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Factors Influencing the Adoption of Digital Technologies in South African SMMEs

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Abstract

The increased use of interactive digital technology and the Internet are forcing organisations to have a digital presence. For small, medium and microenterprises (SMMEs), this is an opportunity to expand communications with consumers and improve sales in the digital economy. However, SMMEs in developing countries, including South Africa, are slow to adopt these technologies, thereby impacting their survival. This preliminary study explored five SMME top management's perceptions of digital technology adoption towards enhancing their digital presence based on the technology-organisation-environment framework. The study used in-depth interviews with managers from five SMMEs in the Western Cape province of South Africa. The study found that SMME owners' awareness of the relative advantage of the technology for an enhanced digital presence, the perceived SMME's capabilities, the compatibility of the technology with existing processes, and effort expectancy in time influenced the adoption of technology for digital presence. The adoption of technology is moderated by prior digital technology experiences, perceived pressures from customers and competitors, and external support availability.

Keywords: Digital Technologies; Digital Presence; SMMEs; Adoption Factors; TOE.

1. Introduction

The rapid advances and prevalence of the Internet and information and communication technologies (ICT) are forcing businesses to transform how they conduct operations (Fosu, 2018). Organisations communicate and interact with consumers and stakeholders through new digital channels that increase their digital presence (Fosu, 2018; Elia et al., 2020). Digital channels utilise digital technologies, including websites and social media, to interact and communicate directly with consumers (Elia et al., 2020). Some of the benefits derived from ICT-based customer interactions include improving the organisation's competitiveness, efficiency, and cost-effectiveness (Fosu, 2018). In particular, small businesses have reaped the benefits of digital technologies that enable them to compete with larger organisations to cost-effectively access markets and maintain customer relationships (Matikiti et al., 2018).

For developing countries, such as South Africa, small, medium and microenterprises (SMMEs) are essential for job creation and economic growth (Botha et al., 2020). However, SMMEs have high failure rates (Mukwarami et al., 2020). SMMEs' inability to forge and maintain communication with their customer base is one of the most significant causes of failure (Fosu, 2018). Despite the benefits and the ubiquity of digital technologies that enable a digital presence, many SMMEs still lack a meaningful digital presence (Maduku et al., 2016). These SMMEs risk becoming irrelevant and losing consumers to competitors in an increasingly

competitive and digital environment (Nuseir, 2018). This study's primary question sought to identify the factors that influence the adoption of digital technologies by SMMEs in South Africa to enhance their digital presence.

The next section provides a brief background to preliminary study with a limited sample, followed by the research objectives and theoretical framework. Section three describes the research design, and section four discusses the findings. Section five provides a conclusion and lists limitations and future work.

2. Background

Creating a digital presence entails adopting digital technologies, such as e-commerce websites, social media, and other internet technologies (Banner, 2018). E-commerce enables organisations to trade via the Internet (Alzahrani, 2019) and establish their market presence and improve their current market position (Banner, 2018). Social media are internet-based applications that enable user-generated content creation and exchange (Kaplan, 2015), enabling a business to improve its digital presence at a relatively low cost (Ainin et al., 2015). Social media adoption enables organisations to increase market penetration, competitiveness, and increased awareness of the business (Matikiti et al., 2018) and extend customer relationships (Harrigan et al., 2010). SMMEs play a pivotal role in South Africa as they contribute towards economic growth and job creation (Botha et al., 2020). An increasing number of South Africans use the Internet and digital technologies to search for products and services online, which presents firms' opportunity to gain consumers and penetrate the market (Kemp, 2020). The adoption of digital technologies enables organisations to promote their business, engage with consumers, convey real-time information and improve communication with consumers, ultimately contributing towards their growth and survival (Abed, 2020). Fostering a digital presence would enable SMME's to remain relevant. It provides a platform for market penetration, and it can directly increase sales revenue while providing a means of survival in the digital economy (Fosu, 2018).

2.1 Factors Affecting Digital Technology Adoption by Organisations

Organisations are influenced in their decision to adopt digital technology by internal and external factors (Matikiti et al., 2018). The internal factors refer to the organisation's capabilities and characteristics (Abed, 2020), while the external environment includes factors and events over which the organisation has limited control (Kuratko et al., 2014). For SMMEs, the factors that facilitate or inhibit digital technologies' adoption are influenced by top management perceptions (Matikiti et al., 2018; Zadok, 2018). The challenge is to identify the factors that enhance or inhibit the adoption of a digital presence.

2.2 Research Problem

Adopting a digital presence is essential for organisations to remain relevant, to keep consumers satisfied and survive in the digital economy (Fosu, 2018; Rahayu & Day, 2015). While there is increased use of technology by consumers and larger organisations to enhance their digital presence, SMMEs in developing countries are slow to adopt these technologies (Eze et al., 2020). At the same time, there is little research on the digital presence of SMMEs in developing countries (Matikiti et al., 2018).

2.3 Research Objectives and Research Question

To investigate the research problem, the study sought to qualitatively explore SMMEs' top management's perceptions of digital technology adoption for enhancing SMMEs' digital presence by posing the question: What factors do top management of SMMEs in the Western

Cape province of South Africa perceive to influence their digital technologies adoption? Although this was an inductive study, it was deemed necessary to position and guide the research and the interviewees through the use of a single theoretical framework.

2.4 Theoretical Framework

Theoretical frameworks provide a lens of the empirical investigation (Saunders et al., 2009). There have been various theories developed to study technology adoption at both the individual and organisational levels. Two popular theoretical frameworks that investigate a phenomenon from an organisation, technology and environment point of view is the diffusion of innovation theory (DOI) (Hillmer, 2009) and the technology organisation environment (TOE) framework (Baker, 2012). Some constructs that influence the adoption and usage of technology in organisations are common to DOI and TOE (Odoom et al., 2017). However, the TOE framework's strengths lie in its ability to look at multiple dimensions of variables (Olanrewaju et al., 2020). The TOE framework is recommended when there is a need to consider external factors that could affect technology adoption, whereas the DOI neglects external factors (Maduku et al., 2016). Baker (2012) defines the TOE framework as an organisation-level theory that explains how the different elements of a firm's context influence technology adoption. The three elements are the technological context, the organisation context, and the environmental context. The technological environment refers to the available technologies and could be useful to the firm and indicates the relevant skills required to use the particular technology being adopted (Matikiti et al., 2018). The TOE framework highlights organisations' external and internal aspects that influence the adoption of digital technologies required to create a digital presence. It has been used in several studies related to adopting new technologies by organisations (Rahayu & Day, 2015), including social media (Wamba & Carter, 2015).

2.4.1 Technology Factors

Technological factors include relative advantage, compatibility, and complexity, influencing an organisation's technology adoption process (Olanrewaju et al., 2020). The relative advantage of digital technology comes from technological innovation's anticipated benefits (Maduku et al., 2016). Compatibility with the organisation's culture, existing technology, value, and work practices (Rahayu & Day, 2015) is a significant determinant of technology adoption in an organisation (Chairoel et al., 2015). Complexity influences technology's adoption as challenging to use technology may require significant business process changes (Alshamaila et al., 2013).

2.4.2 Organisational Factors

The organisational factors that influence technology adoption include organisation size, top management support, and prior technology experience (Igwe et al., 2020). The organisation size is a significant factor in influencing technology adoption (Hagsten & Kotnik, 2017; Ifinedo, 2011). Large organisations have more significant resources and the ability to survive compared to smaller firms. On the other hand, smaller firms are more flexible and innovative (Alshamaila et al., 2013). Top management support is essential when adopting technology (Jere & Ngidi, 2020) as top management must approve of the technology adoption and allocate resources (Maduku et al., 2016). Prior experience of users with technology correlates to current practice (Alshamaila et al., 2013). Thus, the organisation will be more likely to adopt the technology if its employees and top management are familiar with similar technology.

2.4.3 Environmental Factors

An organisation's decision to adopt technology can be impacted directly by environmental factors (Olanrewaju et al., 2020). Customer and competition are the most investigated external factors that affect organisations' adoption of technology (Shaltoni, 2017). The fear of losing to competitors arises from the external environment and usually leads the organisation to adopt the technology to maintain its competitiveness (Soto-Acosta et al., 2014).

3. Research Design and Methodology

The study sought to explore factors that influence digital technology adoption to create a digital presence by South African SMMEs within their natural settings (Aspers & Corte, 2019). Data was collected using semi-structured interviews using themes and questions (Saunders et al., 2009). With themes derived from the TOE framework constructs, semi-structured interviews provided an in-depth understanding of digital technology adoption by SMMEs. Five face-to-face interviews were conducted with owners of SMMEs at the premises of the organisation. Each interview between 20 and 30 minutes was voice recorded and transcribed for further analysis with the interviewees' permission.

Instrument Development

The unit of analysis was the digital presence of SMME businesses located within the Western Cape province of South Africa. An interview protocol was developed based on the TOE framework with open-ended questions adapted from Alshamaila et al. (2013).

Data Sources and Sampling

Judgmental sampling was used for the study since it enabled the observed unit/units to be selected based on the interviewer's judgment about the most useful or representative interviewees (Babbie, 2008). Owners and managers are primary decision-makers in the SMMEs (Jere & Ngidi, 2020) and were the respondents of this study.

Data Analysis

Thematic analysis was used to analyse the data (Nowell et al., 2017). The contexts of the TOE framework (technology, organisation, and environment) formed the initial coding system and were identified as the main themes. The interview voice recordings were first transcribed using Microsoft Word and then coded using Atlas.ti (Saldana, 2013). The codes were sorted and categorised under the TOE framework's respective main themes based on the reference, relationship, and underlying meaning.

4. Findings and Discussion

Five diverse SMMEs (named SMME1 through SMME5), as shown in Table 1 were interviewed. SMME1 was a second-hand motor dealership with a repair and services workshop that sells cars and car parts and had been in operation since 2003. SMME2 was a small retail business established in 2015. SMME3 and SMME4 were printing businesses and had been in existence since 2000 and 2005, respectively. SMME5 was a family retail business and has been in existence for about 40 years. Only SMME5 had no digital presence.

4.1 Technology Factors

Technological factors influencing digital technologies adoption were the relative advantage, compatibility, complexity of the technology, and engagement, as shown in Figure 1.

4.1.1 Relative Advantage

Organisations with a digital presence were aware of the benefits derived from the use of technology. Benefits included connection with customers, the potential to reach more customers, and a cost-effective way to increase sales. “More people became aware of my business, which gave me a broader customer base over a short period when I started using social media for my business.” (SMME2). “We made more sales once we started using social media ... to make more sales during COVID-19 than we would have made under normal circumstances.” (SMME3). The organisation that had not adopted digital technology was unaware of the benefits technology could provide; hence, it did not adopt the digital technology. “... our operations don’t require any digital technology.” (SMME5).

| Number | Industry | Interviewee role | Number of employees | Digital media technology adopted |
|--------|--------------------------|------------------|---------------------|----------------------------------|
| SMME 1 | Motor trade and services | owner | 16 | E-mai, Social Media, E-commerce |
| SMME 2 | Retail trade | owner | 5 | Social Media, E-mail |
| SMME 3 | Printing industry | owner | 10 | Social Media, E-mail, E-commerce |
| SMME 4 | Printing industry | owner | 7 | Social Media, E-mail |
| SMME 5 | Retail trade | owner | 4 | None |

Table 1: Summary/description of research participants4

4.1.2 Complexity / Perceived Ease of Use

All organisations that had a digital presence viewed digital technology as easy to use except for the non-adopter who was sceptical of the complexities of digital technology use. “Once I started using social media and realised ... it was much easier to use than I anticipated.” (SMME2). “Social media and these new technologies has its own problems. I would rather stick to what I know works for my business.” (SMME5). However, adopting an e-commerce website was more complicated than social media. “Having a business website or incorporating e-commerce for my business requires a bit of IT skill ... it also has to be maintained regularly, however social media is relatively easy to use” (SMME1).

4.1.3 Compatibility

Compatibility was a crucial factor influencing the organisation to adopt digital technology to align with the organisation’s values, needs, and resources. “I adopted digital technology like social media because my business products need to be visually promoted ... helped me reach many people while giving my products visual exposure.” (SMME2). “I can access and manage my online business presence through my social media pages using my phone, which makes it so much easier.” (SMME4). The non-adopter business indicated that technology was not compatible with their existing work practices. “Our customers make use of our services and purchase goods in person. This is why I haven’t adopted digital technologies for my business.” (SMME5).

4.1.4 Engagement

Engagement with digital technology influenced the organisation’s decision to adopt it. “Tailoring our products and services to the needs of our customers is enabled by the level of engagement that digital technology provides.” (SMME3).

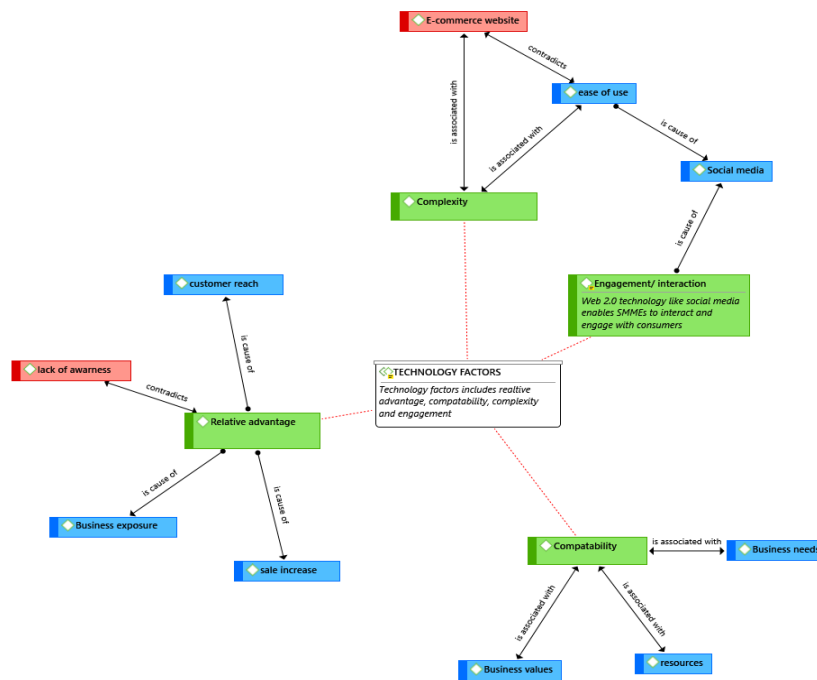


Figure 1: Technology Factors Influencing Digital Technology Adoption.

4.1.5 Discussion of Technology Factors

As in Abed (2020), this study found that the advantages include direct interaction with consumers, wider market reach, cost-effective means to maintain communication with consumers, and promoting their business, leading to increased sales. In contrast, the non-adopter business did not recognise the advantage of digital technologies. Complexity, also referred to as perceived ease of use, influenced digital technology adoption by SMMEs, consistent with Igwe et al. (2020). Relatively easy to use digital technology such as social media was more likely to be adopted than technologies that were perceived to be complicated. Compatibility observations supported the findings of Ainin et al. (2015). Digital technology, like social media that follows existing practices, is more likely to be adopted than a technology that does not align with the organisation’s resources and needs. Top managements’ need for engagement using digital technologies was an essential factor that led SMME owners to adopt digital technology consistent with Ainin et al. (2015). Social media’s interactivity and engagement through two-way communication influenced the SMMEs to adopt the technology.

4.2 Organisation Factors

Organisational factors that influence digital technologies adoption were top management support, organisation size, prior technology experience, and time, depicted in Figure 2.

4.2.1 Top Management Support

The decision to adopt digital technology was supported and initiated by the owners of the technology adopting SMMEs. In contrast, the non-adopter was resistant to implement digital technology. “Although sceptical at first, once I realised the potential and benefits ... I decided to adopt the technology” (SMME1). In comparison, comfort in past success is a hindrance to technology adoption. “My family business has been thriving for a long time without an online presence, and therefore I am not willing to change anything” (SMME5).



Figure 2: Organisation Factors Influencing Digital Technology Adoption.

4.2.2 Organisation Size

The organisations’ size was observed to influence the decision to adopt digital technology. “The use of affordable technologies like social media enables us as a small business to create a presence with little resources.” (SMME2).

4.2.3 Prior Technology Experience

Prior technology experience influenced the decision to adopt the technology within the organisations. “My previous experience working with technology allowed me to apply my knowledge and utilise the technology that is available” (SMME3).

4.2.4 Time

Many participants highlighted that the lack of time was a significant concern and prohibited digital technologies adoption within the organisation. “Time is a problem since we have to continuously engage and respond to consumers as soon as possible.” (SMME2). The non-adopter business also remarked that time was a factor that influenced the decision not to adopt the technology. “My business duties keep me busy 24/7, I do not have much time to promote my business online.” (SMME5).

4.2.5 Discussion of Organisation Factors

Top management support significantly impacts the organisation’s digital technology adoption decision, consistent with Maduku et al. (2016). The organisation size was not perceived as a barrier to digital technology adoption, which aligns with Ifinedo (2011), particularly technologies such as social media, which are relatively easy and inexpensive to adopt and aligns with the organisation’s resources. Resonating with Maduku et al., (2016), prior experience and technology capabilities enabled the users to be aware of the benefits that could

be derived and facilitated adopting the organisation’s technology to enhance a digital presence. Lack of time was identified as a factor that negatively affected digital technologies adoption by the organisation.

4.3 Environment Factors

Environmental factors that influence digital technologies adoption were customer pressure, competitor pressure and external support, depicted in Figure 3.

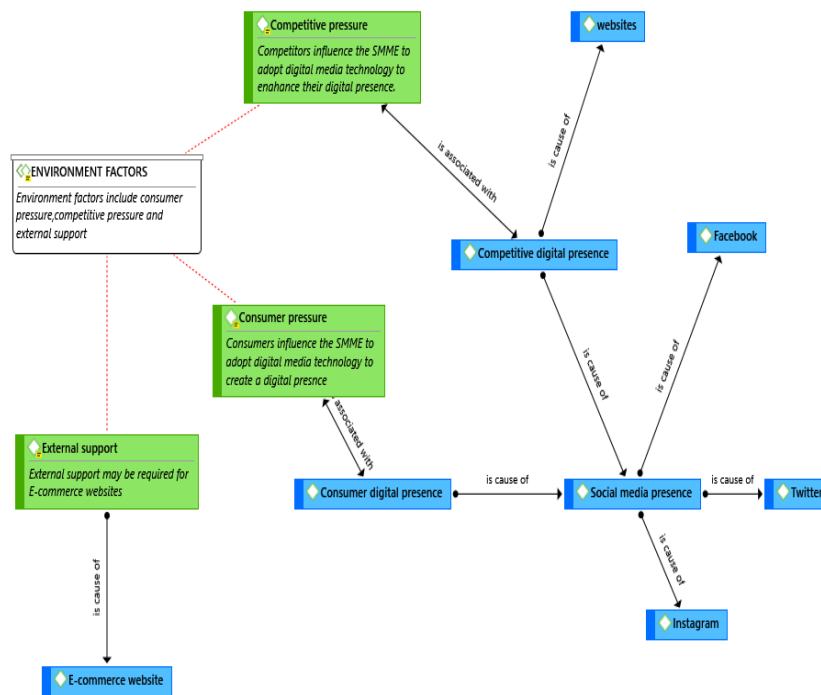


Figure 3: Environmental Factors Influencing Digital Technology Adoption.

4.3.1 Customer Pressure

Customers significantly influenced the decision to adopt the technology. The organisations indicated that it is essential to be easily found and have a presence where consumers are. “Our consumers expect us to be found online via social media or website; therefore, we are expected to have a digital presence.” (SMME4). On the other hand, the non-adopter business did not encounter the same customer pressure, “...our consumers know us and prefer doing business the traditional way.” (SMME5).

4.3.2 Competitor Pressure

Competitors also influenced SMME decisions to adopt digital technologies for the organisation. “It was essential to adopt digital technologies for my business because my competitors have a strong online presence which was beneficial for their business.” (SMME4). Likewise, the non-adopter expressed no interest in using digital technologies due to competitors not using it either. “none of my competitors are using digital technologies, so as it does not affect my business” (SMME5).

4.3.3 External support

External support was not considered an influencing factor of digital technologies adoption of social media. “I did not require any external IT support as I know how to use social media

effectively to promote my business.” (SMME1). However, external support could be an influencer for more advanced digital technologies. “As I have adopted both social media and E-commerce, I require external IT support for my website. However, I don’t for my social media business account.” (SMME3).

4.3.4 Discussion of Environmental Factors

Customers were observed to be a significant external factor that influences digital technology adoption, consistent with Boguea and Brito (2018). Competitor pressure influenced the adoption of technology to maintain competitiveness, as Rahayu & Day (2015) indicated. External support was not considered an influencing factor of easy-to-use digital technologies but could influence more complex technologies requiring external support.

5. Conclusion

This preliminary study explored top management’s perceptions of digital technology adoption for enhancing digital presence for SMMEs in the Western Cape in South Africa. Five SMME owners in the Western Cape were interviewed using open-ended questions guided by the TOE framework. The findings indicate that different digital technology complexities have different factors that promote or inhibit the organisation from adopting the technology. For example, social media was more readily adopted than e-commerce which was more complex and took more effort.

The study underlines the TOE framework’s applicability for exploring technology adoption in organisations. It also showed that technology, organisation, and environment are interrelated and influence digital technologies adoption. Technological factors that significantly influence digital technologies adoption are relative advantage, compatibility, complexity, and engagement. The organisation factors that influence digital technologies adoption in SMMEs were top management support, size, previous digital technology experience and time. The environmental factors that influence digital technology adoption were customer pressure, competitive pressure, and external support. Both forms of pressure were perceived as positive influencing factors of digital technology adoption. The conditions and factors impacted each other and differed between SMMEs and the level of digital technologies. For example, the relative advantage of technology, which is the perceived benefit derived from the adoption of digital technologies, may not be realised after implementation and could influence the organisational construct of prior technology experience. Meanwhile, the lack of awareness and benefits of digital technologies hindered SMMEs technology adoption. Likewise, relationships were observed in the adoption of digital technologies which directly impacted sales, although the need to respond to online consumers timeously constrained the organisation from adopting the technology.

In sum, for an enhanced digital presence, SMME owners should be aware of the relative advantage of the technology, which must be within the business’s capabilities, compatible with existing processes and operable within available time frames of the business. Adopting technology is moderated by prior experiences with technology and the perceived pressure of customers and competitors. For innovative technologies, external support may further moderate adoption.

The study was limited by a small sample size and a purely qualitative approach concentrating on owners’ perceptions and the use of a single theoretical framework. Future research could expand the scope and consider a mixed-methods approach and apply related theories to expand the understanding of digital adoption amongst small businesses. Quantitative research may also

benefit from input from other staff. Future work is needed to determine levels of technology that may differently impact the factors affecting adoption. For example, social media, which was observed to be relatively easy to implement, support and operate, would be ranked lower than e-commerce, which requires more effort and external support.

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