazi Street precinct is the struggle route (Rogerson 2004), as it was home to two Nobel Peace laureates, Nelson Mandela and Desmond Tutu (Mtapuri & Giampiccoli 2020). Another flagship in the precinct is the Hector Petersen Memorial (Booyens & Rodgerson 2019). Tourists visit the precinct to experience black South Africa's past and present (Ramchander 2007).

This study deals with one of the most important components of the South African economy, the tourism industry. According to Aratuo and Etienne (2019), tourism growth can happen even in economic stagnation. Consequently, tourism is one of the biggest drivers of the world economy and provides an excellent tool for development in emerging economies (Khan *et al*. 2019). According to Paramati *et al*. (2017), tourism provided 10% of the world's GDP in 2014.

PROBLEM STATEMENT AND PURPOSE

Numerous studies have shown the positive association between customer satisfaction and loyalty intentions (Chuaha *et al*. 2017; Ferreira *et al*. 2019), and between technology use and customer loyalty intentions (Badwan *et al*. 2017). Mgiba and Chiliya (2020) indicated that 4IR directly impacts the tourist centre's reputation (REPUT) and customers' pre-visit (PREVISIT) intentions, which also influence loyalty intentions (LOYALT) via customer satisfaction. However, despite the relevance of tourism and the effects of technology on tourists' loyalty intentions, there is scant research on both the direct and the indirect effect of 4IR technology on customer loyalty in South Africa (Beneke *et al*. 2010; Rudansky-Kloppers 2014). Consequently, the impact of the 4IR environment on LOYALT and the mechanism of this impact are not well understood. This article was conceptualised as an effort to illuminate the 4IR-LOYALT relationships in the South African context through the lenses of two well-known theories discussed below. The investigation highlights the importance of REPUT and PREVISIT as antecedents of LOYALT and as mechanisms that transmit the effects of 4IR on LOYALT (Ndofor *et al*. 2011). For this study, REPUT and PREVISIT are conceptualised as having a direct impact on LOYALT, and mediating the relationship between 4IR and LOYALT. Mediation analysis assumes a sequence of relationships in which an antecedent variable affects a mediating variable, which then affects a

dependent variable (Mackinnon *et al*. 2007). According to Aguinis *et al*. (2017), mediation can explain the process and mechanism by which 4IR affects LOYALT. For the present study, the direct relationships between 4IR, REPUT, and PREVISIT with LOYALT are first hypothesised and confirmed. The testing of the possible mediating effects of both REPUT and PREVISIT on the 4IR-LOYALT relationship follows.

This research synergistically integrates constructs from the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB) in the tourism context (Wu & Chen 2017) and proposes a novel theoretical framework. These theories provide models that can be applied to study the adoption behaviour of customers across IT products and services (Kamble *et al*. 2018). Furthermore, according to Williams *et al*. (2009) and Pattansheti *et al*. (2016), the integration produces a more comprehensive understanding of customers' intent to adopt technology applications. The integration is expected to further extend the two theories' validity and applicability in the tourism industry (Hu *et al*. 1999).

Drawing upon these grounding theories, the study develops a research model that links 4IR, REPUT, PREVISIT, and LOYALT. This proposed model can help predict consumer acceptance of technology in the tourism industry (Pavlou 2003). It will inspire academic debate on the best permutations of the well-known constructs from these two grounding theories. Moreover, it will add considerable weight to the existing literature on the application of technology in the tourism business and other services businesses for developing countries. The study involves mediation analysis, which aims to uncover causal pathways along which changes in 4IR are transmitted to LOYALT (Pearl 2015). This is an important consideration in light of both technological advancement and the Covid-19 pandemic. This study can also help managers in the deployment of 4IR strategies that will maximise benefits.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Technology use within the tourism industry could enhance the tourist experience. To adopt appropriate approaches and implement suitable strategies within the digital environment (Kennedy-Eden & Gretzel 2012), tourism providers need to comprehend the ways in which technology could be used to influence tourist decision-making and behaviour. To that end, this study utilises two major theories, namely the Technology Acceptance Model (TAM) and the Theory of Planned Behaviour (TPB).

TAM is one of the most effective and widely used information systems theoretical frameworks (Holden & Karsh 2010; Lee *et al*. 2003). The most common usage of TAM has evolved to be the determinant of the relationship between perceived usefulness (PU), perceived ease of use (PEOU), the attitude towards technology (Salloum *et al*. 2019; Scherer *et al*. 2019), and the anticipated future usage of emerging technologies (Koul & Eydgahi 2018). It is a useful theoretical model for predicting and explaining behavioural intention (Hansen *et al*. 2018). TAM states that to adopt technology, perceived usefulness and ease of use standards must be met (Hu *et al*. 1999). It further assumes that individual adoption of technology is influenced by enjoyment.

TPB has become a framework for explaining and predicting behaviour (Fishbein & Ajzen 2010; Steinmetz *et al*. 2016). It states that the main driver for behaviour is the intention to perform the behaviour, and that intentions are the best predictors of behaviour (Armitage & Conner 2001). Intentions account for 24% of the behavioural variance (Sheppard *et al*. 1988; Winkelnkemper 2014). The theory's ability to predict intentions and behaviour across a variety of behavioural domains is supported by several studies (c.f. Haus *et al*. 2013; Overstreet *et al*. 2013). TPB is a useful framework for designing behaviour change interventions and to explicate the mechanisms by which interventions are expected to exert their effects on behaviour (c.f. Kothe & Mullan 2014; Yardley *et al*. 2011; Armitage & Talibudeen 2010). Intentions, in turn, are influenced by the attitude toward the behaviour, subjective norm, and perceived behavioural control (PBC) (Steinmetz *et al*. 2016). TPB is used to model the acceptance of new technology and predicts the levels of usage (Xie *et al*. 2017).

From the brief description of the theories, it is evident that individually these cannot fully explain the use of technology within the tourism industry to achieve customer loyalty. TAM deals with the elements that make the technology appealing to users and the prediction and explanation of future engagement; TPB deals with explaining and predicting future behaviour by use of intentions and how desired behaviour changes can be achieved. Therefore, TPB provides the link between favourable attitude, satisfaction, and loyalty intentions. All these elements from the two theories cater for the chosen constructs for the present study, which are 4IR, REPUT, PREVISIT, and LOYALT. Together their explanatory power is enhanced.

CONCEPT OPERATIONALIZATION

The operational definitions for each of the constructs are listed in Table 1 below.

TABLE 1:   OPERATIONAL DEFINITIONS

Construct	Operational meaning	Sources
Tourism	Visit a centre to which an individual is attracted, to fulfil some personal interests, which results in economic activity and growth.	Camilleri 2018; Opute *et al*. 2020; Fernándeza *et al*. 2019; Brida *et al*. 2016; Dino & Ong 2020
Fourth industrial revolution environment (4IR)	Digital technology-driven connected environment characterised by information availability, ease of communication, lowered switching costs and increased completion because of the enhanced virtual pre-trial of products and services.	Prasetyo *et al*. 2020; Fotiadis & William 2018; Mavrageni *et al*. 2019

Construct	Operational meaning	Sources
Virtual reputation (REPUT)	Perceptual representations, attitudes, and associations consumers hold about a service or product, which influences purchase decisions and consumer behaviour.	De Chernatony 1999; Keller 1993; Fombrun & Rindova 1996; Kim & Ko 2012; Jin 2012; Ruiz *et al.* 2014
Pre-visit experience (PREVISIT)	Technology-enabled virtual encounter, an experience that facilitates changes in attitudes and purchase behaviour because it is based on trust of the message sources.	Fäs & Zumstein 2019; Christyou 2015; Djafaro & Rushworth 2017
Loyalty (LOYALT)	Trust and satisfaction-based deeply held attitude towards a brand that results in repurchase decisions in the presence of other alternatives, and gives rise to positive word of mouth, lowering of marketing costs and business growth for brands.	Faraoni *et al.* 2018; Aaker 1991; Eid 2011; Gola *et al.* 2016; Sniewski *et al.* 2018; Wery & Billieux 2017; Sadeghi *et al.* 2019; Oliver 1999; Lerbin & Aritonang 2017; Chang & Chen 2009; Yen & Lu 2005

TOURISM AND 4IR

The tourism industry is one of the pioneer industries in the application of new technologies (Ghorbani *et al*. 2020). In the 4IR era, digital technology is the main prerequisite for those who run tourism businesses (Prasetyo *et al*. 2020). Tourism actors can use digital technology to fulfil agility and competitiveness requirements (Prasetyo *et al*. 2020). New technology enhances customer encounters and service processes. It leads to significant changes in the way organisations deliver their services and the way consumers evaluate their service encounters.

HYPOTHESES DEVELOPMENT

Figure 1 illustrates the hypothesised research framework where the direct and the indirect effects of 4IR on LOYALT are represented.
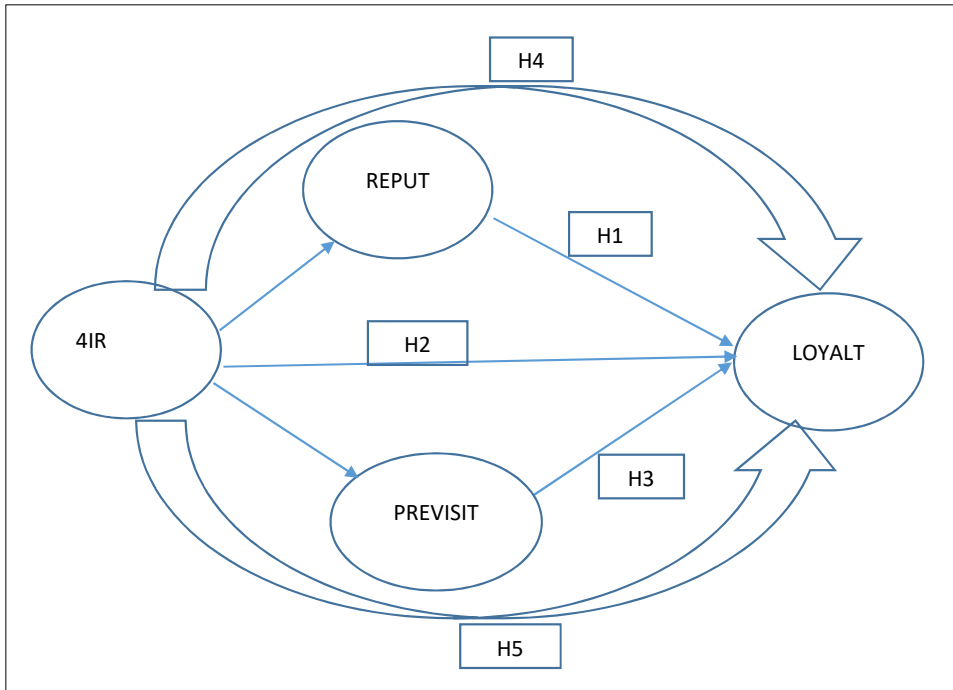
FIGURE 1: PROPOSED RESEARCH FRAMEWORK

The model also highlights the mediating roles of REPUT and PREVISIT. It shows that, in addition to their direct impact on LOYALT, REPUT and PREVISIT mediate the relationship between 4IR and LOYALT.

4IR and loyalty intentions (4IR–LOYALT)

4IR-enabled tourists' sources of information are key for generating expectations, fostering visit decision-making, and shaping final satisfaction levels (Money & Crotts 2003; Zarezadeh *et al*. 2019). This effect is amplified when technology is accessible, deemed useful, and user-friendly. As information can be offered and accessed electronically (García-Milon *et al*. 2020), the customer does not necessarily interact with the brand in a face-to-face setting (Luarn & Lin 2003). Further, technology allows for quick feedback to customers (Umashankar *et al*. 2017). Tourists become more engaged with the service itself and with service providers. This has shifted the industry from passive consumption to a more engaging service space (Taheri *et al*. 2019). 4IR promotes amusement, emotional interaction, and enhances the entire tourist experience (Buhalis & Sinarta 2019; Tiago *et al*. 2018). All these developments affect tourists' attitudes and consumption behaviour (Buhalis & Sinarta 2019; Leung *et al*. 2019). It also affects customers' satisfaction levels, which in turn affects their loyalty intentions (Fatima *et al*. 2018; Rasoolimanesh *et al*. 2019). It can be argued that if technology can be accessed by tourist business centres and potential tourists, it

should produce beneficial effects. Based on these arguments, it can be hypothesised that:

H1: The fourth industrial revolution environment is positively related to tourists' loyalty to the Vilakazi street precinct.

Reputation and loyalty intentions (REPUT–LOYALT)

Consumers' online comments usually are considered as honest and transparent, which can shape the behaviour of potential consumers (Mellinas & Reino 2018). Hence, online comments can build or ruin an organisation's reputation (Rosamond 2020). In the context of 4IR, the word reputation and online reputation are used interchangeably (Bakos & Dellarocas 2011). Having a strong reputation is a valuable asset for any business (Sadeghi *et al*. 2019). Consumers are unwilling to purchase from companies, which they have little information on (Sadeghi *et al*. 2019). Osakwe *et al*. (2019) state that building a corporate reputation is one of the most pressing concerns for a business's long-term success. A company's good reputation has a positive relationship to its pricing and customers' product quality perceptions (Caruana & Ewing 2010). Several studies have highlighted the great influence of online reputation through reviews and ratings and how it affects purchasing decisions by others (Mgiba & Chiliya 2020). Customers tend to purchase more from a corporate with a high reputation than a corporate with a low reputation, and feel more satisfied with their purchase (Sadeghi *et al*. 2019). A good online reputation can result in decreased consumer considerations, increased positive comments, and increased repurchase intentions (Lai 2019). It also gives rise to increased customer commitment and trust and encourages purchasing, which could enhance commitment to the brand (Sadeghi *et al*. 2019).

H2: Vilakazi street precinct's reputation has a positive impact on the loyalty intentions of tourists for the street precinct.

Pre–visit experience and loyalty intentions (PREVISIT–LOYALT)

4IR technology enables people to encounter brands virtually (Bailey *et al*. 2015; Hsu *et al*. 2018). The virtual encounter can plunge potential customers into a world of real context (Guerra *et al*. 2015), and stimulate a sense of presence in the real world (Gül & Gül 2018). The encounter can generate emotions and social interactions (Guerra *et al*. 2015), and elicit the same reactions and emotions as those felt during a real experience (Garrozzino & Bergamasco 2010). Therefore, services can be experienced and impressions about them formed pre-purchase and pre-consumption (Kharat & Kharat 2017). These experiences and impressions might even affect their intentions and behaviour (Kumar *et al*. 2013; Prasad & Jha 2014). Their encounters and impressions might lead to positive word of mouth (WOM), and an increase in consumers' trust and willingness to use that brand (Dolbec & Chebat 2013; Khan & Rahman 2015). An technology-enabled experience can trigger feelings of loyalty to a brand (Kauv & Blotnicky 2020).

In the tourism context, Ghorbani *et al*. (2020) state that travel also encompasses the movements of the mind, an area that is enhanced greatly by 4IR technology.

Marketers often attempt to influence these impressions and responses (Kharat & Kharat 2017; Van der Westhuizen 2018) by using social media marketing (Chen & Yuan 2018), and by using influencers to recommend their brands (Djafarova & Rushworth 2017; Fäs & Zumstein 2019). Influencer and social media marketing have become valuable assets for tourism due to their significant impact on tourist destination experiences (Chatzigeorgiou 2017). They could provide online reviews and ratings, which significantly influence potential consumers' experience, and their purchase decisions (Mellinas & Reino 2018). To achieve the desired outcomes, organisations use individuals who are regarded as trustworthy and authentic by their customers (Gupta *et al*. 2017; Seiler & Kucza 2017) to recommend their brands (Fäs & Zumstein 2019). A good pre-visit experience may result in a favourable attitude towards a brand and predisposes the customer to repeat purchase behaviour (Chang & Chen 2009). Li *et al*. (2020) state that online destination experience and loyalty are positively related. Furthermore, 4IR technologies can improve customer experience by the use of customisation and thus improve customer satisfaction (Swart *et al*. 2019). Satisfaction has a significant effect on loyalty intentions (Cho 2019). Customer trust and satisfaction are the determinants of customer loyalty (Faraoni *et al*. 2018). Based on the above, the following hypothesis is proposed:

H3: Pre-visit experience has a positive impact on loyalty intentions for Vilakazi street precinct.

Online reputation is a positive mediator between 4IR and loyalty intentions

A firm's online reputation defines customers' opinion of it (Dorčák *et al*. 2017). Reputation can reduce perceived risk, which is shown to be particularly high in the tourism decision-making process (Loureiro & Kastenholz 2011). Over 70% of consumers report that they trust online reviews (Zervas *et al*. 2015). Following this logic, the next hypothesis is proposed:

H4: Reputation is a positive mediator between the fourth industrial revolution environment and loyalty intentions for Vilakazi street precinct tourists.

Pre-visit experience is a positive mediator between 4IR and loyalty intentions

Pre-visit experiences are formed by the correlation of service features and the perceptions and experiences of other tourists. These experiences mediate consumer responses and attitude (Coghlan *et al*. 2012) and influence satisfaction perceptions, WOM, and LOYALT (Serra-Cantallops *et al*. 2018). Positive WOM (Serra-Cantallops *et al*. 2018), attitude, and satisfaction are antecedents of loyalty (Picón *et al*. 2014; Serra-Cantallops *et al*. 2018). A technology-enabled tourism experience is significantly associated with travel experience satisfaction, which has a positive effect on tourists' happiness and revisit intentions (Pai *et al*. 2020). Based on this line of argument, it can be concluded that in addition to the proposed direct effect of PREVISIT on LOYALT, PREVISIT also mediates the relationship between 4IR and LOYALT. The study, therefore, proposes the following hypothesis:

H5: Pre-visit experience is a positive mediator between the fourth industrial revolution and loyalty intentions.

METHODOLOGY

This study investigated the causal relationship between 4IR, REPUT, PREV, and LOYAL intentions, using data obtained from tourists who visited the Vilakazi Street precinct in the Gauteng province of South Africa between October and November 2019. A questionnaire was designed according to the hypotheses stated above. Based on literature recommendations, each of these constructs contained several context-specific developed measurement items (Khan *et al*. 2019; Ringle *et al*. 2015; Thompson *et al*. 1995). All survey items were measured using a 5-point Likert scale, which ranged from strongly agree to strongly disagree. Participants were eligible if they were over 16 years old, and provided written informed consent. On sample size decision, Majchrzak *et al*. (2005) recommend that there should be at least five to ten times the number of samples as the maximum number of model paths.

Pursuant to requirements for conducting ethical research, approval was obtained from the Ethics Committee of a Johannesburg-based South African university. The protocol number is H20/03/14. Socio-demographic characteristics were collected including ethnicity, age, education level, yearly income, and marital status. It was emphasised to participants that there were no right or wrong answers, and that what was required from them was honest responses. Participants were also assured of anonymity, confidentiality, and freedom to ask clarity-seeking questions. In addition to the anonymity of the survey, this study attempted to separate questions for different variables as much as possible. The researcher collected data in separate phases for the predictor (4IR), outcome (LOYAL), and the mediator (REPUT) and (PREVISIT) variables to avoid the possible CMV effects.

DATA ANALYSIS APPROACH AND OUTCOMES

In total, 235 participants provided the data for this study and were included for analyses. Since this study included parallel mediation, involved a marginally complex model, and had a relatively small sample size, the researcher used the Smart PLS analysis approach (Chen & Lin 2019; Khan *et al*. 2019). This approach can simultaneously handle the model constructs and the measurement items (Petter *et al*. 2007). Moreover, PLS is more appropriate when the measurement items are not well established or when they are used within a new measurement context (Khan *et al*. 2019). Smart PLS (Version 3.2.7), developed by Ringle *et al*. (2015), was more suitable than other SEM analysis methods (Khan *et al*. 2019). This approach is also recommended for reducing measurement errors, and the avoidance of collinearity (Khan *et al*. 2019).

The analysis stage follows the scholarly recommended approach of doing the descriptive part before analysing both the direct effects and the mediation effects (Yu *et al*. 2019). For the descriptive summary, see Table 2 below. The Smart PLS SEM analysis follows the brief descriptive summary.

The descriptive outcomes: Socio-demographic characteristics

Socio-demographic characteristics were collected, including age, education level, yearly income, and tourism expense levels. The results indicate that the majority of the participants were mature (above 39 years old) males. In addition, Vilakazi Street precinct visitors are likely to be highly educated individuals. About 58% held either a Master's degree or a PhD. They are more likely to be high net-worth individuals, judging from their income and expense levels.

TABLE 2:   DESCRIPTIVE SUMMARY

Description	Levels	Percentages
Gender	Male	52.8
	Female	45.5
	Prefer not to state	1.7
Age	< 18 years	2.6
	18-25 years	19.1
	26-38 years	28.1
	>39 years	48.9
Education level	Below Matric	6.9
	Degree	20.9
	Honours degree	14.9
	Master's degree	50.2
	PhD degree	4.7
Income level	<500000	4.3
	50 0001-750 000	1.3
	750-001-1000 000	2.1
	1 000 001-1 250 000	6.0
	>1 250 000	29.8
	Prefer not to state	56.6
Expense level	< R1000	6.4
	R1001- R2000	5.1
	R2001-R3000	2.1
	R3001-R4000	3.0
	R4001-R5000	3.4
	>R5000	27.7
	Prefer not to state	52.3

The first step in evaluating PLS-SEM results involves examining the measurement (outer) models, which included the reliability of each item and the internal consistency, convergent validity, and discriminant validity of each construct (Risher *et al*. 2019). The reliability of items was tested by the corresponding loading of the questions. Factor loading presented the extent to which the construct can be measured by some questions, and the threshold value was 0.6, which was used to represent individual reliability (Hair Jr. *et al*. 2010). Composite reliability (CR) values for each construct were higher than the threshold value of 0.7, indicating the constructs were internally consistent (0.892-0.928) (Chin 1998). Convergent validity was assessed by average variance extracted (AVE). According to Fornell and Larcker (1981), if this index is > 0.5, this construct has good convergent validity. It can be seen from Table 2 that the AVEs for potential variables of the constructs in this study were between 0.694 and 0.903, indicating good convergent validity.

TABLE 3: MEASUREMENT MODEL STATISTICS (RELIABILITY AND AVE OF THE OUTER MODEL)

Construct	Item	Loadings	CA	CR	AVE
4IR	1.	0.749	0.871	0.904	0.611
	2.	0.826			
	3.	0.863			
	4.	0.747			
	5.	0.802			
	6.	0.691			
REPUT	1.	0.503	0.891	0.928	0,682
	2.	0.557			
	3.	0.561			
	4.	0.498			
	5.	0.545			
	6.	0.634			
PREVISIT	1.	0.570	0.910	0.928	0.682
	2.	0.673			
	3.	0.640			
	4.	0.663			
	5.	0.650			
	6.	0.639			
LOYALT	1.	0.317	0.848	0.892	0.626
	2.	0.576			
	3.	0.544			
	4.	0.631			
	5.	0.556			

Following Henseler *et al*. (2015), the researcher evaluated discriminant validity through heterotrait-monotrait ratios (HTMT). From Table 4, all the HTMT values between the constructs are below the 0.90 threshold, pointing that discriminant validity has been achieved.

TABLE 4:   HETEROTRAIT-MONOTRAIT (HTMT) RATIOS FOR
DISCRIMINANT VALIDITY

Variable	4IR	LOYALT	PREVISIT
4IR			
LOYALT	0.776		
PREVISIT	0.871	0.679	
REPUT	0.773	0.833	0.737

QUALITY OF THE MODEL

One cannot interpret the hypothesised relationships before the collinearity possibilities and the predictive power and accuracy of exogenous variables are resolved. These checks determine the quality of the structural model (Hair *et al*. 2017; Hair *et al*. 2019; Rigdon 2012). For instance, the presence of collinearity can bias the results (Hair *et al*. 2014; Risher *et al*. 2019). Collinearity possibilities were assessed by looking at the degree of collinearity among the independent variables (4IR, REPUT and PREVISIT) by use of the variance inflation factor (VIF). According to Hair *et al*. (2011), the variance inflation factor (VIF) value of 5 or above typically indicates a collinearity problem (Daoud 2017; Robinson & Schumacker 2009). The values for this study are tabulated in Table 5.

TABLE 5:   COLLINEARITY TEST VALUES

Independent variable	VIF value
4IR	2.877
REPUT	2.069
PREVISIT	2.734

The criteria used to assess the model's predictive quality included the model's predictive power (R^2) and the effect size (f^2) (Hair *et al*. 2016). R^2 is the variance explained values, which describes the amount of variance the model can explain (Plonsky & Ghanbar 2018). A 50% value or more is acceptable (Hair *et al*. 2011). For the R^2 values for this study see Figure 2 below. Effect size (f^2) measures the power of a variable's impact on others (Hair *et al*. 2016). The values are shown in Table 6 below.

TABLE 6:   F² EFFECT SIZES VALUES TABLE

Construct	REPUT	PREVISIT	LOYALT
4IR	0.151	1.50	0.076
REPUT			0.291
PREVISIT			0.002

HYPOTHESES TESTING RESULTS

The solid measurement and structural properties enhanced the confidence in testing the hypothesised relationships. The hypothesised relationships tests dealt with 4IR-LOYALT, 4IR-REPUT, 4IR-PREVISIT, REPUT-LOYALT, and with the parallel mediations of REPUT and PREVISIT. Table 7 summarises the outcome of the direct and indirect relationships.

TABLE 7:   DIRECT AND INDIRECT EFFECTS

Direct and indirect relationships table

Direct effect	Coefficients	Bootstrap 95%
Relationships	**Coefficients**	**Decision/Significance**
4IR-LOYALT (c)	0.298	Significant/Accepted
4IR-REPU (a1)	0.687	Significant/Accepted
4IR-PREVISIT (a2)	0.775	Significant/Accepted
REPUT-LOYALT (b1)	0.494	Significant/Accepted
PREVISIT-LOYALT (b2)	0.217	Significant/Accepted

Indirect effects

Indirect effects	Point estimate	VAF calculations
H2:a1*b1	0.34	43.3%%
H3: a2*b2	0.17	21.0%
TOTAL indirect effs	0.51	64.3%

REPUT

$R^2=0.512$

4IR

LOYALT

$R^2=0.590$

PREVISIT

$R^2=0.598$

a2=0.775
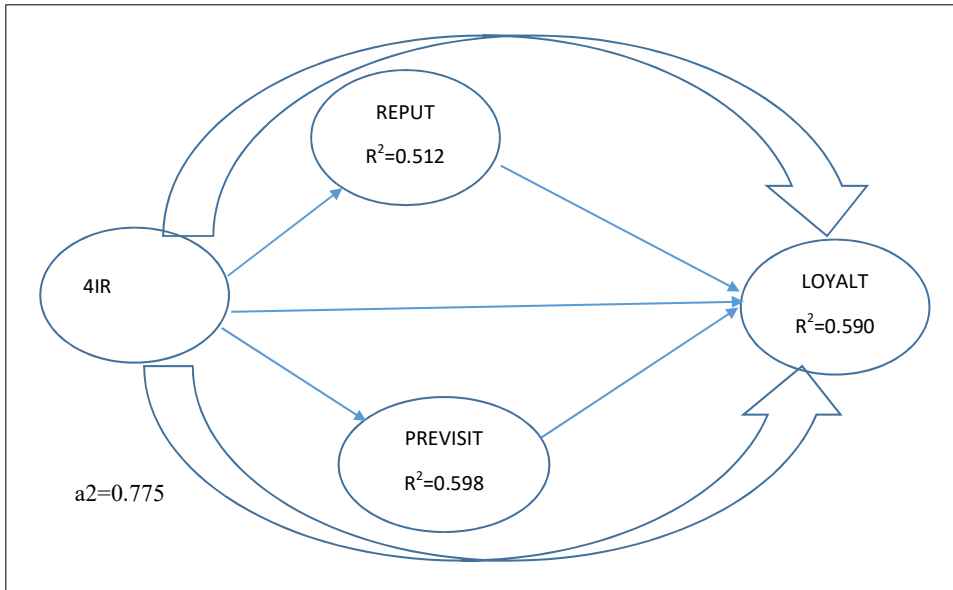
Key: a1, a2, b1, b2, and c-path coefficients

FIGURE 2: MODEL ANALYSIS RESULTS

DISCUSSION

This study attempted to understand how tourists' loyalty intentions to the Vilakazi Street precinct are impacted by the 4IR environment. In pursuit of that, it attempted to extend and connect two different theories of technology adoption with online reputation and virtual experience literature to predict tourists' loyalty intentions surrounding the precinct. The findings indicate that, in addition to the impact of 4IR on satisfaction (Mgiba & Chiliya 2020), the 4IR environment also directly affects LOYALT. Existing literature shows that users often share their experiences online when they feel positive towards a service (Kar 2020). The findings are also in line with other studies (Huang *et al*. 2019; Giovanis & Athanasopoulou 2017). The second set of findings deals with the mediation effects of REPUT and PREVISIT. In a digital world, reputation is a value (Lăzăroiu & Rommer 2017) that in itself can lead to loyalty intentions. This study confirms that this conclusion also applies to tourism destinations. On 4IR's impact on PREVISIT and PREVISIT's impact on LOYALT, the study confirms that potential customers can gain a priori perception of a service (Khan *et al*. 2019). It also shows that an organisation's stronger reputation can mitigate feelings of risk perceptions (Khan *et al*. 2019). These findings are important as they confirm other findings for service businesses. Because service products are intangible and cannot be easily described, consumers tend to rely on word of mouth from an experienced source to lower perceived risk and uncertainty.

IMPLICATIONS OF THE STUDY

In the competitive marketplace of tourism, the Vilakazi Street precinct needs to present its unique features online to draw tourists' attention. Tourism being a service industry, customers cannot distinguish the service they receive from the people who provide it (Mavrageni *et al*. 2019). 4IR technology offers novel and unparalleled opportunities to create value for marketers and academia. Tourism experience is co-created by marketers, consumers, and potential consumers. This article describes opportunities for future research for improving marketing efficiencies, and gives pointers for policy-making.

The academic merits are significant. By augmenting the conceptualisation of the effect of 4IR on Vilakazi Street precinct's reputation, pre-visit experience, and on tourists' loyalty intentions, it enriches the current sparse research on African tourism-based economies and technology. The model proposed in this study not only contributes to the existing literature, but also helps researchers gain a better understanding of tourists and potential tourists' engagements with technology both before and after visiting African tourist destinations. The model provides a better explanation and richer insights into technology adoption in the tourism industry than the individual grounding theories used in the study. Promising areas for future research involve the refinement of the proposed framework by looking at additional constructs that mediate the relationships between 4IR and loyalty intentions, even from outside the chosen theories. The present mediating constructs only account for about 60% of the loyalty intentions. The article also contributes to the improvement of management practices for businesses that are affected by technology.

Management practitioners must be aware that continued loyalty intentions are affected, not only directly by 4IR, but also indirectly via REPUT and PREVISIT. This study provides evidence that tourists can enjoy the tourism centre vicariously, which can lead to their loyalty intentions. The findings should help managers to fine-tune their marketing campaigns, especially in the context of the Covid-19 pandemic. For policy-makers, the findings of the study could be of value in adopting policies that promote the use of technology for both country branding and tourism centre branding. Organisations operating in the precinct can be incentivised to utilise available technology to not only attract visitors to the precinct but also patronise their operations.

LIMITATIONS AND DIRECTION FOR FUTURE RESEARCH

In this study, several limitations provide opportunities for further research. First, the proposed model was tested only for one urban destination. This situation limits the generalisability of the findings. Second, this study was conducted during a particular point in time and circumstances (pre-Covid-19). Residents' place image and their perceptions of tourism impacts are dynamic, and may change over different stages of the destination's lifecycle, and as circumstances transform. Further validation of the model in other South African destinations and other African regions is required, as tourist destinations vary in their image characteristics, the type of experience they offer, and the extent of tourism development.

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