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## Information Searching and Satisficing Process for IT Decision Making Process of SMEs

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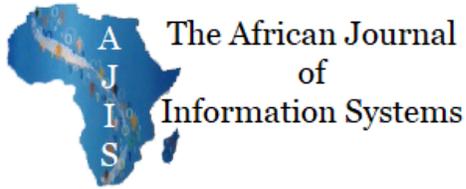
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# Information Searching and Satisficing Process for IT Decision Making Process of SMEs

## Research Paper

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## ABSTRACT

Information Technology (IT) can provide Small and Medium Enterprises (SMEs) with competitive advantage, effective management, and improved business performance. Decision making is an integral process of achieving a successful IT investment. SME owner-managers are usually the key IT decision makers despite the fact that they often do not possess sufficient IT skills. This study examines how SME managers search and prioritise information that guides their IT decisions. This study adopted a qualitative research method and conducted interviews with eleven SME owner-managers in Nigeria and South Africa to understand the process of IT investment based on the information available to the decision-makers. Owner-managers of small manufacturing, servicing, and retail companies were the participants of this study. Thematic data analysis technique was employed to analyse the data collected in this study. The findings of this study revealed that SME owner-managers face specific challenges like insufficient information to guide IT choice, limited resources when making IT decisions and lack of formalised approach to the decision-making process. The finding in this study provides an insight into strategies to formalise SME owner-managers' IT decision-making process. This study concludes that, the formalisation of information searching process for IT choices in SMEs is crucial to achieving better IT investments.

## KEYWORDS

Information Technology, Decision-making, Small Enterprise, SMEs.

## INTRODUCTION

Over the past three decades, extensive research has been conducted to ascertain the value of IT, the transformative role of IT in organisations and how IT has influenced businesses (Brynjolfsson & Yang, 1996; McFarlan, 1984; Melville, Kraemer, & Gurbaxani, 2004). IT has been identified as a possible value driver for businesses, even though it can be regarded as a complex technology that Organisations would have to learn to adopt (Alyahya & Suhaimi, 2013). Nonetheless, enterprises can achieve competitive advantage, improve productivity, join global markets, achieve effective business management and improve business performance if organisational IT investment is properly aligned to the business's vision (Ghobakhloo, Sabouri, Hong, & Zulkifli, 2011).

Small and Medium Enterprise (SME) owner-managers often make IT investment decisions without a thorough need assessment; hence, researchers have argued for a formalised IT decision process in SMEs (Ghobakhloo, Hong, Sabouri, & Zulkifli, 2012). This study argues that SME owner-managers are faced with challenges that influence their IT decisions. Decision makers in SMEs have a significant role to play to achieve the value IT can offer their businesses, especially in developing nations where SMEs play a significant role in national economic development. SMEs need to make a more holistic assessment of their enterprises and make strategic IT decisions to overcome challenges they face as a business entity.

This study explores how SME owner-managers' access to information influences criteria definition, prioritisation of criteria and setting preference when making IT investment. To achieve the objectives of this study, the bounded rationality theory of decision-making was adopted as a theoretical lens for understanding the searching and satisficing behaviour of decision-makers in SMEs. This article is presented in six sections: a review of existing relevant literature, the theoretical framework, the methodology adopted for this study, the presentation of the findings, followed by a detailed discussion of the findings and the conclusion.

## LITERATURE REVIEW

### What is a Small and Medium Enterprise (SME)?

The Small and Medium Enterprise (SME) is also referred to as Small Enterprise (SE) or Small Business (SB). The size of the employee and turnover have traditionally been the benchmark for classifying SMEs. However, there is no universal definition of SMEs based on SMEs' number of employee and turnover (Harindranath, Dyerson, & Barnes, 2008). According to the European statistics, SMEs are privately owned enterprises that have fewer than 500 employees (Ghobadian & Gallar, 1997). In Malaysia, SME is a company with an average annual sales turnover of not more than \$5.5million and 150 employees (Hashim, 2007). The African Development Bank defines SMEs as companies with less than 50 employees (Esselaar, Stork, Ndiwalana, & Deen-Swarray, 2006). SMEs in Ghana are firms that employ fewer than 100 people (Effah & Light, 2009). In Egypt and Vietnam, SMEs are firms with between 5 and fewer than 50 employees and between 10 and 300 employees respectively (Dalberg, 2011). Firms with employees between 10 and fewer than 200, with net asset excluding land and buildings worth between 5 and 500 million Naira are regarded as SMEs in Nigeria (SMEDAN & NBS, 2013). SMEs are mostly family owned business that is often managed with limited resources on a day to day basis (Ibielski, 1997).

The small and medium enterprises are more innovative than large enterprises and contribute to the growth of a nation's economy through different collaborative approaches and leveraging their resources

(Dehbokry & Chew, 2014). Despite SMEs’ limited resources, they have managed to make innovative contributions, occupy a niche market and have taken business risks that large organisations would not economically afford to consider. SMEs take higher risks because they are more flexible and less bureaucratic than large organisations (Yusof & Aspinwall, 2000). Also, most SMEs explore risky business ventures because of their strong entrepreneur orientation and quick decision-making process (Hung, Chang, Lin, & Hsiao, 2014). However, SMEs need to be more frugal and creative in managing their resources because they have less resources to draw from when compared to large organisations (Bidan, Rowe, & Truex, 2012). SMEs and large organisations are not just different by the number of employee and capital, but the organisational structure, management style, decision-making process, policy-making procedure, resources utilisation, knowledge and technology capabilities distinguish SMEs from large enterprises (Dehbokry & Chew, 2014).

### Decision Making Process in SMEs

Decision making is the act of choosing the best option from set of alternatives by thoroughly assessing possible alternatives and constraints (Ogarcă, 2010). One of the crucial drivers of organisational performance is an effective decision (O’Regan, Sims, & Ghobadian, 2005). Decision making is the act of acquiring, processing, synthesising and analysing information to make a rational choice after filtering (internal and external) factors that affect a given problem/situation (Öksüzoğlu-Güven, 2014). The success, opportunity and risk an organisation faces are as results of decision makers making or not making a decision (Ogarcă, 2010). The process of making a decision is one of the most important and complex activities of SME owner-managers (Lunenburg, 2011; Negulescu, 2014). Management make most decisions under constantly changing external and internal environmental constraints (Negulescu, 2014). The process of making an organisational decision is complex when compared with individual daily life decisions (Lunenburg, 2011). Decision maker keeps wondering about possible options, constraints, the consequences of each alternative, the desirable choice and cognitive considerations (Connolly & Zeelenberg, 2002). Figure 1 depicts the Simon’s decision making model.

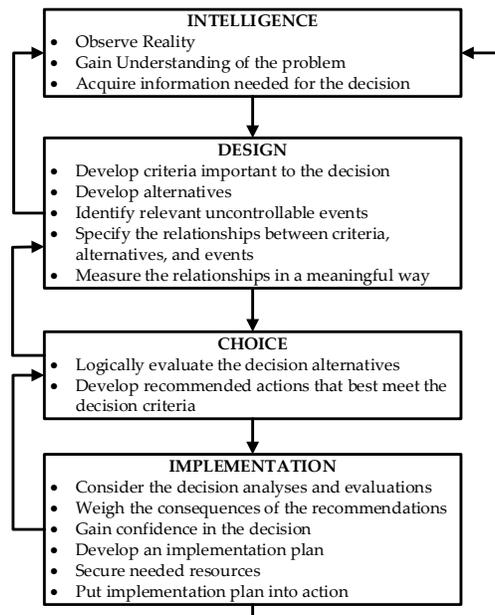


Figure 1. Decision Making Model (Source: Phillips-Wren, 2013)

It is paramount that the decision maker in SMEs understand their decision problems and potential opportunities to solve the problem (Negulescu, 2014). The sustainability and competitiveness of SMEs highly depend on the appropriateness and quality of decisions (Dimants, 2012). SMEs that seeks to achieve better performance and ultimately competitive advantage cannot afford to make decisions that pose an inherent risk or based on trial and error (O'Regan et al., 2005). Öksüzoğlu-Güven (2014) argued that it is unrealistic to expect a fully informed (rational) decision on every problem in SMEs because human factor limits the cognition of SME owner-managers.

The reasoning process of SME owner-managers when making decisions depend on the decision problem and the decision maker's experience, which is categorised as 'causal' and 'effectual' (Sarasvathy, 2001). A particular effect initiates the *Causal reasoning process* and focus is on selecting alternatives to achieve the effect; and the *effectuation reasoning process* starts with a set of given alternatives and focuses on choosing between possible effects that can be created with the given alternatives (Sarasvathy, 2001). That is, causal cognitive process pre-established a goal and seek for optimal alternatives to fulfil the goals; while effectuation is a reasoning process of sustenance, preserving, hanging on and striving until the final goal is achieved. Ogarca (2010) argued that effective SME owners prefer the effectual reasoning to casual cognition because it is more creative, spontaneous, urges imaginations and initiates innovative risks.

Furthermore, the knowledge and capabilities of decision makers are not homogenous and vary amongst novice and habitual (serial or portfolio) entrepreneur (Ucbasaran, Alsos, Westhead, & Wright, 2007). The experiences of SME owners differ according to the number of businesses they owned or have previously owned. Ogarca (2010) citing (Ucbasaran et al., 2007) argued that novice SME owners are more meticulous and analytical in deciding while the habitual business owners are experiential. The systematic and analytic approach could lead to businesses losing opportunities considering the dynamic environment SMEs operates, although habitual business owners are susceptible to make risky decisions.

## IT Decision Making in SMEs

IT decision-making processes are complex activities that often have strategic implications on businesses. This study assumes a close comparison between IT and financial investments regarding the crucial influence of IT to business growth and the need to maximise investments. SMEs are incessantly seeking for ways to limit their IT budget, curtail their dependencies on high cost IT infrastructure and overcome limited resources through IT investments (Bayrak, 2013). Nevertheless, IT is a tool that offers SMEs informational, spatial, temporal and transactional benefits (Mwangi & Brown, 2015). This explicates why most studies focus on the transactional and operational role of IT in SMEs rather than strategic role (Alyahya & Suhaimi, 2013).

SMEs are yet to achieve benefits IT offers large organisations even though managers of SMEs do occasionally align their IT strategy to strategic context (Levy, Powell, & Yetton, 2002). A mere investment in state of the art IT cannot lead to the realisation of promising benefits of IT in SMEs. The lack of strategy (why and how) of small businesses toward IT investments and misconceived benefits of IT affect the investment decision process (Nguyen, 2009). The lack of strategy alludes to the unplanned and fragmented use of IT in SMEs (Alyahya & Suhaimi, 2013; Levy et al., 2002). SMEs are yet to leverage their IT resources to support customers and services, link their supply chain and achieve certain strategic benefits (Kyobe, 2004). IT investment decisions in SEs are often made based on short-term, informal and ad-hoc practices (Rantapuska & Ihanainen, 2008).

IT decisions made based on insufficient knowledge are likely to have the less rational influence to the organisation (James & Van Belle, 2013). SME owners-managers make IT decisions out of their enthusiasm as oppose to a thoughtful business strategy (Alyahya & Suhaimi, 2013). There is no formal guided strategy that SMEs owners employ in their IT decision process. SME owners-managers bootstrap to find their solutions to the daily organisational problem and ignore a routine-procedural (textbook, manual, documentation etc.) approach (Ekanem & Smallbone, 2007). Rantapuska & Ihanainen (2008) investigated the knowledge used and IT decision style of SME owners-managers and categorised IT decision making styles as problem, product and provider oriented.

The IT choice process of SME owners-managers cannot be referred as explicitly rational because their actions are based on learning process and experiences acquired through interaction (Ekanem, 2005). The decision makers are often limited to the information available to them when making IT choices. The IT decision-making process of SME owners-managers are considered as a bounded rational choice (James & Van Belle, 2013; Pomerol & Adam, 2006). Better quality information will lead to a more informed IT decisions (Duncombe & Molla, 2009).

### **Challenges Hindering the Leveraging of IT in SMEs**

The SMEs are yet to achieve benefits IT offers large organisations even though managers of SMEs do occasionally align their IT strategy to strategic context (Levy et al., 2002). A mere investment in state of the art IT cannot lead to the realisation of promising benefits of IT in SMEs. The lack of strategy (why and how) of SMEs toward IT investments and misconceived benefits of IT affect the investment decision process (Nguyen, 2009). The lack of strategy alludes to the unplanned and fragmented use of IT in SMEs (Alyahya & Suhaimi, 2013; Levy et al., 2002). SMEs are yet to leverage their IT resources to support customers and services, link their supply chain and achieve certain strategic benefits (Kyobe, 2004). IT investment decisions in SMEs are often made based on short-term, informal and ad-hoc practices (Rantapuska & Ihanainen, 2008).

SMEs make several routine decisions on a daily basis without proficient IT skills. Therefore, decision makers rely on several (internal and external) information sources to make IT decisions due to the lack of IT skills and provision of formal knowledge to guide owners-managers' choice process (Chiwere & Dick, 2008). Studies conducted in SMEs in Botswana, Kenya, Nigeria, South Africa, Uganda and Tanzania suggest that decision makers rely strongly on informal information sources when making IT decisions (Chiwere & Dick, 2008; Kyobe, 2004; Moyi, 2003; Oyelaran-Oyeyinka & Lal, 2006; Wolf, 2001).

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## THEORETICAL FRAMEWORK

The choice of an appropriate theoretical framework as a guiding lens for a research project should be based on the nature of the research (Mackenzie & Knipe, 2006). The choice of the theoretical framework allows the researcher to establish a relationship between his/her local context phenomenon of investigation and attempts to relate it to similar events. This study acknowledges the existence of several Decision Making Theories (DMT). The normative DMT, prescribes how decision maker (individual or organisations) should behave under certain condition to attain certain goals while the descriptive DMT describes how decision makers behave in achieving a goal (Simon, 1972). Probability theory, game theory, rational expectation and experimental economics are intellectual contributions that changed the discourse of theory of decision making uncertainty (Baron, 2008; Pomerol & Adam, 2006; Simon, 2000). Rational Choice Theory (RCT) assumes that an individual has preferences among the available choice alternatives that allow them to state which option they prefer and focuses on the determinants of the individual choices (Bicchieri, 2003; Grüne-Yanoff, 2012). Literature revealed that theory of bounded rationality informs SMEs' decision-making process, cognitive theory and real life choice (Fodor, 2011; Lederan, Curayeu, & Vermeulen, 2009).

The Bounded Rationality Theory (BRT) implies that the choices people make are determined not only by some consistent overall goal and the properties of the external world, but also by knowledge that decision makers do and don't have of the world, their ability or inability to evoke that knowledge when it is relevant, to work out the consequences of their actions, to conjure up possible courses of action, to cope with uncertainty and to adjudicate among their many competing wants. Rationality is bounded because these abilities are severely limited" (Simon, 2000). The BRT serves as a theoretical guiding framework for this study. The BRT is employed to ascertain the optimality of IT choice of decision makers based on how decision makers process information available to them. To ascertain the role of information in assessing alternatives, evaluating future consequences and selecting the most preferred alternative preference. The human bounded rationality has been a discourse since the classical times (Simon, 2000). There have been several narratives on the emergence of Bounded Rationality Choice Theory (BRCT). The experimental studies in the 60's and 70's contributed to the understanding of bounded rational decision making (Reinhard, 1990). Ellison (2006) argued that the distinct emergence of bounded rationality began in the late 70's and early 80's which also mark the game theoretical revolution in organisations. Simon's Bounded Rationality Theory (BRT) which focus on the process of information gathering, human's limits of rationality, decision under uncertainty and the consequences of payoff functions forms the basis for BRT (March, 1978).

Bounded rationality is used widely by various economics discipline (Ellison, 2006). BRT has been used in social science in fields like anthropology, sociology and political science (Simon, 2000). In the 90's, Camerer (1998) explored several studies of bounded rationality in individual decision making and strongly emphasised the need to further explore the promising direction of procedural (or bounded) rationality of individuals' choice. The need for experimental/empirical study to fill the knowledge gap was emphasised as a pragmatic way to understand bounded rationality (Reinhard, 1990). Simon (2000) proposed four ways of systematising theory of bounded rationality, namely as a tool for: (i) finding empirical phenomena, (ii) building theories, (iii) testing theories and (iv) dealing with uncertainty. In this study, bounded rationality is perceived as a theory for understanding IT decision making process of SE owner-managers in Nigeria and South Africa, and to determine the searching and satisficing strategy of SE owner-managers when they make IT decisions. The aim of this study is to explore the search and satisficing process of small enterprise owner-managers when they make IT decisions.

## METHODOLOGY

This study assumed the pragmatic paradigm (Morgan, 2014; Pansiri, 2005; Parvaiz, Mufti, & Wahab, 2016). Pragmatism is a philosophy with real world practice orientation to research and rejects the distinction between anti-realism and realism (Mackenzie & Knipe, 2006). Truth is constructed in pragmatic paradigm but not in an arbitrary way because the truth is rooted in practice and experience. The prediction of the outcome of an action is fallible and probabilistic based on previous experience because of the changing nature we found ourselves (Morgan, 2014). Most SMEs operate in rapidly changing environments and are required to make an optimal choice with limited experience of prior action. The pragmatic paradigm suggests that research problem(s) should be the main focus of action and not the method of conducting research (Pansiri, 2005). Pragmatism allowed the researcher to place the research question centrally, to apply different approaches to understand what and how the research problem need to be addressed (Creswell, 2003). Pragmatism focuses on what works as truth in research as opposed to other paradigms and advocates the use of mixed methods in investigating a phenomenon (Tashakkori & Teddlie, 2003). This research adopted qualitative research to enquire on the IT decision making process of SME owner-managers.

This study adopted purposive sampling techniques to select the participants for collecting interview data to inform the awareness of the typical IT decision making process in SMEs (Fox & Bayat, 2007; Johannesson & Perjons, 2014). The scope of this research was limited to small enterprises in Nigeria and South Africa. Nigeria and South Africa are the largest and most developed economies in Africa with a mixed economy, emerging market, highest gross domestic product, and the existence of dual economy systems where development, technology and demand patterns are separated in two sectors within the same country. The distinctive factors in South Africa and Nigeria provided the preferred case for generalization based on African context. A database of non-IT enterprises with less than 150 employees was compiled and, at the time of collecting data for this study, 187 and 362 SMEs were identified from Nigeria and South Africa respectively. The Nigerian Bureau of Statistics (NBS) provided a list of SMEs from Nigeria, and the Small Enterprise Development Agency (SEDA) provided a list of South African SMEs. The list was further scrutinised to eliminate firms with less intense and highly intense information flow, and firms with a formal IT support department, which reduced the list of SMEs to 102. SMEs with intense information flow or with a dedicated IT unit will have access to professional support when making IT investments. Thus, this study focused on SMEs where IT decisions are made by the owner-managers.

The SME owner-managers were contacted via emails and text messages to participate in this study but only 23 SMEs responded. Sixteen of the twenty-three respondents accepted to participate in this study. The participating SMEs were categorised as manufacturing, servicing and retail industry. Table 1 shows the list of the SMEs that participated in this study. The SME owner-managers were contacted via email and phone calls to schedule appointments. The researcher was able to make eleven successful appointments for interviews with eight participants from Nigeria and three participants from South Africa. An open-ended, semi-structured interview was conducted with all the participants (Blaikie, 2010; Ekanem, 2005).

Description of Participants					
Participant	Business Type	No. of Emp.	Branches/Units	Year of Est.	Age of SE
1	Hospitality	58	3	2005	11
2	Traveling & Tourism	81	3	1999	17
3	Manufacturing	68	1	2002	14
4	Education	156	4	1984	32
5	Construction	102	4	1993	23
6	Agriculture	75	2	2001	15
7	Hospitality	144	1	1981	35
8	Automobile	53	1	2010	6

**Table 1. Description of Participants**

The interview lasted between 60 and 120 minutes with each participant. The participants were presented with a consent form before the commencement of the interview. The data collected in this study were analysed using thematic analysis method (Braun & Clarke, 2006; Clarke & Braun, 2014). Thematic analysis is a widely used data analysis technique that provides a detailed description of data by identifying, analysing, and reporting themes (or trends) of qualitative data (Braun & Clarke, 2006). Thematic analysis dwells less on technological and theoretical knowledge in comparison to other qualitative analytic methods (Braun & Clarke, 2006). There are several technologies to ease the data management and analysis of qualitative data, but onus lies on the researcher to systematically draw meaning of the data (Weitzman, 2000).

The data analysis in this study was conducted without the application of any analytical software. This study adopted the following process described in a - e to thematically analysed the data collected. (a) Data familiarisation: The data familiarisation began during the data collection in Nigeria and South Africa. The researchers became immersed in the interview data during the repetitive listening of the recorded interviews. In the familiarisation phase, three themes emerged as follows; business-IT goals in SMEs, SME owner-managers' information sources and preference strategies. The interviews were transcribed using word processing application. The transcriptions were word – for- word based on the recordings. The transcription of the interviews lasted for about four – six hours for each interview. (b) Generating initial codes: the code generation process was conducted manually (Braun & Clarke, 2006). The transcripts were printed and reviewed to generate candidate codes. The codes were highlighted in different colours. After reading through each of the transcripts twice, the codes were exhausted. (c) Searching for themes: this study adopted the Simon's decision making model to create themes that will help in understanding the searching and satisficing behaviour of SME decision-makers (Pomerol & Adam, 2006). Seven candidate themes emerged in the first phase of theme searching based on the Simon's decision making model. The themes that emerged are IT decisions goals, decision requirements, consideration for choosing IT, preference for choosing IT, preference for information sources, decision-making process and miscellaneous. The theme "miscellaneous" is a collection of codes that did not fit into the six main themes. (d) Reviewing themes: some of the themes identified in (c) were merged as follows: the "consideration for IT theme" into "decision requirements theme", and the "decision-making process theme" was merged with the "miscellaneous theme". After merging the themes, five themes were retained. The next stage of theme reviewing was initiated by reading through the codes and the transcripts in search for new possible themes and codes, but we could not identify any new code or possible themes. Hence, the theme reviewing process was terminated, and the next stage of analysis was initiated. (e) Defining and naming themes: the five themes identified were defined and named as: intelligence (business goals that inform IT decisions, and information source for making IT

decisions), design (criteria for making IT decisions), and choice (IT decision-making preferences). The themes were defined and the findings in this study is presented in subsequent sections.

**FINDINGS**

This section describes the findings from the interviews conducted with the small and medium enterprise owner-managers in Nigeria and South Africa. The findings discussed in this section is categorised under five themes.

**Business Goals that inform IT Decisions in SMEs**

The SME owner-managers are strategic when they decide to invest in any IT. The primary objectives identified amongst SME owner-managers when they make IT decisions are: (i) to drive cost efficiencies, (ii) improve product development and service delivery, (iii) improve customer service experiences, (iv) improve operational activities and productivity, (v) improve innovativeness within the enterprise, and (vi) attain new business opportunities, (vii) perceived relevance of the IT, (viii) the need to overcome specific business problems, and (ix) enforced government regulations. Some of the SME owner-managers unequivocally emphasised that they look for feasible IT solutions to overcome business challenges. Table 2 highlights some comments by SME owner-mangers and their perceived IT goals.

Participant	Comments
1	"....the trend now, people no longer travel with cash and base on the cashless society policy. For you to have or retain your customers you must have a POS station that will enable them to make payment."
2	"It is obvious that one needs to have internet to survive in this our business. I don't know anyone who runs the same business without internet service."
5	".....if the design you are submitting for tender doesn't comply with the Ministry of Land and Housing requirements, the tender application will not be considered...."
11	".....I make my decision based on my experience and word of mouth with trusted networks."
10	"After careful consideration of all the things said by the consultants, I decide on what I can afford."

**Table 2. Quotes from owners' perception of IT goals**

This study identified the use of some IT like cloud service, email services, connectivity (ADSL connection & VOIP, Local Area Network, Internet), e-payment systems, online presence, and online backup as technologies commonly used in Nigerian and South African SMEs. The South African SMEs use the online marketing strategy, customer relationship management systems, and resource management systems. The use of social media as a common means of online marketing strategy is not a popular strategy in Nigeria SMEs but this study discovered a high usage of websites in Nigerian SMEs.

The South African SMEs are creating a strong online presence through social media platforms. The SME owner-managers emphasised that most of their customers use social media, so it is a convenient way of reaching their customers. The SMEs in South Africa are also using social media as a platform for marketing products and services. The participants of this study have created an active online presence on common social media platforms like Facebook, Twitter, LinkedIn, and Instagram. The SME owner-managers unanimously believed that social media and websites provide a fast, easy, and cheap way of communicating with customers. According to participant 9: *"I don't think any business can survive without a website.....online presence determines the genuineness of a company"*. The SME owners are looking forward to improving their online presence, strategies to accommodate online ordering, online payment, and customer support to support their businesses.

The study identified that some SME owner-managers use cloud services such as email services and online backup but are unaware that they are using cloud services. The increase in the use of cloud services and open source applications is due to efficient but costly internet connectivity. The SME owner-managers in South Africa acknowledged the significance of internet access but are dissatisfied with the high cost of the internet. SMEs are yet to explore IT capabilities to attain new business opportunities. For instance, the communication infrastructures used by all the SMEs interviewed are used mainly for correspondence with customers. The point-of-sale systems used by two of the participants in this study are used mainly for payment purposes. SMEs are yet to explore how to mine data and analyse business information at their disposal.

### Criteria for IT Decisions in SMEs

This study indicates that decision-makers in SMEs define their IT requirements when investing in IT. The participants were asked to mention their criteria for selecting the IT they use in their organisations. Table 3 presents a summarised list of the criteria identified by the SME owner-managers. The thick symbol ‘✓’ represents the criteria the decision-makers consider when making certain IT decision.

	Criteria for Making IT Decisions	ERP	Productivity	Web Development	Mail Service	Computer Network	E-Payment System	Cloud Storage	Computers	Social Network	CRM System
1	Cost of implementing the IT solution	✓	✓		✓	✓	✓	✓	✓		✓
2	Trust Vendors choice/suggestion on IT solution		✓	✓		✓	✓		✓		✓
3	Service Support Agreement provided by vendor	✓	✓	✓		✓	✓				✓
4	Accessibility & control of IT solution		✓	✓				✓		✓	✓
5	Time of delivery - vendor	✓			✓	✓				✓	
6	Flexibility of the IT solution	✓	✓		✓					✓	
7	Business Analytics capabilities of IT	✓									✓
8	Data backup & recovery of business information		✓					✓			
9	Functionality is of utmost preference	✓		✓						✓	✓
10	Integration of the IT solution to the existing technologies				✓						
11	License - open source versus proprietary	✓			✓					✓	
12	Quality Assurance from vendors and consultants			✓		✓					✓
13	Resource - Technical resources required for deployment		✓								
14	Security/Confidentiality of the IT Solution			✓	✓						✓
15	Relevance of IT			✓			✓			✓	
16	Simplified users' interface			✓			✓			✓	

Table 3. Criteria for making IT Decisions

The criteria identified in Table 3 provides insight to various considerations for IT investment decisions in SMEs. The cost of implementation, trust of vendor, support services, and access to IT are the common criteria SME decision-makers consider to be most significant when investing in IT. The integration of organisational IT and strategy for deployment are not given much consideration by SME

owner-managers when making IT decisions. The findings provided a contrary expectation because the SMEs that participated in this study lack any formal IT unit/professionals within their enterprises.

### IT Decision-Making Preferences of SME owner-managers

SME owner-managers were asked to prioritise their multi-variant criteria in order to understand the decision-makers' preference. Prioritising requirements is a common challenge for SME owner-managers. The participants stated that choosing from IT alternatives is a difficult decision because of the proliferation of IT. The participants confirmed that they are often in situations where they are compelled to choose from a large option of different IT. SME owner-managers lack a formal approach to assessing and prioritising their criteria when making IT choices, as illustrated by participant number 4 in Table 4. Table 4 highlights some of the comments of the SME owner-managers when they were asked about their IT decision-making preferences.

Participant	Comment
4	"We have to look for another alternative that can deliver the same work. In the process of looking for something cheaper, I stumble onto the school software online, and I pay for it immediately...The most important factors are the cost, then task at hand"
9	"I always do some assessment of what I am investing and how the technologies can help me cut cost in my daily activities and business management."
10	"I am a bit passionate about IT, but I don't get clouded by the promises considering that I don't have sufficient skills, so I need assurances that the technology I am buying will provide a long-term benefit to my business with less complexity."
9	"I will consider complexity in my subsequent choices... for instance, we had to abandon the fin-enterprise (financial system) we bought a few years ago because it was too complex for my cashiers and accountant to manage and was costing us more than the benefits we anticipated."

**Table 4. Preferences of Decision Makers when making IT choices**

Findings from the interview revealed the following preferences of SME owner-managers: (i) cost of implementing IT choice, (ii) ease of use of the IT, (iii) IT skills requirement, (iv) profitability of IT decision (investment), and (v) availability of IT solution, and (vi) the SME owners' accentuated potential benefits of IT were the preferences for IT investment decisions in SMEs. The cost of implementing IT was a persistent requirement for most of the SME owner-managers. The decision-makers trade-off other criteria for a cheap cost. Participant 10 emphasised that, in addition to the preferences mentioned, "he looks for IT that has a long-term influence on his business". In addition, the complexity of IT has been considered a major setback which has led two of the SME owner-managers to abandon some previously implemented IT.

### Information Sources for IT Decision-Making Process in SMEs

This study explores how the SME owner-managers seek for information that guide their criteria definition and IT decision-making preference. The researcher asked the participants how they search for information that guides their IT decisions and to what extent they rely on their information sources. Table 5 summarises the responses of the decision-makers. The tick symbol (✓) indicates the information source(s) SME owner-managers rely on when making IT decisions.

Participant	1	2	3	4	5	6	7	8	9	10	11	Total
Friend's recommendation	✓	✓		✓	✓			✓				5
Personal experience		✓	✓	✓	✓	✓			✓	✓	✓	8
Online enquiry				✓	✓	✓		✓	✓	✓	✓	7
Vendor		✓	✓			✓			✓	✓	✓	6
Business network		✓						✓	✓	✓	✓	5
In-house non-IT staff				✓		✓						2
Consultancy										✓		1
Customers' insight										✓	✓	2

Table 5. Information source for making IT decisions

Table 6 highlights some comments of the participants when the researcher asked the participants about the sources of their information and the extent of their reliance on the information that guides their IT decisions.

Participant	Comments
6	"I will say I rely on internal information source if I do not have any idea then I completely rely on my staff since I do not have IT, staff, in-house. Then I will consider outside source. I have a feeling that internal source understands my business better although the experts have more experience, I do not know."
8	"Well, I ask my friends or go on the internet.... Regarding reliance, I just use my common sense and the business idea."
11	"When we have problems that I believe can be solved with IT, I go on Google to search for best alternatives and people's view. If I am satisfied I go to the stores or contact one of my IT vendors."

Table 6. Quote Statements (Information Source for making IT decisions)

## DISCUSSION

Literature revealed that SME owner-managers make IT decisions based on personal experience and satisficing (Bayrak, 2013). This study identified that the information sources that the SME owner-managers are able to access influences their choices and shape their experience. However, the assumption that SMEs are not objective when making IT decisions is debatable. The level of rigour can be avowed to be limited as argued in the theory of bounded rationality (Brothers, Andriessen, & Nicolaes, 1998) but SME owner-managers are strategic in making IT investment. The SME owner-managers focus on short-term business needs and pay less attention to the potential or the innovative opportunities that can be derived from new technologies based on their business's capabilities. This study argues that strategic goals differs between large and small enterprises because SMEs operate in a more agile and flexible environment (Cragg et al. 2007). This implies that the definition of strategic thinking in the context of long-term goals becomes a relative term when compared to large organisations. The standards for assessing IT success in large organisations cannot be used to evaluate SMEs because it will undermine the strategies of SMEs considering the fundamental differences between the two categories of enterprise (Ghobadian & Gallea, 1997).

The study discovered that the use of social media and website (which this study refers to as online presence) is increasingly growing amongst SMEs in South Africa and Nigeria. The social media has created a simple and cheap platform for SMEs to reach out to potential and existing customers. A South African firm, PwC in 2015, emphasised that website is a popular supportive tool in sustaining over 150,000 South African SMEs employing an average of 1.6 million jobs (Botha, Van Dijk, & De Rijk-Uys, 2015). On the contrary, the use of social media platform like Facebook, Twitter and Instagram are highly used by SMEs to reach out to clients/customers because of the ease of usage, affordability and

availability. SMEs now consider owning a “business website” as a requirement for starting and sustaining their businesses. Mary & Ofafa (2013) revealed a similar trend of high usage of online technologies as a strategy for SME growth in Kenya.

The decision-makers in SMEs are strategic and often make IT investments they perceived as relevant to their businesses. The cognizant process of IT choice demonstrates rationality towards IT choices amongst SME owner-managers. The Nigerian and South African SME owner-managers pre-defined their objectives when they invest in IT. The findings showed that the overall goal of making IT investments in SMEs is to attain business growth through better market outreach, gain competitive advantage, improve performance, and decrease the cost of production and logistics. This study identified that SMEs invest in IT that improves business productivity, customer management, and resources management.

SMEs explore various information sources to guide their IT investment decisions. The quality and relevancy of the information decision-makers rely on when making IT decisions is paramount to the leveraging of IT in SMEs. The information sources SME owner-managers rely on to make IT choices often lack sufficient understanding and assessment of the contextual business environment. The SME owner-managers understand their business requirements better than the vendor, friends, families, or customers identified in this study as sources of information. Internal and external business factors can influence IT choices, and vice versa. Thus, holistic strategy to IT - related decisions will help SMEs to overcome the simplistic approach of solving a business problem with IT, resulting in the creation of unexpected business impediments.

The SME owner-managers admitted that resource limitation is a criterion they consider when investing in IT. On the contrary, most of the ITs identified in the SMEs were not open-source but proprietary software applications. It was presumed that SME owner-managers would invest in open source and cloud-based solutions to limit their dependency on vendors and consultants, minimise the demand for IT workforce, and reduce the cost of IT implementation. The inconsistency between SME owner-managers' IT choices and their criteria was accorded to the decision-makers' limited access to information when making IT decisions. However, we recommend a further investigation to comprehend the contradiction in criteria identification and alternative selection.

## CONCLUSION

The objective of this study was to understand SME owner-managers search for information that guide their IT choices and how they prioritise their choices based on the information the decision-makers are able to access and assess. In this study, we explored how IT decisions are made in SMEs with specific focus on the information searching and satisficing process in order to gain a better understanding of how the information influences their decision processes as discussed in (Alhassan & Van Belle, 2017).

The SME owner-managers are goal oriented and strategic when making IT decisions. This was contrary to literature discourse that SME owner-managers are not often strategic when making decisions. The definition of strategic can be regarded as a relative concept that varies between types of industries and the size of enterprise (that is employee, finance and other resources). The level of strategic goal seeking in SMEs is subjected to decision-maker's experience, bounded rationality and capacity for risk. However, SME owner-managers are optimistic in leveraging IT for their business but often lack the skills to identify the best IT alternatives. SME decision-makers rely on external information sources to make up for their skill gap when making IT decisions, but the information are often not holistic to achieve the full benefits of IT investments.

This study recommends a further study to develop an artefact to support IT decision making process in SMEs. The artefact should aim at providing a holistic assessment of the enterprises and to formalise the information processing by analysing, documenting, and monitoring the IT decisions process. SMEs vary based on industry type, locations, businesses and management, which could limit the findings of this study. It is possible to identify different factors that can/influence IT decision-making process of SMEs in different industries or countries. This study focused only on selected SMEs in Nigeria and South Africa, conducting similar research in a different context will allow the generalisation of this study across a broader scope.

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