

Examining the Role of Mobile Marketing in Overcoming Hesitancy towards the COVID-19 Vaccine in South Africa

Philile Thusi¹

Department of Marketing, University of Johannesburg, South Africa,
Orcid: 0000-0001-6624-0435

Keywords

COVID-19
South Africa
Perceived risk
Mobile marketing
Innovation resistance

Abstract

The COVID-19 vaccine has completely altered individuals' lives financially and mentally. The emergence of the global COVID-19 pandemic encouraged the entrance of COVID-19 vaccines into the South African market. Hence, this study aims to examine the role of mobile marketing in promoting acceptance and overcoming hesitancy towards the COVID-19 vaccine in South Africa through the lens of innovation resistance theory. A total of 424 responses were obtained from South African consumers. Quantitative research was the chosen research method, with a questionnaire as a data collection tool. The questionnaires were distributed online via Google Forms, which were processed and analysed using SPSS and structural equation modelling.

The study demonstrated that perceived risk and mobile marketing have positive significant relationships with innovation resistance, while trust has a negative influence on innovation resistance. The study's findings are significant to the healthcare industry in South Africa and can be used as the basis to develop strategies to promote vaccines and overcome resistance.

1. Introduction.

Improvements in information and communication technologies introduce crucial marketing opportunities for companies. One of the last technological improvements affecting companies' marketing activities is mobile phones being used as a channel of marketing communication (Troiano & Nardi, 2021). The promotion of goods, services, and ideas has increased the importance of "mobile Marketing", which can be identified as establishing the marketing communication with the target clients through mobile phones and sending promotion-orientated messages. The mobile marketing system is facilitated using text via short message service (SMS) and multimedia message service, audio when using apps, videos when watching movies, streaming live music, and emailing, which gives consumers the best service to have active interactions, send requests, and find out more information from organisations (MarketLine, 2021). Mobile marketing has been widely used in different contexts and industries (Troiano & Nardi, 2021). The South African government utilised mobile marketing in the form of SMS, media advertising, and campaigns to spread the word and encourage society to get vaccinated against COVID-19. The messages sent through texts and campaigns assured society that the vaccine is safe and people should get it to fight the pandemic.

The World Health Organization (2020a) stipulated that the COVID-19 virus has accelerated poverty, scarcity of food, and the unemployment rate. As such, the vaccines were presented to be a functional way to hinder and control the virus (Mo, Wong & Lam, 2019). However, with the increased spread of the virus, people still refuse to get vaccinated (Troiano & Nardi, 2021). Vaccine hesitancy has been a global public health challenge since before COVID-19, negatively affecting child and adult immunisation. However, previous research (e.g., Cooper, Van Rooyen & Wiysonge, 2021; Pertwee, Simas & Larson, 2022; Wake, 2021) does not provide sufficient evidence behind individuals' reluctance to get vaccines, nor does it offer insight into what will motivate them to get vaccinated. For instance, a South African study by Cooper et al. (2021) investigated the hesitancy behind people getting vaccinated, confirming citizens' reluctant behaviour towards getting vaccines. Despite this finding, a limited amount of research has investigated factors contributing to consumers' resistance to vaccines (Chaney & Lee, 2022; Hudson & Montelpare, 2021; Li, Wen, McKeever & Kim, 2021). Furthermore, no study in current literature has investigated the role of mobile marketing to overcome resistance of COVID-19 vaccines among South African consumers. Therefore, this study aims to close this gap by contributing to the lack of literature concerning COVID-19 vaccine resistance.

The study aims to answer the following research question: What role does mobile marketing have in overcoming resistance and encouraging acceptance in obtaining the COVID-19 vaccine in South Africa?

To address this research question, the following objectives were set:

- To examine the factors influencing societal hesitancy to obtain the COVID-19 vaccine amongst South Africans.

- To determine how the government can evoke trust through mobile marketing platforms; and
- To examine the validity of innovation resistance theory in a vaccine adoption context in South Africa.

2.Literature Review

2.1 Mobile Marketing Overview

Martins, Costa, Oliveira, Gonçalves and Branco (2019) stated that mobile marketing has changed interactions amongst customers and marketers. This change has accelerated due to the easier access to internet connection and the increased mobile presence amongst consumers. Mobile marketing enables easier, fast, and remote communication with consumers (Hundermark, 2020), making it the most efficient and effective way to reach out to consumers. Due to the greater consumer reach, marketers in companies have rapidly explored mobile marketing in their marketing strategies (Jebarajakirthy, Maseeh, Morshed, Shankar Arlie & Penticost, 2021).

Saleh (2022) confirmed a 5% increase in South African consumers making purchases through mobile devices. This statistic demonstrates that South African consumers have access to mobile marketing and their behaviour is influenced by mobile marketing (Saleh, 2022). Moreover, over the years, the number of affordable smartphones that can be purchased in South Africa has risen, which has increased the rate of mobile usage (Hundermark, 2020). Mobile marketing utilises various channels to communicate with consumers, such as SMS, email, social media, and mobile responsive websites (Kumar & Mittal, 2020). This excess of channels enables consumers to access advertisements, which makes mobile advertising an effective marketing tool (Kumar & Mittal, 2020). Furthermore, the inherent attributes of mobile marketing, such as personalisation, interactivity, and localisation, differentiate it from other marketing channels and it holds significant potential (Jain, Pant & Daswani, 2011). Mobile marketing allows marketers to reach and influence their target market directly. It has provided an innovative way of communication that has changed the concept of advertising (Barwise & Farley, 2005). However, mobile marketing needs to be used correctly by monitoring it regularly as well as updating and having control measures to ensure mobile marketing is conducted appropriately to reach consumers (Kumar & Mittal, 2020).

Marketing managers in the healthcare industry have also utilised mobile marketing (Radu, Solomon, Gheorghe, Hostiuc, Bulescu & Purcarea, 2017). It has enabled medical institutions to communicate with current and potential consumers by sharing promotions on the advantages of using products and services from medical institutions (Radu et al., 2017). Moreover, mobile marketing has been used as a medium to communicate health-related information to difficult-to-reach populations, such as those in rural areas (Grębosz-Krawczyk, Olender & Łódzka, 2018). Additionally, it expands medical education to the public and provides training opportunities for healthcare workers (Grębosz-Krawczyk et al., 2018). In an effort to encourage South Africans to get vaccinated, the government has implemented multiple interventions

that seek to encourage people in the country to get vaccinated, including mobile vaccination campaigns, giving incentives to the elderly group, and providing transportation assistance to nearby vaccination campaign centres in local communities (Suleman & Lucero-Priso, 2022). For instance, the South African government launched a mobile campaign, “Zwakala; #TakeYourShot #DoItForYou”, aimed at encouraging young people in the country to get vaccinated, wear their masks, social distance, sanitise, and be in ventilated spaces to protect themselves and their loved ones (UNICEF South Africa, 2021).

2.2 The Hesitancy towards Obtaining the COVID-19 Vaccine

To hesitate or resist is to refuse to undergo a certain action that a person does not freely agree to (Brewer, Chapman, Rothman, Leask & Kempe, 2017). In this study, it refers to how South Africans resist or hesitate to obtain the COVID-19 vaccine. Mass vaccination campaigns have been implemented worldwide to counteract the COVID-19 pandemic, but their effectiveness could be challenged by vaccine hesitancy. According to Bedford, Attwell, Danchin, Marshall, Corben and Leask (2018), vaccines are considered to be highly successful and cost-effective in assisting with disease prevention in humans. By April 2020, roughly more than 100 COVID-19 vaccines had been developed and were ready to be tested, but despite the benefits, South African consumers were hesitant to get vaccinated.

The World Health Organization considered vaccine hesitancy amongst individuals as the result of several factors, including issues of confidence, complacency, and accessibility (Troiano & Nardi, 2021; World Health Organization, 2020a). Recent studies by Thunström, Ashworth, Finnoff and Newbold (2021); Troiano and Nardi (2021); and Wang, Wong, Ho, Cheung, Yau, Dong, Wong and Yeoh (2021) show how some individuals can be accepting of general vaccines but still be apprehensive about vaccines, whereas some individuals can refuse to obtain vaccines completely. The hesitancy towards the COVID-19 vaccine emanates from doubts regarding the safety and value of the vaccines against the virus, social influence, and trust issues (Troiano & Nardi, 2021). This trend is directly affecting the public health standpoint, given the fact that taking the vaccine is paramount in slowing down the spread of the COVID-19 virus (Chou & Budenz, 2020). According to Brewer et al. (2017), emotional responses, such as fear and anxiety, are the driving forces behind the hesitancy in obtaining the vaccine. As such, Durnan (2020) concluded that the cause for such emotions is directly impacted by misinformation, conspiracy theories, and confusion from potential anti-vaxxer groups.

Moreover, vaccine hesitancy has increased drastically amongst South Africans (Cascini, Pantovic, Al-Ajlouni, Failla & Ricciardi, 2021; Loembé & Nkengasong, 2021). Research (Cooper et al., 2021) indicates that common reasons why South Africans are reluctant to obtain the vaccines include the fear of the aftermath (53%), doubt about the value of the vaccine (24%), and rejecting the vaccine entirely (23%). Moreover, Jafar, Dambul, Dollah, Sakke, Mapa and Joko (2022) showed that South Africans refused to get the vaccine as they believed that COVID-19 will not pose any big health risks. Moreover, research by Dzinamarira, Nachipo, Phiri and Musuka (2021); Thunström et al. (2021); and Troiano and

Nardi (2021) revealed the following top three reasons for individuals' hesitancy towards the vaccine as: (1) not being sure about the vaccine being clinically safe; (2) not being informed about possible side effects; and (3) not being well informed about the value of the vaccine in hindering the increase of the virus contamination. Regarding vaccine safety, there is uncertainty and misunderstanding, which highly contributes to South African communities' hesitancy to obtain the vaccine (Dzinamarira, et al., 2021).

3 Conceptual Model and Hypotheses Development

The principal theoretical basis of this study is innovation resistance theory (Ram & Sheth, 1989). Research shows that fears associated with adapting to change are a critical factor influencing consumers' acceptance of the COVID-19 vaccine (Lu, Tsai, Wang, Tang, Li, Ke & Chen, 2021). Hence, innovation resistance theory is a suitable theory for this study. This study tested the factors (perceived risk, social influence, trust, and mobile marketing) affecting innovation resistance under the influence of mobile marketing directed to citizens. The model is demonstrated in Figure 1.

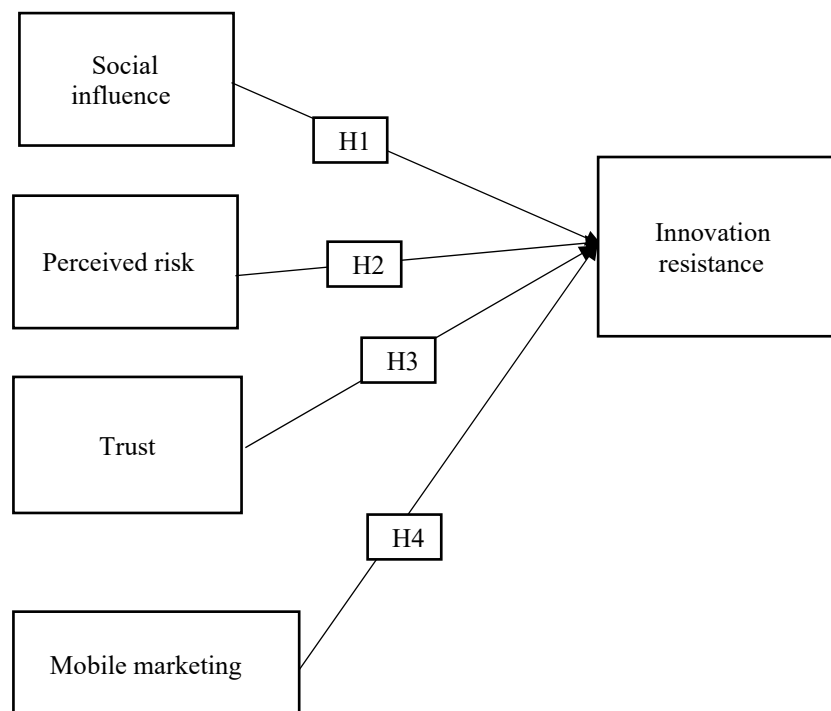


Figure 1: Conceptual model
Source: Author's own construction.

3.1 Social Influence

Social influence is interpreted as how individuals are influenced by their significant others (i.e., friends and family) to accept or reject the vaccine (Piltch-Loeb, Savoia, Goldberg, Hughes, Verhey, Kayyem, Miller-Idriss & Testa, 2021). According to Piltch-Loeb et al. (2021), negative information from social media and close contacts (i.e., friends and family) negatively affects individuals' behavioural intention to obtain the vaccine. Empirical research shows the larger impact social media plays on acquiring the

COVID-19 vaccine (Agranov, Elliott & Ortoleva, 2021; Jennings, Stoker, Bunting, Valgarðsson, Gaskell, Devine, McKay & Mills, 2021; Luo, Li, Chen & Tang, 2020; Piltch-Loeb et al., 2021). A study conducted in China gave insight into the health communications via social media on post-virus transmission that positively contributed to consumers' behavioural intention to obtain the vaccine (Luo et al., 2020).

- H1: Social influence has a significant positive influence on the innovation resistance of the COVID-19 vaccine.

3.2 Perceived Risk

Perceived risk can be explained as the consequential severity and vulnerability associated with performing a certain action (Karafillakis & Larson, 2017). In relation to contextual research on the COVID-19 variant, perceived risk can be described as the risks linked to vaccinations. Empirical research has widely highlighted how perceived risk influences innovation resistance (Abbas, Nawas, Ahmad & Ashraf, 2017:2; Chauhan, Yadav & Choudhary, 2019; Joachim, Spieth & Heidenreich, 2018:97; Tlale, Gabaitiri, Totolo, Smith, Puswane-Katse, Ramonna, Mothowaeng, Tlhakanelo, Masupe, Rankgoane-Pono, Irige, Mafa & Kolane, 2022). A Botswana study tested the relationship between individuals' perceived risk and its influence on vaccine acceptance (Tlale et al., 2022), and confirmed a positive relationship between risk and resistance. Consequently, this study suggests that perceived risk positively influences South Africans' resistance to innovation:

- H2: Perceived risk has a positive relationship with innovation resistance.

3.3 Trust

In the context of this study, trust pertains to citizens showing trust or distrust towards the COVID-19 vaccine (Verger & Dubé, 2022). Few research studies have found proof of the connection between vaccine hesitancy and distrust of medical professionals and political societies and how it impacts citizens (Cooper et al., 2021; Peretti-Watel, Larson, Ward, Schulz & Verger, 2015; Pertwee et al., 2022; Razai, Osama, McKechnie, Majeed, 2021). A study conducted in the United States in 2022 showed that attitudes towards vaccines, trust within the local health professionals, and a political way of thinking are all connected (Pertwee et al., 2022). The study proposes that citizens who trust political sources and health professionals will not resist taking the vaccine (Pertwee et al., 2022):

- H3: Trust has a significant negative relationship with innovation resistance.

3.4 Mobile Marketing

Mobile marketing refers to advertisers communicating asymmetrically with their customers and does not include pertinent parts issued through current mobile marketing underlined in modern descriptions (Kumar & Mittal, 2020:523). Mobile marketing describes how marketers and government

use mobile marketing to promote and disseminate news about COVID-19 vaccines (Anne, 2020). Researchers have examined the influence of mobile marketing in innovation resistance (Kaur, Dhir, Singh, Sahu & Almotairi, 2020:358; Kumar & Mittal, 2020:523; Ram & Sheth, 1989:5; Sivathanu, 2019:145). Kaur et al. (2020:358) assessed the influence of mobile marketing in the adoption and use of innovation in Malaysia. This study presents that mobile marketing has a negative impact on the innovation resistance of South African citizens.

- H4: Mobile marketing has a significant negative influence on innovation resistance.

4 Research Methodology

Research methodology is a system used to find solutions to problems stipulated in a study. The methodology contains steps that researchers use to understand a research problem in their appropriate field of study and to comprehend a research problem in a scientific manner (Patel & Patel, 2019:48). The following sections describe the research methods used in this study.

4.1 Research Approach

A research approach is the process applied to collect, analyse, and interpret data. Saunders, Lewis and Thornhill (2019:179) mentioned that the main research approach is deductive and inductive. A deductive approach determines a theory's validity by using existing theory to formulate and test a hypothesis. However, an inductive approach does not test a hypothesis. Therefore, a deductive research approach was used in this study. Additionally, this study relates to quantitative studies, which are more suitable for deductive research (Saunders et al., 2019:153). The hypotheses were tested using quantitative data and by expansively reviewing literature on existing theories.

4.2 Research Strategy

The study employed an electronic questionnaire. All the primary constructs were measured with reflective items adapted from Arnold and Reynolds (2003), Babin, Darden and Griffin (1994), and Chiu, Fang, Cheng and Yen (2013). To measure this, this study applied a Likert scale ranging from 1 ("strongly disagree") to 7 ("strongly agree").

4.3 Sampling, Data Gathering, and Sample Characteristics

The population defined in this study was adults aged 18-65 of all races residing in South Africa. Since no sample frame was available, participants were chosen using a non-probability sampling technique known as convenience sampling. The first page of the online questionnaire had a consent form clarifying the aim of the research and the participants' rights. The sample size comprised 424 respondents, of whom 226 (53.3%) were female, 192 (43.5%) were male, three (0.7%) specified "other" as their gender (0.7%), and three (0.7%) respondents indicated that they preferred not to say their gender. From the

results obtained, 49.5% of the respondents were aged 18-25 years, 31.6% were 25-40 years old, 17.2% were over 40 years, and 1.7% indicated that they preferred not to say their age.

5 Data Analysis and Results

The self-administered survey questionnaire was utilised to gather primary research data for the study. The questionnaire was disseminated through online platforms (i.e., Google Forms) and the link to the questionnaire was made available on social media and via email. The individuals conducting the study aimed to have online interactions with the respondents, to provide the respondents with a description of why the study is being done, to kindly request the respondents to complete the questionnaire willingly by providing the respondents with the link to the questionnaire, and to kindly ask them to distribute the link to their contacts. The data was collected in June 2022.

5.1 Validation of Scale

The validity of the measures was conducted to determine the reliability and validity of the proposed measurement model. The measurements' validity was evaluated using convergent and discriminant validity. The convergent validity was evaluated using standardised factor loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). The Cronbach's alpha for the internal consistency of reliability and the CR estimates all exceeded the 0.7 threshold, and the AVEs for each of the constructs were greater than 0.5 (Hair, Sarstedt, Ringle & Gudergan, 2018) – refer to Table 1. The results presented in Table 2 indicate that the factor loadings were greater than 0.7. As a result, the constructs were proven statistically to be acceptable and reliable.

Table 1: Convergent Validity of the Constructs

Construct	Number of Items	Cronbach's Alpha	CR	AVE
Trust	4	0.925	0.928	0.764
Social Influence	4	0.838	0.856	0.606
Perceived Risk	4	0.885	0.891	0.674
Innovation Resistance	4	0.848	0.850	0.587
Mobile Marketing	6	0.916	0.872	0.632

Table 2: Factor Loading

Factors			Estimate
SI4	<---	Social influence	0.537
SI3	<---	Social influence	0.882
SI2	<---	Social influence	0.863
SI1	<---	Social influence	0.784
MM4	<---	Mobile marketing	0.666
MM3	<---	Mobile marketing	0.883
MM2	<---	Mobile marketing	0.831
MM1	<---	Mobile marketing	0.785
PR4	<---	Perceived risk	0.672
PR3	<---	Perceived risk	0.932
PR2	<---	Perceived risk	0.873
PR1	<---	Perceived risk	0.784
INR4	<---	Innovation resistance	0.72
INR3	<---	Innovation resistance	0.84
INR2	<---	Innovation resistance	0.678
INR1	<---	Innovation resistance	0.816
TR4	<---	Trust	0.911
TR3	<---	Trust	0.917
TR2	<---	Trust	0.912
TR1	<---	Trust	0.744

Discriminant validity was confirmed using the heterotrait-monotrait (HTMT) criteria because the HTMT ratios of correlation realised for the constructs were less than the strict threshold (Henseler, 2018) guidelines. The HTMT construct values were measured against the threshold of 0.85 (correlation value). The results in Table 3 indicate that all construct values are below the 0.85 threshold, thus confirming discriminant validity.

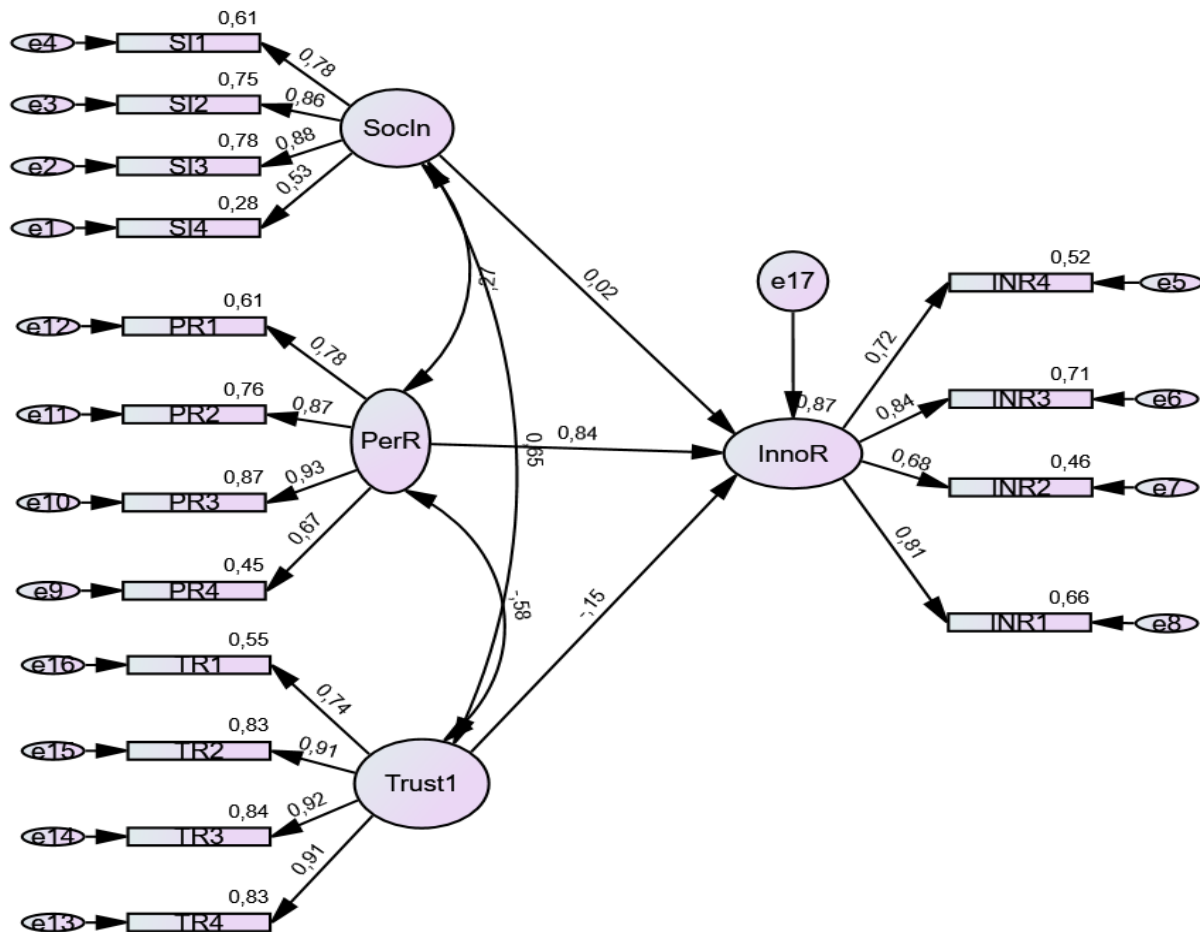
Table 3: Discriminant Validity – HTMT Criteria

	Social Influence	Mobile Marketing	Perceived Risk	Innovation Resistance	Trust
Social Influence					
Mobile Marketing	0.489				
Perceived Risk	0.239	0.214			
Innovation Resistance	0.281	0.216	0.814		
Trust	0.618	0.526	0.509	0.552	

5.2 Hypotheses Testing

The analysis of the structural model was also accomplished using the partial least squares structural equation modelling (PLS-SEM) technique via SmartPLS 3. The results of the PLS-SEM of the structural model analysis are presented in Figure 1 and Table 4.

Figure 1: Structural Model Analysis with Path Coefficients and R² Estimates



Source: Author's own construction.

Notes: SocIn = Social influence; PerR = Perceived risk; InnoR = Innovation response.

Table 4: Hypotheses Testing Results

Path	β	<i>p</i> -value	Decision
Social influence > innovation resistance (H1)	0.003	0.961	Not supported
Perceived risk > innovation resistance (H2)	0.990	***	Supported
Trust > innovation resistance (H3)	-0.177	***	Supported
Mobile marketing > innovation resistance (H4)	0.118	0.045	Supported

5.3 Results Discussion

The study aimed to examine the effect of mobile marketing on the resistance to accept the COVID-19 vaccine in South Africa. The finding of the study focus on the impact of the constructs, such as perceived risk, trust, social influence, and mobile marketing, on innovation resistance. The findings show that social influence (H1) had no significant relationship with innovation resistance, thus H1 was not supported ($p > 0.05$; $\beta = 0.03$). This implies that the influence of peers and significant others does not affect the resistance to take vaccines. These findings are in line with those of Napitupulu, Yacub and Putra (2021) and Salali, Uysal,Bozyel, Akpinar and Aksu (2022:11), who also found no effect and no significant association of social influence on COVID-19 acceptance among consumers in Southern Africa.

The results show that perceived risk had a significant and positive relationship with innovation resistance, therefore confirming H2 ($p < 0.00$; $\beta = 0.990$). This finding proves that if South Africans have risk concerns associated with their decision to get the COVID-19 vaccine, they will maintain their resistance to get vaccinated. The Ram and Sheth (1989) literature model on innovation theory presents risk barriers as being a predictor of innovation resistance. The findings of this study further confirm a negative relationship between trust and innovation resistance (H3) ($p < 0.00$; $\beta = -0.177$), which implies that if consumers trust the vaccines and healthcare providers, there will be lower resistance towards the vaccine. Schmelz and Bowles (2021:2) and Zheng, Jiang, and Wu (2022:277) proved that trust has a negative relationship with innovation resistance, implying that an increase in trust leads to individual resistance decreasing. This study's results confirm a significant relationship between mobile marketing and innovation resistance, thus confirming H4 ($p < 0.05$; $\beta = 0.118$).

Surprisingly, the findings show that this relation is positive, which suggests that mobile marketing messages cause an increase in resistance. This could be caused by the proliferation of fake news and misinformation on digital platforms, such as social media. Barua, Barua, Aktar, Kabir and Li (2020) confirmed that credibility evaluation of misinformation predicts individual responses towards COVID-19 vaccines. Furthermore, fake news and exaggerated information contribute to health anxiety and resistance to vaccines. In addition, Skaffle (2022) stated that the impact of misinformation/fake news on the vaccines is huge and has immensely contributed to hesitation. Hence, there is a positive relationship between mobile marketing and innovation resistance towards COVID-19 vaccines.

6 Managerial Implications

The findings of this study suggest that individuals with a higher perception of perceived risk will be more hesitant to obtain the COVID-19 vaccine. Therefore, to overcome South Africans' hesitancy towards the COVID-19 vaccine, the government, public and private healthcare sector, and travel agencies need to develop strategies to address these perceived risks so that more South African citizens get vaccinated. For instance, these institutions can ensure coherent and transparent information is

enhanced and communicated to the public to address misinformation, which can be achieved through mobile marketing platforms. This will lower the perception of risk amongst South African citizens. Moreover, trust was identified as a significant factor influencing the resistance towards the vaccine.

Consequently, it is imperative to build trust in the vaccine, which can be achieved by giving necessary, accurate, and timely information to the public regarding the vaccine through mobile marketing. Furthermore, as South Africans demonstrated that they do not rely on mobile marketing messages for correct information about the vaccine, the more they are exposed to information, the greater their resistance to the vaccine. Possible reasons for this could be that South Africans do not trust the source and the common fake news trending on social media about the vaccine. Thus, it is crucial for government to use credible sources to provide information, deal with fake news, give assurance to the public, and deal with people who are spreading this fake news through mobile devices. In this way, government would be able to utilise mobile marketing positively and consumers would also rely on mobile marketing for important information regarding COVID-19.

7 Theoretical Implications

This research attempts to provide experimental legitimacy to innovation resistance theory amid South Africa's public health sector. In addition, this is the first research study to be conducted with the intention of examining the reasoning behind resistance to accepting COVID-19 vaccines in a developing country (i.e., South Africa). Majority of existing studies have been conducted in developed nations (Cooper et al., 2021; Suleman & Lucero-Prisno, 2022; Thunström et al., 2021) and their results do not apply to South African consumers. Consequently, this study contributes to literature by examining the vaccine resistance using innovation resistance theory. Furthermore, this study is amongst the limited studies to examine the influence of mobile marketing on innovation resistance. Therefore, this study validates innovation resistance theory within the mobile marketing context among South African participants.

8 Conclusion and Recommendations

This study has analysed and measured the impact of the four identified independent constructs (i.e., trust, social influence, perceived risk, and mobile marketing) on the societal hesitancy to obtain the COVID-19 vaccine in South Africa. The study has achieved the stipulated objectives, which aimed to examine mobile marketing's influence on societal hesitancy to obtain the COVID-19 vaccine in South Africa. Nevertheless, the study has some limitations, such as the fact that data was collected from only one South African province (Gauteng), meaning not all South Africans are represented. Furthermore, it is recommended that future research evaluates perceived risk as a multidimensional construct, which will enable the examination of perceived risk in more detail.

References

- Abbas, M., Nawaz, M.S., Ahmad, J. & Ashraf, M. (2017). The effect of innovation and consumer related factors on consumer resistance to innovation. *Cogent Business & Management*, 4(1), 1312058. <https://doi.org/10.1080/23311975.2017.1312058>
- Agranov, M., Elliott, M. & Ortoleva, P. (2021). The importance of social norms against strategic effects: The case of COVID-19 vaccine uptake. *Economics Letters*, 206, 109979. <https://doi.org/10.1016/j.econlet.2021.109979>
- Arnold, M. J. & Reynolds, K. E. (2003). Hedonic shopping motivations. *Journal of Retailing*, 79(2), 77-95. [https://doi.org/10.1016/S0022-4359\(03\)00007-1](https://doi.org/10.1016/S0022-4359(03)00007-1)
- Babin, B. J., Darden, W. R. & Griffin, M. (1994). Work and/or fun: Measuring hedonic and utilitarian shopping value. *Journal of Consumer Research*, 20(4), 644-656.
- Barua, Z., Barua, S., Aktar, S., Kabir, N. & Li, M. (2020). Effects of misinformation on COVID-19 individual responses and recommendations for resilience of disastrous consequences of misinformation, *Progress in Disaster Science*, 8, 100119. <https://doi.org/10.1016/j.pdisas.2020.100119>
- Barwise, P. & Farley, J. U. (2005). The state of interactive marketing in seven countries: Interactive marketing comes of age. *Journal of Interactive Marketing*, 19(3), 67-80. <https://doi.org/10.1002/dir.20044>
- Bedford, H., Attwell, K., Danchin, M., Marshall, H., Corben, P. & Leask, J. (2018). Vaccine hesitancy, refusal and access barriers: The need for clarity in terminology. *Vaccine*, 36(44), 6556-6558. <https://doi.org/10.1016/j.vaccine.2017.08.004>
- Brewer, N. T., Chapman, G. B., Rothman, A. J., Leask, J. & Kempe, A. (2017). Increasing vaccination: Putting psychological science into action. *Psychological Science in the Public Interest*, 18(3), 149-207. <https://doi.org/10.1177/1529100618760521>
- Cascini, F., Pantovic, A., Al-Ajlouni, Y., Failla, G. & Ricciardi, W. (2021). Attitudes, acceptance and hesitancy among the general population worldwide to receive the COVID-19 vaccines and their contributing factors: A systematic review. *EClinicalMedicine*, 40, 101113. <https://doi.org/10.1016/j.eclinm.2021.101113>
- Chaney, D. & Lee, M. S. W. (2022). COVID-19 vaccines and anti-consumption: Understanding anti-vaxxers hesitancy. *Psychology & Marketing*, 39(4), 741-754. <https://doi.org/10.1002/mar.21617>
- Chauhan, V., Yadav, R. & Choudhary, V. (2019). Analyzing the impact of consumer innovativeness and perceived risk in internet banking adoption: A study of Indian consumers. *International Journal of Bank Marketing*, 37(1), 323-339. <https://doi.org/10.1108/IJBM-02-2018-0028>
- Chiu, C.-M., Fang, Y.-H., Cheng, H.-L. & Yen, C. (2013). On online repurchase intentions: Antecedents and the moderating role of switching cost. *Human Systems Management*, 32(4), 283-296. <https://doi.org/10.3233/HSM-130796>
- Chou, W.-Y. S. & Budenz, A. (2020). Considering emotion in COVID-19 vaccine communication: Addressing vaccine hesitancy and fostering vaccine confidence. *Health Communication*, 35(14), 1718-1722. <https://doi.org/10.1080/10410236.2020.1838096>
- Cooper, S., Van Rooyen, H. & Wiysonge, C. S. (2021). COVID-19 vaccine hesitancy in South Africa: How can we maximize uptake of COVID-19 vaccines? *Expert Review of Vaccines*, 20(8), 921-933. <https://doi.org/10.1080/14760584.2021.1949291>
- Durnan, G. (2020). Unmasked in the plandemic: Misinformation during the novel coronavirus (SARS-CoV-2) pandemic. *Master's Projects and Capstones*, 1084. Retrieved from <https://repository.usfca.edu/capstone/1084> [Accessed: 30 May 2022].
- Dzinamarira, T., Nachipo, B., Phiri, B. & Musuka, G. (2021). COVID-19 vaccine roll-out in South

- Africa and Zimbabwe: Urgent need to address community preparedness, fears and hesitancy. *Vaccines*, 9(3), 250. <https://doi.org/10.3390/vaccines9030250>
- Grębosz-Krawczyk, M., Olender, M. & Lódzka, P. (2018). The application of mobile marketing in CRM in the medical sector. *Handel Wewnetrzny*, 3(374), 162-171.
- Hair, J. F., Jr., Sarstedt, M., Ringle, C. M. & Gudergan, S. P. (2018). *Advanced issues in partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks, CA: Sage.
- Hudson, A. & Montelpare, W. J. (2021). Predictors of vaccine hesitancy: Implications for COVID-19 public health messaging. *International Journal of Environmental Research and Public Health*, 18(15), 8054. <https://doi.org/10.3390/ijerph18158054>
- Hundermark, L. (2020). #BizTrends2020: What does the African mobile consumer really want for the new decade? *Bizcommunity*, 3 February. Retrieved from <https://www.bizcommunity.com/Article/196/726/200254.html> [Accessed: 05 June 2022]
- Jafar, A., Dambul, R., Dollah, R., Sakke, N., Mapa, M. T. & Joko, E. P. (2022). COVID-19 vaccine hesitancy in Malaysia: Exploring factors and identifying highly vulnerable groups. *PLoS ONE*, 17(7), e0270868. <https://doi.org/10.1371/journal.pone.0270868>
- Jain, V., Pant, S. & Daswani, A. (2011). Mobile marketing: The emerging Indian perspective. *International Journal of Mobile Marketing*, 6(2), 17-27.
- Jennings, W., Stoker, G., Bunting, H., Valgarðsson, V. O., Gaskell, J., Devine, D., McKay, L. & Mills, M. C. (2021). Lack of trust, conspiracy beliefs, and social media use predict COVID-19 vaccine hesitancy. *Vaccines*, 9(6), 593. <https://doi.org/10.3390/vaccines9060593>
- Joachim, V., Spieth, P. & Heidenreich, S. (2018). Active innovation resistance: An empirical study on functional and psychological barriers to innovation adoption in different contexts, *Industrial Marketing Management*, 71, 95-107. <https://doi.org/10.1016/j.indmarman.2017.12.011>
- Karafillakis, E. & Larson, H. J. (2017). The benefit of the doubt or doubts over benefits? A systematic literature review of perceived risks of vaccines in European populations. *Vaccine*, 35(37), 4840-4850. <http://dx.doi.org/10.1016/j.vaccine.2017.07.061>
- Kaur, P., Dhir, A., Singh, N., Sahu, G. & Almotairi, M. (2020). An innovation resistance theory perspective on mobile payment solutions. *Journal of Retailing and Consumer Services*, 55, 102059. <https://doi.org/10.1016/j.jretconser.2020.102059>
- Kumar, V. & Mittal, S. (2020). Mobile marketing campaigns: Practices, challenges, and opportunities. *International Journal of Business Innovation and Research*, 21(4), 523-539. <https://doi.org/10.1504/IJBIR.2020.105996>
- Li, J.-Y., Wen, T. J., McKeever, R. & Kim, J. K. (2021). Uncertainty and negative emotions in parental decision-making on childhood vaccinations: Extending the theory of planned behaviour to the context of conflicting health information. *Journal of Health Communication*, 26(4), 215-224. <https://doi.org/10.1080/10810730.2021.1913677>
- Loembé, M. M. & Nkengasong, J. N. (2021). COVID-19 vaccine access in Africa: Global distribution, vaccine platforms and challenges ahead. *Immunity*, 54(7), 1353-1362. <https://doi.org/10.1016/j.immuni.2021.06.017>
- Lu, W.-C., Tsai, I.-C., Wang, K.-C., Tang, T.-A., Li, K.-C., Ke, Y.-C. & Chen, P.-T. (2021). Innovation resistance and resource allocation strategy of medical information Digitalization. *Sustainability*, 13(14), 7888.
- Luo, C., Li, Y., Chen, A. & Tang, Y. (2020). What triggers online help-seeking retransmission during the COVID-19 period? Empirical evidence from Chinese social media. *PLoS ONE*, 15(11), e0241465. <https://doi.org/10.1371/journal.pone.0241465>
- MarketLine. (2021). Digital advertising in South Africa. Retrieved from <https://www.marketresearch.com/MarketLine-v3883/Digital-Advertising-South-Africa->

Summary-14710268/ [Accessed: 8 Septer 2022]

- Martins, J., Costa, C., Oliveira, T., Gonçalves, R. & Branco, F. (2019). How smartphone advertising influences consumers' purchase intention. *Journal of Business Research*, 94, 378-387. <https://doi.org/10.1016/j.jbusres.2017.12.047>
- Mo, P. K. H., Wong, C. H. W. & Lam, E. H. K. (2019). Can the health belief model and moral responsibility explain influenza vaccination uptake among nurses? *Journal of Advanced Nursing*, 75(6), 1188-1206. <https://doi.org/10.1111/jan.13894>
- Napitupulu, D., Yacub, R. & Putra, A.H.P.K. (2021). Factor influencing of telehealth acceptance during COVID-19 outbreak: Extending UTAUT model. *International Journal of Intelligent Engineering & Systems*, 14(3), 267-281. <https://doi.org/10.22266/ijies2021.0630.23>
- Patel, M. & Patel, N. (2019). Exploring research methodology: Review article. *International Journal of Research and Review*, 6(3), 48-55.
- Peretti-Watel, P., Larson, H. J., Ward, J. K., Schulz, W. S. & Verger, P. (2015). Vaccine hesitancy: Clarifying a theoretical framework for an ambiguous notion. *PLoS Currents*, 7. <https://doi.org/10.1371/currents.outbreaks.6844c80ff9f5b273f34c91f71b7fc289>
- Pertwee, E., Simas, C. & Larson, H. J. (2022). An epidemic of uncertainty: Rumors, conspiracy theories and vaccine hesitancy. *Nature Medicine*, 28, 456-459. <https://doi.org/10.1038/s41591-022-01728-z>
- Piltch-Loeb, R., Savoia, E., Goldberg, B., Hughes, B., Verhey, T., Kayyem, J., Miller-Idriss, C. & Testa, M. (2021). Examining the effect of information channel on COVID-19 vaccine acceptance. *PLoS ONE*, 16(5), e0251095. <https://doi.org/10.1371/journal.pone.0251095>
- Radu, G., Solomon, M., Gheorghe, C. M., Hostiuc, M., Bulescu, I. A. & Purcarea, V. L. (2017). The adoption of healthcare marketing in the digital area. *Journal of Medicine and Life*, 10(1), 44-46.
- Ram, S. & Sheth, J. N. (1989). Consumer resistance to innovations: The marketing problem and its solutions. *Journal of Consumer Marketing*, 6(2), 5-14. <https://doi.org/10.1108/EUM0000000002542>
- Razai, M. S., Osama, T., McKechnie, D. G. J. & Majeed, A. (2021). COVID-19 vaccine hesitancy among ethnic minority groups. *BMJ*, 372, n513. <https://doi.org/10.1136/bmj.n513>
- Salali, G. D., Uysal, M. S., Bozyel, G., Akpınar, E. & Aksu, A. (2022). Does social influence affect COVID-19 vaccination intention among the unvaccinated? *Evolutionary Human Sciences*, 4, e32. <https://doi.org/10.1017/ehs.2022.29>
- Saleh, M. (2022). Share of internet users who purchased something online using a mobile device in Egypt and South Africa compared to the global average in 2019 and 2020. Retrieved from <https://www-statista-com.eu1.proxy.openathens.net/statistics/1190637/online-shopping-with-mobile-devices-in-egypt-and-south-africa/> [Accessed: 3 March 2023]
- Saunders, M., Lewis, P. & Thornhill, A. (2019). *Research Methods for Business Students*. Pearson Education, New York, NY.
- Schmelz, K. & Bowles, S. (2021). Overcoming COVID-19 vaccination resistance when alternative policies affect the dynamics of conformism, social norms, and crowding out. *Proceedings of the National Academy of Sciences*, 118(25), e2104912118. <https://doi.org/10.1073/pnas.2104912118>
- Sivathanu, B. (2019). Adoption of digital payment systems in the era of demonetization in India: An empirical study. *Journal of Science and Technology Policy Management*, 10(1), 143-171. <https://doi.org/10.1108/JSTPM-07-2017-0033>
- Suleman, M. H. & Lucero-Prisno, D. E., III (2022). South Africa's COVID-19 vaccine rollout amid the emergence of Omicron. *Population Medicine*, 3, 1-2. <https://doi.org/10.18332/popmed/145772>
- Thunström, L., Ashworth, M., Finnoff, D. & Newbold, S. C. (2021). Hesitancy toward a COVID-19 vaccine. *Ecohealth*, 18(1), 44-60. <https://doi.org/10.1007/s10393-021-01524-0>

- Tlale, L. B., Gabaitiri, L., Totolo, L. K., Smith, G., Puswane-Katse, O., Ramonna, E., Mothowaeng, B., Tlhakanelo, J., Masupe, T., Rankgoane-Pono, G., Irige, J., Mafa, F. & Kolane, S. (2022). Acceptance rate and risk perception towards the COVID-19 vaccine in Botswana. *PLoS ONE*, 17(2), e0263375. <https://doi.org/10.1371/journal.pone.0263375>
- Tong, S., Luo, X. and Xu, B. (2019). Personalized mobile marketing strategies. *Journal of the Academy of Marketing Science*, 48: 64-78. <https://doi.org/10.1007/s11747-019-00693-3>
- Troiano, G. & Nardi, A. (2021). Vaccine hesitancy in the era of COVID-19. *Public Health*, 194, 245-251. <https://doi.org/10.1016/j.puhe.2021.02.025>
- UNICEF South Africa. (2021). Zwakala. Retrieved from <https://www.unicef.org/southafrica/take-action-0/zwakala> [Accessed: 04 June 2022]
- Verger, P. & Dubé, E. (2020). Restoring confidence in vaccines in the COVID-19 era. *Expert Reviews of Vaccines*, 19(11), 991-993. <https://doi.org/10.1080/14760584.2020.1825945>
- Wake, A. D. (2021). The acceptance rate toward COVID-19 vaccine in Africa: A systematic review and meta-analysis. *Global Pediatric Health*, 8. <https://doi.org/10.1177/2333794X211048738>
- Wang, K., Wong, E. L.-Y., Ho, K.-F., Cheung, A. W.-L., Yau, P. S. Y., Dong, D., Wong, S. Y.-S. & Yeoh, E.-K. (2021). Change of willingness to accept COVID-19 vaccine and reasons of vaccine hesitancy of working people at different waves of local epidemic in Hong Kong, China: Repeated cross-sectional surveys. *Vaccines*, 9(1), 62. <https://doi.org/10.3390/vaccines9010062>
- Williams, P. (2021). Behind the state's communications strategy to encourage Covid-19 vaccinations. [Online]. Available from: <https://www.gov.za/blog/behind-states-communications-strategy-encourage-covid-19-vaccinations> [Accessed: 10 August 2023].
- World Health Organization. (2020a). Impact of COVID-19 on people's livelihood, their health and food systems. Retrieved from <https://www.who.int/news/item/13-10-2020-impact-of-covid-19-on-people-s-livelihoods-their-health-and-our-food-systems> [Accessed: 04 May 2023].
- World Health Organization. (2020b). Countering misinformation about COVID-19. Retrieved from <https://www.who.int/news-room/feature-stories/detail/countering-misinformation-about-covid-19> [Accessed: 05 July 2023].
- Zheng, H., Jiang, S. & Wu, Q. (2022). Factors influencing COVID-19 vaccination intention: The roles of vaccine knowledge, vaccine risk perception, and doctor-patient communication. *Patient Education and Counseling*, 105(2), 277-283. <https://doi.org/10.1016/j.pec.2021.09.023>