Supplier selection practices in South African State-Owned Enterprises: an exploratory study

Nandi Ntshangase

1527571

A research article submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand Business School, Johannesburg. In partial fulfilment of the requirements for the degree of Master of Business Administration

Johannesburg, 2018

Declaration

I, Nandi Ntshangase, declare that this research article is my work except as indicated in the references and acknowledgments. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the Graduate School of Business Administration, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

NANDI NTSHANGASE

Signed at …………………………………………………

On the ……… day of July 2018

Supplementary Information

Project format:	Research article
Nominated journal:	Journal of Transport and Supply Chain Management
Supervisor:	Professor Gregory Lee
Total Word count:	17323
Supplementary files:	Consistency Matrix

Abstract

Background: Procurement in an organisation is the process of acquiring goods and services required by the organisation to service its customers. These goods and services are often sourced from the external market. The procurement activities of South African State-Owned Enterprises (SOEs) are conducted according to a legislative framework, which is based on competitive bidding, however the framework does not specify the decision making techniques and structures that are applied in the selection of suppliers.

Objective: While the public procurement legislative framework exists, there is a gap in knowledge of the specific techniques applied in the selection of its suppliers. This study seeks to explore the supplier selection practices in South African State-Owned Enterprises.

Method: A qualitative study was conducted, involving ten supply chain practitioners from five State-Owned Enterprises. The study was conducted using semi-structured interviews that resulted in a written narrative. Interview transcripts were then analysed individually to form themes. Data analysis was performed using content analysis, coding, thematic analysis and conclusion drawing.

Results: The findings suggest that as required by regulation, State-Owned Enterprises utilise competitive bidding to seek suppliers from the external market. However, there is a recent and on-going transformation to adopt centralised sourcing or seeking long-term partners to collaborate with the various State-Owned Enterprises' strategies. Various inquiry tools like Request for Information (RFI), Request for Quotation (RFQ) and Request for Proposal (RFP) are used to interrogate the market for information about a commodity and candidate supplier companies.

The information that is received is evaluated according to set criteria and is evaluated by cross-functional sourcing teams from within the organisation. There is evidence that, although not digitised, the supplier selection practices in State-Owned Enterprises utilise the Multi-Attribute Utility Theory methodology to evaluate the

information received from suppliers. There is no evidence of the adoption of academic theories like Data Envelopment Analysis, Fuzzy Logic and Technique for Order of Preference by Similarity to Ideal Solution; in their decision making.

Conclusion: The research found that State-Owned Enterprises in South Africa select their suppliers by first allowing the business unit in the SOEs to send their request for a service or a product to their procurement unit. The cross-functional sourcing team (CFST) is then employed to evaluate the transaction cost of the requirement. An enquiry method is utilised to solicit information about the candidate supplier and the commodity so that this information can be weighed against set criteria. Also, the research found that both qualitative and quantitative processes are utilised by SOEs in supplier selection. Lastly, the research established that both calculated output and decision makers are often considered in the selection of a supplier.

Introduction

Background to the Study

State-Owned Enterprises are legal entities that are wholly owned or partially owned by the state for commercial participation on behalf of the state (OECD, 2009). These entities have a profit motive for purposes of self-sustenance to avoid the use of fiscal budget and are operated on corporate lines (OECD, 2014). They are operated as companies in line with Companies Act, 71 of 2008. While these organisations are largely driven by public policy initiatives, they are different from other state agencies that do not have financial objectives.

It was in a bid to revamp and strengthen the nation's economy that the South African government began to establish State-Owned Enterprises (SOEs) in 1920 (Mekwe, 2015). This was one of those measures that the state put in place to curtail the high incidences of importation which was on the increase and which was fast ravaging the nation's economy immediately after the First World War (Mekwe, 2015). Makhitha (2014) noted that establishing these SOEs was part of South African governments' initiative to industrialise the country, ensuring economic development and autonomy from other countries.

These SOEs provide services in various sectors of the nation's economy such as; transport, telecommunications, energy (Oil, Gas & Electricity), agriculture, mining, etc. According to National Treasury (2006), there are over 300 SOEs in South Africa, some which include; Airports Company of South Africa Limited, ESKOM, South African Post Office Limited, Telkom SA Limited, Transnet Limited, etc.

Even if the state may desire autonomy from suppliers, outright independence from suppliers may not be achievable locally and internationally owing to considerations such as specialisation and opportunity cost. This makes the process of supplier selection a very crucial and veritable process that both the state and their enterprises cannot afford to take lightly. It is a crucial process by which enterprises identify, evaluate, and contract with their suppliers (Lysons & Farrington, 2006). It is important to note that supplier selection is not only limited to state enterprises alone, rather it cuts across all business industries and ownership types.

Even though the process of supplier selection is often capital intensive, its outcome often justifies the spending, most especially when the process culminates in the best value proposition (Beil, 2009). This makes it essential for the buyer to determine what the optimal value is, to be derived from the candidate supplier. It was in this vein that Lowasikou and Iravo (2016) posited that buyers should ensure they can define and measure what they term the best value to be able to effectively make procurement decisions. The specific methods and decision making techniques of the supplier selection process are critical to achieving the best value proposition. This is becoming increasingly critical as poor supplier selection practices have cost several SOEs sums of money which would have been reinvested into the mandate of the SOEs (Auditor General, 2017).

Beil (2009) contends that poor supplier selection has a negative impact on organisations such that they experience major financial losses, poor contract discharge and poor service delivery. It is against this background that this research intends to explore supplier's selections practices in South African State-Owned Enterprises.

Problem Statement

According to Wadhwa and Ravindran, (2007) supplier selection practices is a major issue in decision making among State-Owned Enterprises most especially in developing countries because it is often laced with diverse kinds of error. It is a challenging task for the procurement manager because several cumbersome processes have to be put in place to ensure that bidders are assessed based on their strength to avoid not achieving the best value proposition.

According to Eyaa and Oluka (2011), it is appalling that SOEs in developing countries have been consistently scored low regarding contract awarding and management which have resulted from faulty selection of suppliers and has impacted negatively on the level of procurement performance of the organisations at all levels of the state. Similarly, Mutava (2014) noted that supplier selection processes had been mired with lack of transparency and fairness among bidders, over pricing, procurement malpractice, etc, which has contributed to the increasing rate of poor service delivery, lots of abandoned projects, etc.

Inadequate screening of suppliers may lead to irreconcilable differences between the buying company and its suppliers, due to lack of synergy in their respective traditions and processes (Lowasikou & Iravo, 2016). The Preferential Procurement Policy Framework Act, 2000 is the legislative framework that governs the procurement activities of the state companies. The framework is based on competitive bidding however the specific techniques by which the supplier selection is performed is left to each organisation. There is a gap in understanding how the conditions of the legislative framework are being met by the various state companies.

It is against this background that this research seeks to explore the supplier selection practices in South African State-Owned Enterprises (SOEs).

Research Objective

The objective of the research is to explore the supplier selection practices in South African State-Owned Enterprises.

Literature Review

Introduction

This section of the research presents the theoretical framework which introduces the various theories that would be used for the research, their criticism and application to the study. It also presents the conceptual review, in which the concepts of supplier selection and selection criteria are discussed. Also, the section examines the various methods adopted for supplier selection practices as well as the factors impeding the successful application of supplier selection practices. Lastly, this section presents the empirical review as well as the research questions.

Theoretical Framework

Three theories were adopted for this study to explain the supplier section problem. The theories are transaction cost theory, adverse selection theory and stakeholder theory. They are discussed below.

Transaction Cost Theory

The interest of the buyer when selecting suppliers is rooted in transaction cost theory. Transaction cost is the cost of having a service provided externally through the market as opposed to having it provided internally within the organisation (Coase, 1960; Williamson, 2010). Williamson (1981) as cited in Williamson (2010) suggests making the transaction the unit of analysis in determining the cost of internal capacity vs external capacity and the decision to economise.

If the buyer decides to have the service provided externally, they look into the market for potential providers. According to Coase (1960) as cited in Williamson (2010), before carrying out a market transaction it is necessary to discover who to deal with. Beil (2010) provides a method of proactive discovery of suppliers that may lead to pre-qualification. Bouchard (1998) further eludes to the necessity of learning who the organisation is partnering with before selecting a suitable supplier.

The transaction cost theory has been criticised for the consequential uncertainty that arises from approaching the external market and the associated costs (Schwabe, 2013).

Contingency Theory

Once a decision has been made to seek a service provider from the external market, the organisation has to consider its circumstances so as to maintain organisational effectiveness and competitiveness. Contingency theory suggests that organisational effectiveness comes from fitting characteristics of the organisation to eventualities that are about the situation of the organisation (Donaldson, 2001; Islam & Hu, 2012). Contingencies may include the environment, the size of the organisation and the strategy of the organisation (Donaldson, 2001). Another condition to consider is the use of the organisation's competitive strategy to ensure effectiveness of the supplier selection function of the organisation (Chen, 2011). This method views the competitive strategy of the organisation as a key characteristic of the organisation that contributes to the effectiveness of the organisation. Thus when seeking suppliers, the organisation can ascertain supplier criteria that fits its competitive strategy.

Adverse Selection Theory

While supplier characteristics are important in creating an identity of the organisation and initiating a relationship between buyer and seller, the maintenance of that relationship is also required. There has to be a healthy flow of information between the buyer and the seller. The adverse selection theory is about the adverse selection problem which relates to quality and uncertainty (Devos, Van Landeghem & Deschoolmeester, 2011). This theory suggests that the quality of goods traded in a market can degrade due to information asymmetry between the buyer and the seller (Akerlof, 1970; Devos et al., 2011). This problem left unattended may lead to serious consequences like market collapse (Akerlof, 1970). Information asymmetry leads to the buyer intentionally procuring average-quality goods in a bid to hedge against risk of not knowing the quality of goods beforehand.

The buyer can protect themselves by employing screening and signalling (Akerlof, 1970; Biong, 2012). The buyer can employ screening to seek information about the supplier or the buyer can employ signalling by proposing information to the supplier about their proposals. Beil (2010) proposes proactive identification of potential suppliers that may eliminate the adverse selection problem. In this method, the buyer is then able to collect information about the supplier beforehand and confirm the quality of the supplier.

Criticism for the adverse selection problem is referred to as the moral hazard (Pauly, 2007). Moral hazard may occur on the part of the supplier, if the supplier was to intentionally supply inferior quality goods because the buyer is uncertain about the quality of the goods during the transaction.

Stakeholder Theory

Stakeholder theory is one of the most prominent management theories that were propounded in 1983 by Ian Mitroff (Freeman & Reed, 1983; Miles, 2017). The theory explains that the interest of the stakeholders of origination is very important and should be taken into consideration by the board of the organization (Freeman & Reed, 1983). In the traditional context of stakeholder, the stakeholders of an organisation are only limited to the beneficiaries of the organisation most especially the owners of the organisation. But more recently, the scope of stakeholders has increased to accommodate; suppliers, customers, competitors, etc. (Miles, 2012). According to Teacher Law (2013), the theory assumes that

1. Corporations cannot use stakeholders to benefit themselves in the long run; instead, making profits for all stakeholders is the final objective of companies.
2. As "mediators," directors of companies have to be answerable to stakeholders and balance the divergent interests of stakeholders.

The directors of the organisation should not select suppliers based on their selfish interests. It is expected that only competent suppliers are selected so that all other stakeholders can benefit. The director should ensure that they are answerable, accountable and transparent to all stakeholders in their process of supplier selection and ensure that all the divergent interests of stakeholders are balanced during the process of supplier selection.

Conceptual Review

This section of the research reviews the concepts of supplier selection, supplier selection criteria, supplier selection practices and supplier selection problems.

Supplier Selection

It has been established by scholars Koprulu & Albayrakoglu (2007) and Pikousova & Prusa (2013) that almost all organisations regardless of the sector, require vendors to supply them with the necessary raw materials, finished goods, and services which are essential for their productivity, profitability, and continuity in business. These vendors are not only engaged to provide the organisation with goods and services, but some of them that are knowledgeable in some arrears that can provide specialised input to the buyers' business like scarce skills (Koprulu & Albayrakoglu, 2007).

These have made several organisations, including State-Owned Enterprise (SOEs) to rely heavily on vendors for the supply of both infrastructural and technological facilities that can enhance the effectiveness and the quality of their products and services. This makes supplier selection an inevitable component of a firms procurement function.

According to Stormy (2005), supplier selection refers to the process of scanning, analysing, examining and filtering the basic background and biodata of suppliers within the market with the aim of choosing the best one that will propel the performance of the organisation to a better direction. Thus, a critical assessment of prospective supplier background and biodata is the core of supplier selection because only suppliers that meet the requirement of the buying firm will be contracted.

Furthermore, Lysons and Farrington (2006) define supplier selection as the process by which firms identify, evaluate, and contract with suppliers. In this definition, the process of contracting with the supplier was captured within the concept of supplier selection which has not been the case before 2006. The definition of Lysons and Farrington set the tone for other scholars to define the concept of supplier selection. According to Amindoust, Ahmed, Saghafinia & Bahreininejad. (2012), supplier selection is a multi-criteria decision making (MCDM) which faces multiple inputs and outputs.

Supplier Selection Criteria

After an organization concludes the make or buy decision, criteria is developed to identify suitable candidate suppliers (Williamson, 2010). According to Braglia and Petroni (2000), supplier selection criteria refer to the list of conditions that an organisation has to develop in order to guide them in the process of supplier selection because this list will eventually determine the supplier that would eventually emerge as the company supplier. The research, therefore, reviews the criteria's used so far, from 1966 to 2011.

As per Dickson (1966), the most important supplier selection criteria is not the price of the product or service delivered by the supplier but rather the most important criteria for supplier selection is the supplier’s ability to meet the required product or service quality standard. These two criteria (price and quality) are expected to form the basis of supplier selection. This proved earlier research wrong that price is the sole criteria for supplier selection (Ng, 2008). Which implies before 1966, supplier selection has been based on only the price proposed by the suppliers.

Furthermore, Ellram (1990) posited that the supplier selection process must be guided by four main criteria which include financial considerations, organisational culture, strategy and technology issues. The director of the SOEs should be able to examine the bids for the various contracts most especially the cost estimate which is the financial implications as set by the various prospective suppliers. The SOEs ought to ensure that they consider the cost implication about what their organisation has budgeted. Furthermore, the directors are expected to consider organisational culture and strategies of their prospective suppliers in relations to that of theirs so that the relationship is beneficial to the buyer. They should also be able to consider the level of sophistication of their organisation about the recommendation of the suppliers so that they can be at par.

Also, Weber, Current and Benton (1991) noted that the multiple criteria for supplier selection were identified early 1991 this was introduced as just- in –time (JIT) components. All the components of the JIT were said to constitute the criteria for supplier selection. These components include; quality, delivery, net price, geographical location, production facilities, and capacity. All of these components were the main criteria as at this time that constituted the determinant of the supplier.

In 2004 the criteria for supplier selection changed despite the fact that it remains multiple components as was used in the previous decade. Cheraghi, Dadashzadeh and Subramanian (2004) suggested that there has been a huge transformation among the criteria from 1991 till 1999. Other components have also been identified which included operating controls, packaging ability, training aids, desire for business and warranties and claim policies. But most of these components have ceased to be relevant in 2000. Cheraghi, Dadashzadeh and Subramanian (2004) posited that the most prominent components as at 2001 were reliability, flexibility, consistency and the long-term relationship. This was considered to be even more important than price and any other thing.

In early 2006, USAID (2006) identified six criteria that should be used for supplier selections. These six criteria include; quality, design, price, capacity, delivery and organisation skills. According to Sarkar and Mohapatra (2006), supplier selection criteria can be categorised into two categories; which are supplier performance and supplier capability. The researcher defines supplier performance as the supplier's ability to meet the buyer’s short-term requirements which include the cost, the product/service quality, and delivery. On the other hand, the concept of capability implies the supplier's potential that can be leveraged to the buyer's advantages in the long term.

Also, Luo, Wu, Rosenberg & Barnes (2009) noted that there may not be any standardised criteria for supplier selection but that their organisations should be free to gather the various supplier selection criteria that have been previously identified by scholars and tailored to meet the buyers specific need in line with the information that has been made available to the organisation on the industry. Thus, based on Luo et. al. (2009) there is no limit to the criteria, the list ought to be based on the discretion of the buyer.

Lin and Wu (2011) further identified nine major criteria which include; price, product quality, product consistency, product return and complaints policy, quantity discount and allowance, on-time delivery, professionalism of salespeople and delivery reliability.

Supplier selection practices

This section will review practices like MAUT, a structured framework based on a integrated architecture of supply chain, a supplier pre-qualification process and a process involving continuous investigation of exploratory activities.

Multi attribute utility theory (MAUT) became popular in the 1970s as a decision making aid for complex evaluation tasks (Bearden & Connolly, 2007). Subramanian (2001) documented a supplier selection methodology that utilises multi attribute utility theory (MAUT) together with linear programming. MAUT prioritises multiple conflicting objectives by converting them into common units called Utility Functions (Ehtamo & Hämäläinen, 2001). The utility function is a mathematical identifier of the preferences of a decision-maker. This function maps these conflicting choices into numeric scores, such that the higher the score, the more desirable the choice.

MAUT is applied when three sub-processes of supplier selection have been completed. The three sub-processes are the determination of qualifying suppliers, the determination of selection attributes that the suppliers will be evaluated on and criteria is ordered in a hierarchy (Subramanian, 2001). The buyer subjectively ranks the criteria in the hierarchy. Upon the conclusion of the MAUT computation, the selected supplier is one that meets the objectives of the supplier, thus satisfying the complicated metric of the suppliers conflicting objectives. Chen’s (2011) structured methodology utilises multiple criteria decision making (MCDM) method to decide on the suppliers that are preferred by the buyer.

Chen (2011) proposes a structured methodology for supplier selection and evaluation based on an integrated architecture of supply chain. This methodology highlights the value of supplier selection as a strategic consideration and part of an integrated strategy process as opposed to simply a subset of the supply chain management process.

Chen's (2011) methodology suggests that the criteria and indicators of supplier selection are identified from the competitive strategy of the organisation and in turn used to develop its supplier selection framework. The competitive strategy of the organisation is developed by performing a strengths, weaknesses, opportunity, and threats (SWOT) analysis (Chen, 2011). The SWOT analysis is a common strategy development tool practiced in the modern enterprise. The purpose of a SWOT analysis is to understand the environment in which the organisation operates by identifying these key pointers (Johnson, Whittington, Scholes, Angwin, & Regner, 2014).

The goal is for the organisation to respond strategically to these indicators by reducing threats, maximising benefit from its opportunities, understanding to what extent the strengths can sustain the organisation through a changing environment and understanding to what extent its weaknesses (Johnson, et al., 2014). Performing a SWOT analysis gears the organisation to develop criteria or attributes of suppliers the organisation requires maintaining a competitive position in the external environment.

The model then proposes the use of Data Envelopment Analysis (DEA) for candidate supplier selection, the use of Fuzzy Theory for weight decision for evaluation indicators and Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) for supplier evaluation (Chen, 2011). This application of DEA is a proactive supplier screening process to delete some less qualified suppliers. It can be thought of as a supplier pre-qualification tool. The DEA is a linear programming method for assessing the efficiency and productivity of units referred to as decision-making units

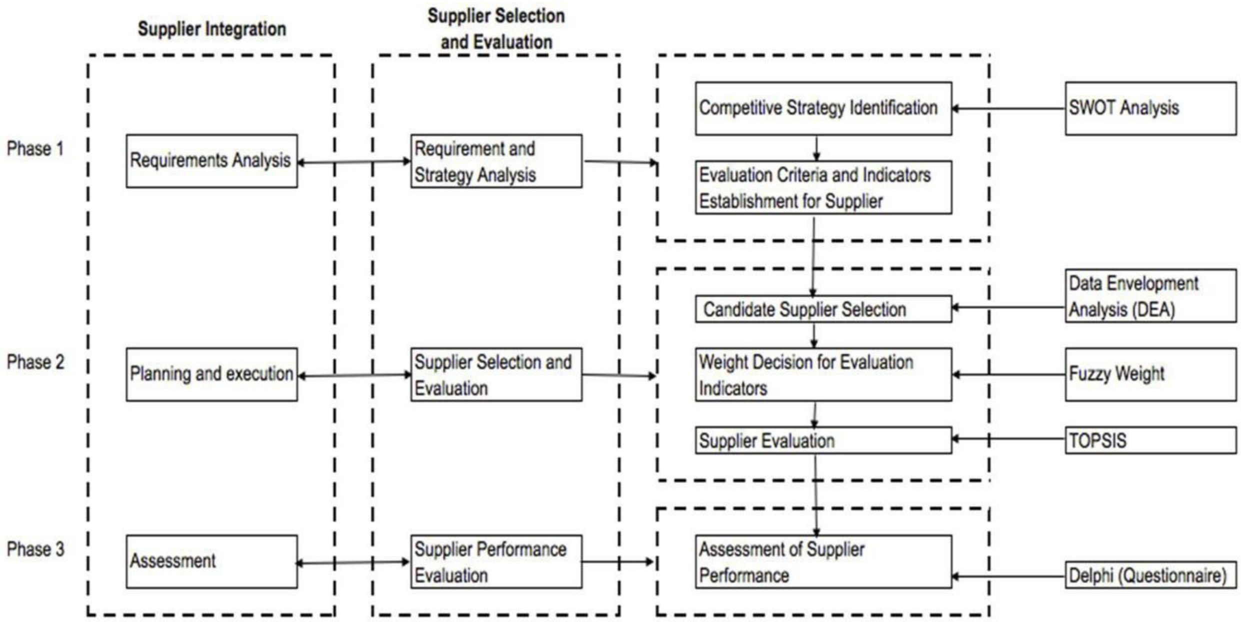
(DMUs) (Ji & Lee, 2010). The supplier evaluation indicators produced from the competitive strategy are used as DMUs.

The Fuzzy Theory process utilises fuzzy logic to decide the strength of the buyers' preference to each criterion so that the weight of supplier evaluation indicators can be calculated (Chen, 2011). Fuzzy logic is about degrees of truth. It suggests that the truth is any value between 0 and 1, thus implying that the truth is not absolute but weighted. The output of this process is how much each supplier evaluation indicator weights. An alternative methodology is presented where qualitative performance evaluation is used by utilising fuzzy Analytical Hierarchical Process (AHP) to find criteria weight (Zeydan, Colpan & Cobanoglu, 2011).

Multiple criteria decision making utilises TOPSIS to evaluate prospective suppliers (Chen, 2011). TOPSIS is based on an aggregating function representing "closeness to the ideal" (Opricovic & Tzeng, 2004). The ideal solution is created from the output of DEA; evaluation indicators are weighted using Fuzzy Theory to form a ranking according to the preference of the buyer and TOPSIS is applied to identify the suppliers that align with the indicators in the buyers preferred ranking. Although employing a qualitative view into the weighting of criteria, Zeydan et al. (2011) also use TOPSIS for the ranking of suppliers for selection.

The Delphi method is suggested for the assessment of supplier performance (Chen, 2011). The Delphi method is used to achieve a consensus among an expert group (Chou, 2002). A typical Delphi study is applied in iterative rounds.

In the first round, a questionnaire is formulated and sent to the group. Their responses are collected and analysed. Another questionnaire is then developed to allow the group to re-rate and reconsider their opinions. The process is repeated until there is a consensus. In this methodology, the Delphi method is applied in the form of a questionnaire to the buyer group which is a combination of supply chain practitioners and end-users.



Sources: Chen (2011)

FIGURE 1: Adapted model of the structured supplier selection methodology.

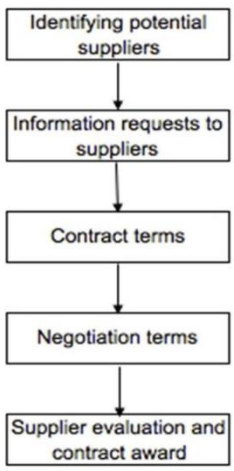
It is important to note that the methodology presented by Chen (2011) shows a reliance on a “decision maker”. This individual is required to constantly make decisions that advance the process from one sub-process to another. As per the evolved definition of an organisations stakeholder, this decision maker can be considered the organisation’s stakeholder (Miles, 2012). The “decision maker” can introduce subjectivity, bias and other human interference, intentionally or not.

Beil (2010) notes that the process of identifying suitable suppliers is expensive and time-consuming. This process is even more expensive when the organisation commits its resources to maintain an "outsider" or an outside organisation (Subramanian, 2001). This method presented below involves a proactive process of identifying potential suppliers through the supplier pre-qualification process. This method further suggests that the buyers ought to constantly develop and maintain a database for all the pre-qualified suppliers. This is necessary in order to keep track of the vendors used in the past.

According to Beil (2010) there are two dimensions to the screening process of suppliers. The first dimension of the screening process is to ensure that the suppliers are those that can perform while the second dimension of the screening is to validate the responsiveness of the supplier. For this type of screening, vital documents such as references, certifications indicating supplier quality, etc. are often required.

Also in this method, the buyers would request that the qualified suppliers should submit detailed information about the goods and services in the form of Request for Information (RFI), Request for Proposal (RFP) and Request for Quote (RFQ). Each of them serves a different purpose. The RFI is utilised to gather market intelligence on the procurement of certain commodity. The RFP is used whenever the buyer desires that the supplier meet some set of performance indicators that the buyer has provided. While the third one, RFQ often requested in situations when the buyers are already well informed about the commodity they are requesting for and only need the supplier to supply to them. This document does not require embellishment because the buyer is already informed about the commodity.

It is important to note that once the suppliers are selected, the next phase is to establish the contract between the buyer and the seller. The contracting sub-process is beyond the scope of this research and has been excluded. The negotiation process is when the supplier and buyer try to induce favourable terms from each party (Beil, 2010).

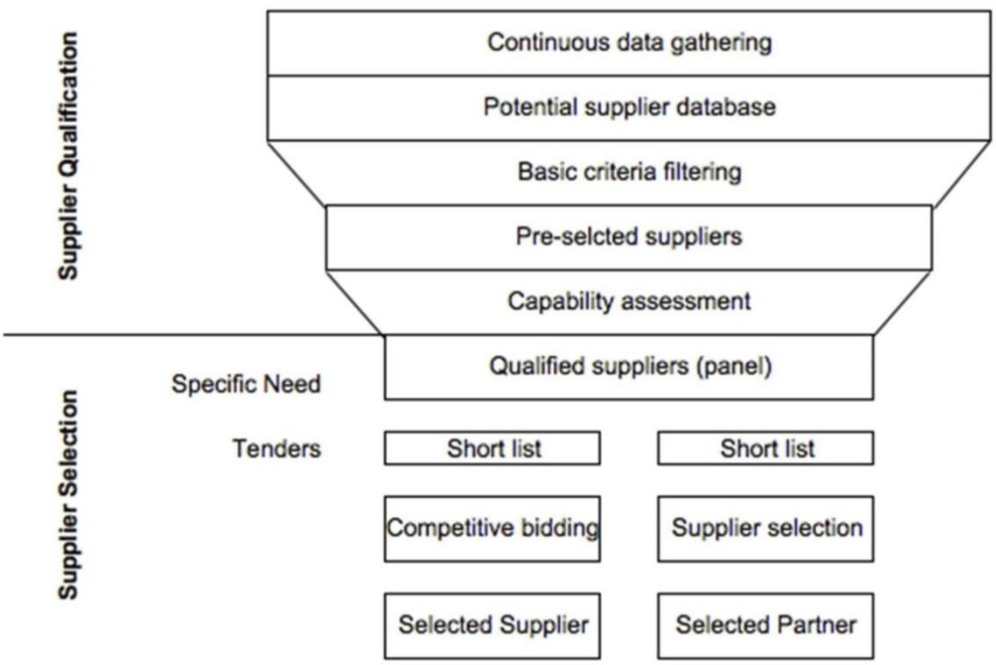


Sources: Beil (2010)

FIGURE 2. Supplier Selection Process.

One of the stages involved in supplier selection process is supplier's evaluation. It is the process by which buyers rank all the suppliers in order to determine the suppliers that will be most qualified for the contract.

According to Bouchard (1998), successful supplier selection process is categorised by a continuous investigation of exploratory activities such as 1) supplier market analysis, 2) new sources identification and 3) supplier data gathering. Initially, buyers were required to use the traditional method for supplier selection which is often through the use of competitive bidding. However, with time, it was soon discovered that the competitive bidding was not an objective and a comprehensive supplier selection process. Therefore, it was suggested that two different activities should constitute the supplier selection process i.e. evaluation based on capabilities and evaluation based on offers. In order to achieve this, a supplier panel will be developed in order to ensure that the supplier evaluation passes two stages which include the prequalification and the qualification stage. It is important to note that the first stage and the second stage are based on low-cost information and selection filters which are contained in the buyer’s database.



Sources: Bouchard (1998)

FIGURE 3: Supplier Selection Process.

It is explained that the capability assessment should be used in conjunction with the biddings. Whenever this capability assessment is to be carried out, its tools must be considered. Some of these tools include; supplier audits, production tests and multi-criteria evaluation techniques. Employing competitive bidding alone will result in the selection of suppliers however pre-qualifying suppliers before utilising competitive bidding results in the selection of partners where mutual dependence can be created Bouchard (1998).

Supplier Selection Problems

At inception, supplier selection never constituted a threat to the organisation, and it was void of flaws. But more recently, it has been ravished with various flaws (Bello, 2003).

According to Altinoz, Kilduff and Winchester (2010), supplier selection problems include the increase in the numbers of potential suppliers. This has increased the likelihood of not getting suitable suppliers because the presence of several suppliers reduces the chances of buyer's dependency on a particular supplier, thereby giving the buyer alternative. However, some of these alternatives may not be credible or even able to deliver quality services or goods. The presence of more candidate suppliers can potentially aggravate the adverse selection theory (Akerlof, 1970; Devos et al., 2011). Since the number of the suppliers is increasing, the chances of investing quality time to ensure that the selection process is thorough becomes a challenge, hence the management may adopt easier methods that in order to maximise the time and reduce the cost involved in sourcing suppliers.

Another problem is the increasing number of attributes. According to Wisner, Leong and Tan (2005), the introduction of various attributes, principles, and rules guiding the business has continued to make the process of supplier selections more tedious, time-consuming and expensive.

Empirical Review

Literature was reviewed in this section to show the contribution of scholars to the subject under study. Akerlof (1970) conducted research to examine quality uncertainty and the market mechanism. The research found out that trust is the most important part of supply and when trust is not guaranteed in a supplier, the business is likely to suffer loss. This suggests that every organisation is looking for a trusted supplier who can help them reduce their level of risk.

Also, another review was carried out by de Boer, Labro and Morlacchi (2001) on supporting the supplier selection process. The research concluded that over time, less attention has been placed on the phase prior to the choice phase which should have been the foundation for suppliers selection while more attention has been on the choice phase which includes; problem definition, formulation of criteria, qualification of potentials suppliers. In addition, the research also found out that most literature reviewed concluded that most organisation often sum up relevant criteria and the do's and don'ts' in order to carefully engage the best suppliers. Lastly the research established that not all suppliers' selection methods are applicable in all supplier selection situations.

Beil (2010) conducted qualitative research on Supplier Selection, reviewing various literatures, the research was able to establish that there five stages in suppliers selection process which include; identifying suppliers, soliciting information from suppliers, setting contract terms, negotiating with suppliers, and evaluating suppliers.

According to Chen (2011) in a qualitative research conducted in Taiwan to propose a structured methodology for supplier selection and evaluation based on the supply chain integration architecture. The research suggest organisations should first identify their competitive strategy using the SWOT analysis, and that their criteria and indicators for suppliers selection should be designed based on this result of the analysis from which they can now develop a framework that would continue to guide their selection. In addition the research also suggested that data envelopment analysis (DEA) should be used to screen the supplier while the Technique for order preference by similarity to ideal solution (TOPSIS) and a multi-attribute decision-making (MADA) method should be sufficient enough help them determine their potential supplier.

Ambe (2016) documents that the lack of clearly defined strategic goals and various misconceptions about the concept of supply chain management, have led to the need for continuous transformation of procurement practices in the quest for better services to the South African public.

In a quantitative research conducted by Makhitha (2014) on the supplier selection criteria craft retailers use when evaluating craft producers as their suppliers, where 233 craft retailers were sampled in South Africa. The data was collected using a semi-structured questionnaire and analysed using Analysis of Variance (ANOVA). The research found out that quality was the most important criteria that were considered by the craft retailers.

Another quantitative research was conducted by Perks and Oosthuizen (2016) to determine the supplier selection criteria for effective social responsible procurement in South Africa, administering a semi structured questionnaire on a total sample of 273 respondents. The data collected was analysed using Multivariate analysis of variance (MANOVA). The result showed that three main criteria were important in the South African business environment which includes; diversity, human right and safety conditions.

Research Questions

From the preceding literature review, a field study was undertaken to explore supplier selection in SOEs. Three research questions were posed, with each question containing two or three sub-questions.

The adverse selection theory indicates the use of signaling and screening in order to deal with information asymmetry between the buyer and the seller (Biong, 2012). Furthermore, Ellram (1990) posited that the supplier selection process must be guided by four main indicators which include financial considerations, organisational culture, strategy and technology issues. Chen (2011) proposes the use of a competitive strategy to identify and evaluate prospective suppliers. Bouchard (1998) suggests that the evaluation of a prospective supplier should pass two stages i.e. pre-qualification and qualification. Using inductive reasoning, it is clear that there are various means of selecting suppliers and indicators to consider (Frankel & Devers, 2000). This research then poses the question how State-Owned Enterprises in South Africa select their suppliers, with the intention of identifying the specific techniques and practices.

Subramanian (2001) documents the use of MAUT to mathematically compute and rank attributes that are to be utilised in the evaluation of suppliers. The MAUT is quantitative by virtue of allocating numeric scores or weights to the attributes. Chen (2011) suggests the use of Fuzzy logic to measure the strength of the buyer's preference against the criteria the buyer has put forward to evaluate the prospective supplier. According to Beil (2010), the screening process of suppliers involves attaining critical documents about the supplier such as references, certifications indicating supplier quality etc. These documents contain the identity and history of the prospective supplier's performance which is qualitative in nature. Using inductive reasoning, the literature reviewed suggests that both qualitative and quantitative means can be utilised in the process of supplier selection (Frankel & Devers, 2000). This research then poses the question whether supplier selection is a qualitative or quantitative process among South African State-Owned Enterprises.

Stakeholder theory indicates the existence of "mediators" that act on behalf of the originators or owners of the organisation. According to Teacher Law (2013), the mediator is answerable to the stakeholders and has an obligation to balance the divergent interests of the stakeholders. The methodology presented by Chen (2011) shows a reliance on a "decision maker". This individual is required to constantly make decisions that advance the process from one sub-process to another. On the basis of inductive reasoning, this research will seek to understand the influence of such a role in the process of supplier selection within SOEs of South Africa (Frankel & Devers, 2000). This research then poses the question probing whether supplier selection is dependent on a decision maker.

The research questions and sub-questions are listed below:

1. How do State-Owned Enterprises in South Africa select their suppliers?
    1.1. How does your organisation select its suppliers?
    1.2. Is competitive strategy considered before selecting suppliers?
    1.3. How are suppliers evaluated before selection?

2. Is supplier selection a qualitative or quantitative process among South African State-Owned Enterprises?

    2.1. How is information solicited from suppliers?

    2.2. Is comprehensive or numerical information collected from suppliers and about suppliers?

    2.3. How is the information solicited from suppliers interpreted?

3. Is supplier selection dependent on a decision maker?

    3.1. Is the decision to select a supplier dependent on a calculated output or is it dependent on a single decision maker?

    3.2. Does dependence on a decision maker introduce any bias to the decision?

Research Methods and Design

Introduction

This section examines the research methodology that was adopted for the study. In this chapter, discussions on the various sessions were fully presented. This section discusses the research design adopted for the research work as well as the population, the sample size, etc.

While most of the reviewed literature is quantitative in nature, the research approach of this paper is qualitative. Qualitative research is the collection and analysing of data in mainly non-numeric forms (Blaxter, Hughes, & Tight, 2006). Qualitative research explores in close detail small numbers of instances (Blaxter et al., 2006).

The paradigm of this project is interpretivist. Interpretivists reject the notion that the real world exists independently of human knowledge (Buddharaksa, 2010). The paper was written from an understanding that knowledge is relative to the knower and can only be understood from the point of view of those directly involved (Hatch & Cunliffe, 2012). The knowledge that this study seeks to obtain is known by the interviewee and is better understood by the procurement practitioners practising supply chain methodology on a daily basis. The question “how” can only be answered by those involved in supplier selection in the South Africa state-owned enterprises.

The approach is subjective and the epistemological assumption of this research is anti-positivism (Burrell & Morgan, 1979). Anti-positivism suggests that knowledge is relative and can be understood through personal experience (Burrell & Morgan, 1979). The approach can be assumed as seeking an “insider” approach. The enquiry methodology is nomothetic.

Research design

The research design adopted for this study was exploratory research design. The qualitative research method was adopted. There is a need for in-depth information since it is an exploratory research, which the quantitative research methods may not be able to provide. According to Blaxter et al. (2006), a qualitative research method involves the collection and analysis of non-numeric data. Also, this research method is also useful for the exploration of small numbers of instances (Blaxter et al., 2006). A study performed by Mpwanya and van Heerden (2015) was also based on qualitative research.

Population and Sample

The population of this study included all the professionals practicing in the procurement and supply chain field, within South African State-Owned Enterprises. The total population of State-Owned Enterprises in South Africa is estimated at 300 (National Treasury, 2006). The total size of procurement and supply chain practitioners amongst the 300 SOEs could not be determined.

Sample and sampling Strategy

The researcher purposively selected SOEs because of their size in relation to spending budget (spending on suppliers) and accessibility from a geography perspective. Out of the enterprises that fit this criteria, a total of 11 SOEs were approached but only 5 agreed to participate. These organisations fit the sampling strategy. The researcher entered into confidentiality agreements with the participating SOEs.

In addition to these, in order to determine the number of respondents, the researcher selected 10 respondents. This was in line with the recommendation of Guest, Bunce, & Johnson (2006) that the sample for qualitative research where instrument such as in-depth interview guide is used should be between 6 to 15 interviewees. The purpose for this is for easy collection of in-depth information and as well as easy analysis.

Furthermore, for this interview, purposive sampling techniques was used to select two respondents from the five (5) State-Owned Enterprise thereby making the total sample size for the interview to be 10 (Mpwanya & van Heerden, 2015). The participants were recruited by the researcher by telephonic conversation. Familiarity with the researcher was not a concern to the study. The respondents were sampled based on their current positions with the organisation. They were all working in the procurement and supply chain units of the various SOEs.

Research Instrument

The research instrument adopted for this study was a semi-structured interviews guide. A semi-structured interview offers a balance between the flexibility of an open-ended question and the focus that is achieved by narrowing the research question to a particular domain (McCammon, n.d). Supplier selection is a sub-set of the broader field of supply chain or procurement. A semi-structured interview ensures that the interrogated domain is narrowed to supplier selection as opposed to supply chain. The responses that are expected are lengthy and descriptive answers.

The in-depth interview Guide was made up of three main questions. Under each of the main questions, there were probing questions. All of the questions were formulated from the literature review.

Procedure of Data Collection

Only primary data was considered in this study. The data was collected from the participants using interviews conducted by the researcher. The researcher ensured that the interview was completed with the two respondents from one company before proceeding to another. The interview for each respondent only lasted between 20 and 35 minutes. Participants were interviewed individually. The interview questions were open-ended which allowed for the introduction of probing questions. The interviews were recorded upon obtaining verbal consent from the participant and notes were taken by the researcher during the interview.

Data Analysis Method

Transcripts were developed from the interview recordings. Each transcript was analysed individually. The analysis methods utilised were coding and thematic content analysis (Guest, MacQueen & Namey, 2012). Coding was used to develop categories and themes. The coded groups were then allocated a topic. Codes can be thought of as tags or labels for assigning meaning to data collected during a study (Bell, 2005).

In this process, data is simplified and standardised for the purposes of analysing the data. This may also involve reducing the quantity of the data by summarising. The intention is to prepare the data for representation without reducing the quality of the data or impairing meaning. Since the collected date was nominal, the coding technique applied was thematic (Blaxter et al., 2006).

Limitation of the Study

The study is limited to five (5) State-Owned Enterprises in South Africa. It is also limited to supplier selection practice, not procurement.

Validity and reliability

The themes were formed based on consistent or “like-minded” responses from multiple participants. The validity and reliability of this research was based on the concept of trustworthiness as a means to credit qualitative research (Joniak, 2005).

Internal validity / Credibility

The credibility of the collected data is reliant on the reliability of the responses provided by the participants. The researcher values the participants own interpretations of reality (Joniak, 2005).

External validity / Transferability

While there is no reason to believe that any of the subjects supplied unreliable data, the full population has not been interviewed to guarantee that findings are fully applicable to all SOEs.

Reliability / Dependability

Data was analysed and interpreted within six (6) months of collection from participants. The transcripts and all paraphrased statements were sent back to the participants to validate.

Confirmability / Validity

The validity period of the data is six (6) months. The South African government issues "notes" that may alter the governance framework on regular intervals. Interview recordings were stored on a password protected laptop computer of the researcher and backed up on internet cloud storage.

Results

The themes that emerged from the data were coded and comprehensive discussions were made in line with the literature review to draw conclusions. In this section, the data that was collected during interviews were further presented as in relation to the research questions. Each research question had sub-questions.

How do the SOEs in South Africa select their suppliers?

This section examines the various State-Owned Enterprises in South Africa and how they select their suppliers; whether they consider competitive strategies for supplier selection and prospective supplier evaluation.

How does your organisation select its suppliers?

The selection of suppliers is a response to a push from the business unit of the State-Owned Enterprises. 40% of the subjects agreed before even publicly requesting for that the demand first ensure that they collect a requirement from the business unit involved. In line with this, one of the respondents noted that:

> "We start by receiving the requests from the business units."
>
> (Subject 8)

Also, another subject also further explains that:

> "The process is initiated gathering requirements. With the requirement, the business unit submits an estimated budget. The role of the buyer is then to advise and initiate the relevant supplier selection process."
>
> (Subject 4)

Generally, buyers have access to various supplier selection process options from which they can choose from. One of those processes is closed tendering (including sole source process or limited supplier selection). According to a subject:

> "The norm is open competitive tendering and if there's… for some reason we're doing a closed tender we have to get permission from National Treasury."
>
> (Subject 4)

Furthermore, at least 70% of the subjects reported that apart from close tender, they can also use informal tendering, formal tendering and transversal term contracting but they must be conscious of the fact that the major determinant to the choice of the supplier selection process is the budget requirement of the commodity itself.

Eighty percent (80%) of the respondents indicated that the supplier selection process is a regulated function that is governed by law i.e. Public Finance Management Act (PFMA) No.1 of 1999 section 5 of the Preferential Procurement Policy Framework Act (PPPFA), Act Number 5 of 2000 (Act No.5 of 2000). In addition to these, another subject identified some steps that ought to be taken during the process of suppliers' selection.

> "So, there are multiple steps that you can go through. That is how to basically go about selecting your suppliers and then at the very end it would be based on price and preference. We used to go PPPFA. I don't know if you are familiar with it? Public Procurement Policy Framework Act. That is what we use."

(Subject 11)

The application of these Acts is limited to an organ of state. What is contained in the PPPFA is the “identification of preference point system, designated sector, pre-qualification criteria, objective criteria and subcontracting” (National treasury, 20017). It is important to note that under this regulation, the pre-qualification of suppliers are mandatory and that a central supplier registration system must be adopted. Corroborating this, another subject posited that:

> “... this is what happens: National Treasury has issued a circular in which every government institution have regulated their database to National Treasury. That’s what we call the National Treasury Central Supplier Database. All government institutions, when they issue tender, that’s the hub of suppliers.”
>
> (Subject 3)

Thus, the Central Supplier Database (CSD) is maintained where all suppliers that are keen to do business with the state organisation are registered. Supplier registration is open to the public. A subject expanded on this that:

> “Currently we’re using the CSD, which was led by the National Treasury where all service providers that are interested in doing business with this bid have to register.”
>
> (Subject 2)

From this assertion from Subject 2, this implies that any supplier engaged by the State-Owned Enterprises must be registered on CSD. Upon registration, the prospective supplier is issued a vendor number. With which they can be identified. Even though 100% of the subjects indicated knowledge of the CSD, however the extent to which the database is engaged differs from one SOE to another and their type of bid.

Similarly, only thirty percent (30%) of subjects indicated that they perform market analysis on a commodity in their organisation. The buyer is expected to perform market analysis on the selected commodity using search tools. The reason why they do these is in order to profile the commodity to the point of developing a sourcing strategy for the commodity.

> "We develop a sourcing strategy in order for us to be able to… Because sometimes you don't want to limit yourself to what you know, and the only way not to limit yourself to what you know is by doing research."
>
> (Subject 3)

Developing a sourcing strategy is very important because it will help to determine the service provider's market saturation. In the event, that there are limited suppliers a closed tender process is utilised.

In addition, the informal tendering can also be applied. This is a lower value competitive bidding process where legislation is not engaged fully by the organ of state. Even though these deviations are already approved by the state, some members of the State-Owned Enterprises will also be appointed to preside over those purchase outside the legislation. It is important to note that informal tendering applies to requirements or purchases that are less than R500,000 or R1,000,000 depending on the organisation. A subject emphasised that:

> "... in that RFQ process it just separates it. There's no way it can be more than five hundred thousand."
>
> (Subject 1)

While another respondent posited that:

> For the informal tendering, one million rand and less is the standard.
>
> (Subject 11)

Informal tendering is location based. The potential supplier is pre-qualified for selection based on their proximity to where the requirement is.

> "... like for example if we want catering for Centurion obviously we have to select service providers which are based in Centurion. This

> is to promote the local content and the local business of the surrounding areas."
>
> (Subject 2)

Thus, the informal tender is issued to a predetermined list of suppliers. The CSD may be utilised to select these suppliers but this is not mandatory. Most organisations maintain a private database of pre-qualified suppliers. This database is influenced by CSD or suppliers utilised in the past by the organisation. A minimum of three participants are required to maintain competitiveness.

All the subjects concur with the use of pre-qualification criteria. The pre-qualification criteria are determined by the organisation. The organisations have a set list of administrative and compliance criteria to pre-qualify suppliers. In this process, the specification of the commodity is drafted by the buyer. The informal tender must be issued with a defined description of commodity or bill of quantities. A respondent explained this further, that:

> "...on the bill of quantities they will write 'okay, for you to pay into this area or to build here, how many bricks you need, how many cement boxes you need, all those things. So that when you go out on tender you have all those specified."
>
> (Subject 4)

We also have the formal tendering which is the competitive bidding process where the requirement is greater than R500,000 or R1,000,000. In most cases, the PFMA & PPPFA is fully engaged in this exercise. In line with these, a subject reported that;

> "And if it's above fifty million its open tender."
>
> (Subject 9)

The PFMA mandates open tendering and the use of CSD for the prequalification of suppliers. This is the evidence of differing interpretations and application of the regulation. Open tendering is open to any member of the public that meets the pre-qualification criteria of the CSD. Thus, the approach of formal tendering differs from informal tendering in this regards that it allows the service provider to show interest rather than be pre-qualified by the organisation.

Furthermore, it is important to note that the specification of the commodity in the formal tendering process is subject to approval before tender issue. Each State-Owned enterprise selects a Bid Specification Committee (BSC) that establishes the soundness of the requirement and criticise the description of the commodity that is sought after. This suggests why sixty percent (60%) of the subjects confirm that their organisations have BSCs. One of the subjects noted that:

> "Yes. In technical you've got two teams. You've got the BSC who deals with specifications and criteria."
>
> (Subject 3)

The BSC is also tasked to develop selection criteria as per PFMA & PPPFA i.e. preference point system, pre-qualification criteria, objective criteria and sub-contracting. Similarly, another subjected indicated that;

> "....open tenders are for five hundred thousand and above, with that we don't go straight to the CSD to invite the service providers. What we do is that we have a committee which is the BSC, which is a cross-functional committee, we'll also have a transitional team where we have people from the different departments like your ICT, HR, Legal where they will sit and then draft the specification. And then, after they have drafted the specification we send the specification to the BAC for approval."
>
> (Subject 2)

Furthermore, only 30% of the subject indicated that the adoption of the centralised sourcing approach was adopted by the state. The National Treasury has tasked the Office of the Procurement officer to perform supplier selection for strategic commodities or big spend items within state organs.

> "The transversal that National Treasury does…, let me explain it, they

fall under what we call ‘office of the procure officer’ Yeah. What they do is they are looking for big spending that has been done by government itself, or departments and SOE’s. And then they negotiate on behalf of government, because now they want to negotiate using volumes, for instance I can use RT-57, which is the cars.”

(Subject 4)

This process culminates to Transversal Term Contracts that are applicable to state organs. A commodity that has a Transversal Term Contract may not be sourced again by a state organ. While there is little acknowledgement from the subjects that this process exists, it is some form of modernisation or evolution to the supplier selection problem.

Is a competitive strategy considered before selecting suppliers?

Only fifty percent (50%) of the subjects acknowledge the existence of a competitive strategy. The overall strategy of State-Owned Enterprises is determined by the National Treasury with the key strategy being cost containment.

“One of it it’s a ‘Note 3’ like the notice ‘Note 3’ of this year. It talks about cost containment.”

(Subject 4)

Cost containment relates to both resources and available budget. Market analysis and central sourcing is used to achieve this directive. Market analysis through search tools is used to profile commodities so that benchmarking and total cost of ownership can be understood per commodity. Also, this is performed in a bid to understand supplier relation management. A subject noted that:

“It helps us understand the supplier relation management. It helps us understand the bench-marking. So, they will then say, give you a strategy on how to deal with acquiring of laptops and desktops. And say when you are acquiring that, you are not only acquiring the machine that you are going to work with, but also elements that add to."

(Subject 3)

The remaining subjects cannot confirm any competitive strategy utilised by their organisation. This is also a view into the comprehension of legislature and the activities of the National treasury. There is an arm of State-Owned Enterprises that is useful in identifying threats, such as the office of the Auditor General (AG). AG performs audits on state enterprises which aids in identifying threats. Such threats can be spend leakages as suggested by a subject.

"This is what we need to go through. Hiring of hotels, flights. Because as the AG goes around he'll find out that, there's leakage."

(Subject 4)

Another threat is the tendering process achieving cost that is above the available budget. There are negotiation mechanisms employed to achieve the budgeted cost.

Budget cost should aligned to your budget value. If it's not, they've got mechanisms in place, negotiations, to trying to align it to what your market analysis was. Or what your market budget was.

(Subject 11)

There is also the eventuality of suppliers that are also competitors due to licensing and accreditation requirements of licensed substances or original equipment manufacturers. A glaring opportunity for the State-Owned Enterprises is supplier development and localisation. That is engaging suppliers based on their locality. To this, a subject indicated that;

"This is to promote the local content and the local business of the surrounding area."

(Subject 2)

The state has an opportunity to reach all members of the public through localisation and not just the big cities. The state benefits as well in their strategy to contain cost as localised sourcing reduces the requirement for logistics.

How are suppliers evaluated before selection?

The PFMA & PPPFA has set forth criteria by which the suppliers must be evaluated. Some of these criteria come in the form of formulas and acronyms which makes it easy for the organisations to grasp and adopt. This was noted by a respondent that:

> "...I've just written it somewhere. It's a formula that we are using."
>
> (Subject 8)

Also, it is important to note that it differs from one SOE to another. All of these enterprises do not use the same evaluation criteria even though their contents may be similar. A respondent briefly mentioned that:

> "They vary."
>
> (Subject 9)

Although the regulation guidelines do not always dictate the weighting of the criteria but having criteria with which the supplier is going to be evaluated is mandatory to the application of the regulations.

> "They submit a tender to us. Obviously we have an evaluation criteria which we issue out together with the tender so when you see my tender, you must know how we are going to evaluate you."
>
> (Subject 11)

The criteria for evaluating the supplier is often published in the enquiry documents. It is mandatory that it should be included in the application guidelines regulations. With regards to that, the subjects confirm that

> The evaluation criteria must be issued with the tender but there is

> little understanding of how this criteria is developed and the evaluation of suppliers occurs in three key stages, though the naming of the stages differs from one organisation to another. The three stages are i) pre-qualification, mandatory criteria and governance, compliance and risk criteria, ii) functionality and iii) price evaluation.
>
> (All Subjects)

The first stage is also sometimes referred to as the gate keeping stage. One of the respondents noted that:

> "Yes. After the gate-keeping it's then that you go to [intervene]. Yes, and then after the gate then we start considering the price."
>
> (Subject 8)

Stage 1 is often referred to as "gate-keeping". Another subject gives more insight into the difference between the stages:

> "They all agree. Now they go to the next gate. The next gate usually will be the technical gate. Then there the technical evaluators are going to go through. Now they're doing the scoring, not disqualifying."
>
> (Subject 4)

The first stage of the evaluation may result in the elimination of the supplier from competitive bidding. The last two stages of the evaluation results in the ranking of suppliers and not elimination.

> "So there's normally a team of minimum five that will form part of the bid evaluation committee. Those are responsible for the evaluation."
>
> (Subject 7)

The evaluation is performed by a cross functional team from the organisation, the Bid Evaluation Committee (BEC). The evaluation is performed on documentation that is submitted by the supplier to the organisation. The evaluated information does not originate from the organisation. While search tools are wildly utilised to identify the suppliers, there is no evidence of search tools being utilised to solicit information about a supplier.

Pre-qualification is performed by the National treasury through a centralised supplier registration process. Before the prospective supplier can register, they are obligated to meet set criteria. A subject noted that:

> it is not a must that you have BEE but since this National Treasury have been introduced as our pre-qualification, now we are trying make sure that BEE is a must. That they must have BEE ownership
>
> (Subject 8)

Also, the prequalification can be developed by the organisation and issued with the tender. Was indicated by a subject:

> "...remember that the team must arrange a meeting, before we submit to the committee and that pre-qualification must appear on the submission."
>
> (Subject 8)

Often pre-qualification is referred to as "basic compliance" while mandatory requirements differ with each bid. This is a set of criteria that is pertinent to the bid. As an example, these can be product specific qualifications. This is often evaluated based on submitted documents that are checked for validity.

While gate-keeping applies to every bid, functionality evaluation doesn't. Explaining this, a subject noted that:

> "They go through the gate-keeping and then normally… it depends with the complex of the project. Some of them, they need functionality."
>
> (Subject 8)

Functionality evaluation relates to technical criteria, quality criteria and designated sectors qualification. Functionality criteria evaluates capability and capacity to perform the required works. Also, the designated sectors are defined and regulated by the Department of Trade and Industry. This is a regulation of local supply thresholds in each commodity. There are commodities that are designated to be sourced locally (within South African borders) or certain thresholds of local supply.

Also, about 80% of the subjects agree that the evaluation is performed by a collective, often named the BEC. The BEC consists of subject matter experts from the business unit that will also evaluate technical quality criteria. Each supplier is scored points based on their compliance or response to the technical criteria. The points are scored out of 100. Responding to the allocation of the scoring allocation of the criteria, a respondent indicated that

It is based on hundred.

(Subject 8)

It is observed that functionality criteria have a threshold and once the supplier's score meet the functionality threshold they progress to the next stage. The supplier scoring the most points assumes the first position and a descending order of ranking is established.

Commercial evaluation includes B-BBEE (Broad-Based Black Economic Empowerment) evaluation and price evaluation. On this matter, a subject indicated that:

> "Some tenders will have functionality, some would just move direct to price or commission, call it commission, that is pricing and your B-BBEE"

(Subject 7)

Pricing evaluation is performed by financial advisors from the organisation. There is a pricing matrix and formula published in the PPPFA that is meant to aid in the scoring of supplier pricing. To this, a respondent indicated that there is a formula they adopt:

> "There's a formula that we use. A government formula that we use."

(Subject 3)

The scoring for this formula is such that the suppliers can be ranked in descending order, with the highest scoring supplier at the top of the list. A key observation on the data is that there is a very clear understanding of the significance and application of commercial evaluation. It is a single common thread between the participants. All the participants agree that there is a strict application of the PPPFA.

For the sake of understanding, B-BBEE is defined next. B-BBEE is an Act of Law intended to transform the South African economy such that there is no exclusion based on race. The application of the law is guided by the B-BBEE Codes of Good Practise of 2007 (Department of Trade and Industry, 2014). The evaluation of the suppliers' compliance to the B-BBEE framework is dependent on the B-BBEE status level of the organisation. More often, most of SOEs have objective criteria and their objective criteria are unique to each organisation. According to a subject:

> "Objective criteria is whatever is important to you or is an objective for you to achieve at that point in time through a particular tender"
>
> (Subject 11)

Each organisation is permitted to introduce objective criteria and weight it according to criticality. An example of objective criteria is intending to select a supplier that employs a certain quota of people living with disabilities.

The points accumulated by the supplier in the evaluation are then summed together to give a score out of 100. The scores of the bidding suppliers are ranked in descending order and the highest scoring supplier becomes the preferred supplier.

Is supplier selection a qualitative or quantitative process among South African State-Owned Enterprises?

In this section some of the responses solicited for are: How is information solicited from suppliers, whether comprehensive or numerical information collected from suppliers and about suppliers and how the information solicited from suppliers are interpreted

How is information solicited from suppliers?

This enquiry includes information about a supplier as well as the commodity of interest. There are two methods of enquiry employed i.e. competitive bidding and direct sourcing. Only 40% of the subjects attest to having a direct sourcing process in their organisations. Most of the organisations rely on competitive bidding. Competitive bidding includes Request for quotation (RFQ) and Request for Proposal (RFP). RFQs are generally referred to as informal tendering whereas RFPs are referred to as formal tenders. The state organs utilise multiple methods to reach the prospective supplier and obtain information from them. The findings to this question will be presented per enquiry method.

By regulation, the formal tender has to be open to all members of the public. The formal tender is advertised on the e-Tender bulletin which is a website operated by the National Treasury. All information pertaining to the commodity, evaluation criteria and required information is published in the tender bulletin. Tenders are also advertised in the Government Gazette which is printed every Friday and is available to the public. There are various other government printers that publish tender information. Each State-Owned enterprise has a tender bulletin on their independent website where their various tenders are published in an attempt to diversify methods of reaching prospective suppliers. A subject explains how their State-Owned enterprise publishes:

> "…on the tenders we do to the public, we have to publish them on the website. Our own website, the National Treasury website and also in Government Gazette."
>
> (Subject 4)

But the submission of required information is manual and not electronic. The prospective supplier submits information for evaluation to a physical address. In addition, there are also certain parastatal that are engaged in projects to collect information from suppliers electronically.

> "Like I was saying now, my mind is busy with what do you call it? E-sourcing. That will be an interface with the tenders. Ja. When the bidders do that, they will have to do everything through the E-sourcing."
>
> (Subject 4)

E-sourcing is an electronic platform under development that is intended to collect information from suppliers electronically. On some occasion a Request for Information (RFI) is performed before a RFP, to better understand a commodity.

In the case of RFQs, the method for collecting information is through electronic mail. Each SOE has an email account for the purposes of receiving information from suppliers. One of the subject expatiated on this that:

> "As much as we're talking about the RFQ, so RFQ is somehow closed in that. You issue to those service providers that you have identified before and that would be a pre-condition for the RFQ. You know the guys you are issuing to."
>
> (Subject 1)

Is comprehensive or numerical information collected from suppliers and about suppliers?

There is a common understanding amongst the subjects that comprehensive information is collected from suppliers and about suppliers.

> "Well, I would say eighty percent of our requirements is comprehensive."
>
> (Subject 10)

> "It's comprehensive. Especially these days, we don't ask for RFT's. We ask for RFP's."
>
> (Subject 4)

Some subjects agreed that the information is comprehensive. One of the subjects he further expands:

> "Its either 'yes' or 'no. We prefer 'yes' or 'no' because then it tends to eliminate any bias. It's just like, telling a story is…."
>
> (Subject 11)

Another subject had a different understanding:

> "So if you pay tax, we need a tax certificate. Do you have? 'Yes' or 'no'. It can't be 'I'm still trying to register with SARS… to us it's a 'no'."
>
> (Subject 9)

Only 20% of the subjects elaborated on RFQs. In a RFQ, the information is mostly numerical as there is a high consideration of price. In a RFP, the information collected is mostly qualitative. It is common that the only requested numerical information is pricing. The numerical data is mostly to understand the financial performance of a supplier in the previous years.

A theme about "establishing history" quickly emerged among 70% of the participants. The qualitative information collected from suppliers is seeking historical information to understand the capability of the supplier and prior experience. A subject noted that:

> "What level and the history and all of that and then also the relationships."
>
> (Subject 1)

These are mostly collected through returnable documents that will inform one about the supplier. An example of such a document is a reference letter from a previous purchase.

In addition, another respondent noted that:

> We'll want to see if the bidder has done a similar project before, and also the experience of the company.
>
> (Subject 2)

The information is intended to show the ideas of a supplier, cross reference their claims and perform comprehensive screening of the supplier and their capability. An identity of the supplier is created in the process as well.

How is the information solicited from suppliers interpreted?

The largely qualitative information collected from the suppliers are often turned into quantitative data by scoring the criteria that is being evaluated. According to a subject:

> "So, based on what you give to us, we will then be able to determine whether 'yes' or 'no'. You meet it 'yes' or you don't meet it 'no'. If you meet it, yes, you'll score the point, if you don't meet it, you don't score

the point."

(Subject 11)

The comprehensive information is interpreted to deduce mainly two radio responses to a question i.e. "Yes/No" and "Complaint/Non-Compliant". The allocation of scoring is done to aid the decision of suitability to the requirement.

According to 20% of the participants, there is often the application of two stage bidding where the supplier is required to perform a presentation, prototype or demo of their products and services.

> "It might be a commodity in which, after you do that, you might want people to come and demonstrate. We also have, what do you call it? 'Two-stage bidding' meaning service providers can then come through."

(Subject 3)

Is supplier selection dependent on a decision-maker?

This section presents results on suppliers selection which include; whether the decision to select a supplier dependent on a calculated output or is it dependent on a decision maker and whether dependence on a decision maker introduce any bias to the decision.

Is the decision to select a supplier dependent on a calculated output or is it dependent on a decision maker?

There is a common understanding between the participants that the decision to select a supplier is dependent on a calculated output. One subject noted that:

> "The ranking is the one that is always…., So, the manager responsible for those transactions will sign off if satisfied with the ranking, compliance issues and the ranking."

(Subject 1)

The score that is allocated to the supplier is what determines their selection to supply a particular commodity. One respondent further explains what happens after scoring:

> Yes after the wheel then we prepare for submission, then we take it to the bid for specification.
>
> (Subject 8)

The output of the supplier evaluation is presented to a cross functional team called the Bid Adjudication Committee (BAC). The BAC performs a quality assurance function on the process of supplier selection. The intention of the BAC is to ensure that the supplier selection criteria of the organisation has been met and that the application of the PPPFA is according to the guidelines.

The originators of the request and their supply chain support which make up the Cross Functional Sourcing Team (CFST), make a submission to the BAC. The submission is a recommendation to select a certain supplier. The BAC has a mandate to critique the submission. The BAC can either approve the submission or reject it for revision. Upon approval of the selection, the BAC gives a mandate to negotiate pricing with the supplier and begin with contracting. In the event that the contracting stage is not successful with the highest-ranking supplier then, the second highest ranking supplier is approached.

When a RFQ has been evaluated according to criteria of the organisation, the CFST submits a recommendation to select the highest-ranking supplier. The submission is made to the manager of the decision. The evaluation is therefore seen as a series of actions that culminate to a decision.

Does dependence on a decision maker introduces bias to the decision?

While all the cross functional teams involved in the process can be influenced, there is no single decision maker. The CFST consists of members from various functions of the business. Within the CFST is a commodity specialist or chairperson who is from the procurement office. The role of this person is not to evaluate but oversee and coach the process. When this question was posed, a subject mentioned that:

"Honestly, like all other committees, they can be influenced."

(Subject 4)

After the evaluation, the scores and process are then submitted to the BAC for approval. The BAC may or may not approve the selection. The entire BAC or a quorum is the delegated authority to critic the selection of suppliers in an organisation. Since it is subject to influence at this point, some subjects posited that there is actually no bias introduced by the BAC.

> "No. No. Normally it doesn't happen. The only thing that they can change, maybe they can just ask some question 'why this one is not like this' but normally they don't change their recommendation. They don't change."

(Subject 8)

The BAC critics the application of supplier selection process, compliance to legislation and compliance to company policy. All participants in the process are obligated to declare interests that may interfere with their objectivity. Explaining further, a subject noted that:

> "Let's just say we asked you to declare your interest. We normally say 'declare your interest'. Declaring interest is that before you do technical, you must tell us as to whether companies that have responded are there. Whether you are in any way associated with them? You have to declare whether you are associated with them or not.

(Subject 3)

In the event of a conflict, the said member is excused from their duty in the process.

The BAC is then seen to introduce accountability to the process and not necessarily bias.

> "There's no bias. I think our segregation in all the processes makes it difficult to have bias."

(Subject 3)

The possibility of influence and human subjectivity exists and cannot be entirely eradicated but the nature of committees being cross-functional is the strength of the process. While the purpose of the BAC is to sign-off the recommended selection and not select by itself, there are scenarios where the BAC has altered the recommended selection in favour of supplier rotation or a supplier that fulfils a criterion high on the organisations agenda. While this is not common practice, if there is consensus amongst the BAC then a decision is taken. A subject indicated that:

> "Yes. So, that's how it's determined. It's not driven by what the procurement manager feels or what the technical guy feels or what Finance thinks. Yes. If you stop at price Finance will say the cheaper price. What about compliance? The BEE and that stage compliance and also the strategy of the company."
>
> (Subject 9)

Discussion of the findings

This section will entail the discussion of findings in relation to literature reviewed as best practice in earlier sections. This will be discussed per research question that was posed.

How do the State-Owned Enterprises in South Africa select their suppliers?

The findings suggest that the selection of a supplier generally begins with a push from a business unit in an organisation requesting a service or a product. The CFST utilises the BSC to evaluate the transaction cost (Coase, 1960; Williamson, 2010). A decision has to be made whether to supply the service in-house or manufacture the product in-house. If a decision is made to provide for the needy through the external market, then the supplier selection process is pursued.

The goal of providing a service through the external market is to achieve or maintain organisational effectiveness. Organisation effectiveness can be achieved by fitting the characteristics of the organisation to eventualities that are about the situation of the organisation (Donaldson, 2001; Islam & Hu, 2012). Makhitha (2014) noted that establishing these SOEs was part of states' initiative to industrialise the country, ensuring economic development and autonomy from other countries. Key contingencies of a typical state organ as found in the collected data are the requirement to encourage economic participation of previously disadvantaged race groups by upholding legislature like B-BBEE, and the requirement to promote economic inclusion by ensuring that the opportunity to do business with the state is afforded to all citizens. The open tender process is used to ensure public participation.

Most state organs introduce objective criteria to fit the characteristics of the organisation to the contingencies. The size of the organisation is also another contingency worth considering. From observing the data, the smaller size state organs limit informal tendering to the value of R500,000 whereas the larger organisations limit informal tender to bids under R1,000,000.

Another contingency of an organisation is its strategy (Donaldson, 2001; Islam & Hu 2012). Chen (2011) suggests the use of the organisation's competitive strategy to ensure the effectiveness of the supplier selection function of the organisation. A key competitive strategy of state organs is cost containment (Chen, 2011). Cost containment results in the effectiveness of the state organs as they would consume less of the state budget, thus fulfilling the mandate of the organ of state. As evident in the collected data, cost containment is a key consideration in the supplier selection process especially informal tendering.

According to Beil (2010), the process of selecting suppliers involves identifying potential suppliers, soliciting information from them, evaluating their potential to perform, legal contracting, negotiating commercial terms and evaluating them. The findings suggest that in formal tendering, the identification of potential suppliers is i) proactively left to the market through open tendering, ii) performed through market research and analysis using market research companies and tools or iii) using the organisation's historical engagement with suppliers (databases maintained by organisations for informal tendering). Potential suppliers present themselves to state organs by registering on the CSD. The registration on the CSD has to be maintained as the status of the registration is dependent on the supplier satisfying the pre-qualification criteria.

The perceived strength of the supplier selection process is regulation through PFMA & PPPFA, which are based on competitive bidding. The guidelines for the application of the regulations are updated regularly and further clarified using regular issues by the National Treasury that are called Notes. Competitive bidding promotes value for money by allowing the market to self-regulate by fair competition; however there is evidence of supplier selection methods either than competitive bidding.

Any supplier that stands a chance to obtain business from the state has the responsibility to present themselves on the CSD database. The pre-qualification of suppliers in the case of informal tendering is dependent on location, and the identity of the supplier being known to the organisation and most of the organisations keep internal databases for this purpose.

Also, there is evidence that soliciting information from suppliers uses inquiry methods like RFQ and RFP as per Beil (2010). These methods of inquiry result in information from the supplier, about the supplier and the commodity. Both information about the supplier and commodity is evaluated for screening purposes (Akerlof, 1970). This screening of suppliers creates an identity of the supplier thus reducing the likelihood of non-performance or misconduct at later stages and recording the contacts of a supplier to ensure responsiveness (Beil, 2010). The collected returnable documents formulate a history on which the supplier is evaluated.

Also, the research found that the BEC develops the selection attributes that the suppliers will be evaluated on (Subramanian, 2001). The findings suggest that common selection attributes are pre-qualification criteria, mandatory criteria, functionality and quality criteria, price and B-BBEE then objective criteria where applicable. These criteria of the buyer may be conflicting in nature, e.g., price and B-BBEE vs. functionality. While the pre-qualification criteria and mandatory criteria is subjective to the organisation, there is no evidence of consideration for organisational culture and capacity of capability to deliver (Ellram, 1990; Sarkar and Mohapatra, 2006). After the criteria are identified, it is subjectively weighted and ranked according to the preference of the buyer. The functionality and quality criteria share a weighting of 100% and price and B-BBEE also share a weighting of 100%.

In the literature reviewed, Subramanian (2001) posits the use of Multi Attribute Utility Theory to aid decision making amongst conflicting attributes. The different evaluation criteria's of each RFP can be seen as utility functions. These criteria are selected subjectively by the buyer and calculated based on the submission of the prospective suppliers. A numeric score is then allocated to the criteria by the evaluator, based on the responses closeness to the ideal (Chen, 2011; de Boer et. al, 2001). The consolidated scores are then ranked in descending order such that the higher the score of the supplier, the more desirable they become to the buyer.

It is evident in the collected data that the centralised sourcing approach is slowly becoming an alternative to traditional competitive bidding. The buyer seeks a partner to collaborate with on strategic commodities (Bouchard, 1998). The success of this process is dependent on the continuous exploration of activities like supplier market analysis, new sources identification and supplier data gathering. According to the responses of the subjects, the Office of the Procurement officer selects these partners and negotiates Transversal Term contracts on behalf of all the state organs. This achieves organisational effectiveness by creating a panel of dependable suppliers with which long-term relationships can be enjoyed, achieving cost containment and optimising the use of resources in the procurement and supply chain office.

Centralised sourcing is best effective when the supplier integration strategy has been defined and analysed. Approaching the market to seek a partner requires a consideration of the extent to which the partner will impact the operation of the state organ (Chen, 2011). The benefits of this approach may not be realised if the centralised sourcing is adopted without a strategy that enhances organisational effectiveness. The question of how suppliers are selected is thus satisfied as elaborated above.

Is supplier selection a qualitative or quantitative process among the South African State-Owned Enterprises?

It is evident in the collected data that the intention behind the different methods of enquiry is to solicit information about the commodity as well as the supplier. The commonly used methods of enquiry are RFQ and RFI. The information published by the buyer is qualitative. The enquiry includes information describing the commodity and information about the evaluation of the submission. Under the PFMA, it is mandatory for the evaluation criteria to be published with the enquiry. This is as a means to ensure transparency to the bidder but also to keep the evaluators objective Teacher Law (2013). Contrary to Mutava (2014), who noted that supplier selection processes had been mired with lack of transparency and fairness among bidders, there are measures to ensure transparency.

According to Braglia and Petroni (2000), supplier selection criteria refer to the list of conditions that an organisation has to develop in order to guide them in the process of supplier selection. Chen (2011) concluded that the three most important factors to be evaluated are quality, delivery and performance history. During an enquiry, comprehensive information is collected regarding the supplier. The supplier is required to provide testimonials and other information proving relationship with the state or other statutory body. The intention is to create an identity and show history of existence.

According to Stormy (2005), supplier selection refers to the process of scanning, analysing, examining and filtering the basic background and biodata of suppliers within the market with the aim of choosing the best one that will propel the performance of the organisation to a better direction. As per Stormy (2005), most respondents concur that the buyer collects information about the supplier to establish a performance history to ensure that the supplier has the capability to perform. While the information that is collected is qualitative, it has to be converted to a quantitative expression so that it can be interpreted. This transformation of data is done by means of scoring suppliers (Opricovic & Tzeng, 2004). A supplier may offer an intelligent narrative on how to supply the commodity but the narrative will be marked or graded to allocate a score against the weight of that particular criteria.

While quantitative analysis of the supplier’s bid benefits the competitive bidding process, the supplier qualification process benefits from the narrative or testimonials recorded about suppliers (Bouchard, 1998). The later may result in the selection of a partner, which insinuates a longer term relationship.

Amongst the three most important evaluation factors is quality (Dickson, 1966). The buyer must perform extensive screening of the prospective supplier to protect against the adverse selection theory problem (Akerlof, 1970). The buyer solicits enough information about the supplier to obtain a good understanding of the commodity and delivery capabilities of the supplier so that there is no information asymmetry between the buyer and the supplier. Information asymmetry leads to the buyer intentionally procuring average-quality goods in a bid to hedge against risk of not knowing the quality of goods beforehand.

Not fully understanding the commodity or the supplier can compromise the cost of the transaction (Coase, 1960; Williamson, 2010). If the goods that are procured are of inferior quality, the decision to have the commodity provided by the external market may be questioned. There is no evidence of the state buyer performing signalling (Akerlof, 1970). There is no stage in the process where the buyer proposes information to the supplier about their proposals.

The qualitative information collected from suppliers is also intended to ensure effectiveness of the organisations competitive strategy (Chen, 2011). Key indicators of a state organs competitive strategy can be understood by performing a SWOT analysis. As an example, it is a threat to a state organ to do business with organisations that do not uphold the law like tax legislation. The National Treasury responds to this threat by requesting a valid Tax Clearance Certificate as pre-qualification criteria to register on CSD or maintain an active status on the database.

Is supplier selection dependent on a decision-maker?

In the case of formal tendering, the decision maker are committees and not an individual. At least four different cross-functional committees are selected to participate in the selection of a supplier. The different committees are the CFST, BSC, BEC, and BAC. The final deciding committee is the BAC. As much as the process is heavily reliant on human intervention, any decision is made by a collection and not necessarily an individual. It then becomes difficult to introduce bias. The multiple committees become the strength of the process, and one is accountable to the other (Teacher Law, 2013). While these committees are stakeholders Miles (2012), they are accountable to one another.

The subjectivity of the process seems to persist at every stage of the process. The criteria with which the supplier will be evaluated is subjectively determined by the organisation. The legislation mandates the development and publication of evaluation criteria but does not outline the weighting of the criteria. The organisation has an opportunity to introduce objective criteria based on subjective intentions of the organisation.

Employing the Bouchard (1998) process which is different from competitive bidding does not remove the human subjectivity challenge. A digitisation of the supplier selection process may result in a lesser requirement of human intervention especially where quantitative information is concerned. Human intervention may introduce bias to process even though it is not intentional. Any persons participating in the process that fails to declare conflicting interests may compromise the integrity of the process.

Conclusion

The research showed that the South African State-Owned Enterprises have a consideration for the adverse selection theory, contingency theory, transaction cost theory and stakeholder theory. Transaction cost theory is employed to decide whether a commodity can be provided internally or externally. This decision is delegated to the CFST and the BSC of the organisation. Contingency theory is applied when considering the environment of the state-owned organisations. The South African economic climate is desperate for inclusive economic participation of previously disadvantaged groups. The adoption of the B-BBEE legislature is a response to the South African environment. Information asymmetry is avoided through screening of suppliers. The information received about suppliers is utilised to screen the supplier for quality, capability to deliver and performance history.

The State-Owned Enterprises competitive strategy is cost containment, economic inclusion for all race groups and citizens, compliance to the law and optimisation of state resources. The MAUT resolves the problem of conflicting objectives from the buyer. The criteria of the buyer are subjectively ranked in a hierarchy. At the top is pre-qualification criteria, then mandatory and compliance criteria, then functionality and quality and finally price and B-BEEE. The study shows that various enquiry tools like RFI, RFQ and RFP are used to interrogate the market for information about a commodity and candidate suppliers. The information that is received is evaluated according to a set criteria and is evaluated by cross functional teams from within the organisation.

Some of the literature reviewed in this study indicates the use of computerised mathematical solutions to the problem of supplier selection. The data collected in the study suggests very minimal digital computation. There is therefore no evidence of the application of Multiple Criteria Decision Making, Data Envelope Analysis, Fuzzy Logic and Technique for Order of Preference by Similarity to Ideal Solution. In the adoption of centralised sourcing or partner selection, there is opportunity for the state organs to modernise the computation of supplier selection criteria.

While comprehensive and qualitative information is solicited from candidate suppliers the information is converted into quantitative data via scoring against set criteria. The selection decision is performed on quantitative data. There is little evidence of a single decision maker in the supplier selection process, except in the case of a RFQ. In formal tendering, a committee of internal experts oversee the evaluation of candidate suppliers and ultimately the recommendation to select a particular supplier.

Recommendations

From the preceding study, the following recommendations are made:

1. Screening for functionality is emphasised by the regulation however screening for product quality is not. Literature emphasises quality as a key supplier selection criteria (Dickson, 1966; Weber et. al., 1991; USAID, 2006; Lin & Wu, 2011). The supplier selection process should include the screening for quality criteria of the products as mandatory. This will minimise the impact of the adverse selection problem where the buyer is not able to proactively determine the quality of the

goods sold in the market. If the goods that are procured are of inferior quality, the decision to have the commodity provided by the external market may be questioned.

2. The Central Supplier Database is a means of the state to perform proactive screening of the candidate supplier however the scope of the CSD is limited to entry of information by the candidate supplier and assessment for compliance by the National Treasury. The scope of the CSD can be extended to include testimonials or history of supply with other state organs. This will ensure that there are means of tracking suppliers used in the past (Beil, 2010). This will also assist in validating the responsiveness of the supplier.
3. There is evidence of the adoption of centralised sourcing by the state organs. This practise is encouraged. This achieves organisational effectiveness by creating a panel of dependable suppliers with which long-term relationships can be enjoyed, achieving cost containment and optimising the use of resources in the procurement and supply chain office of the SOEs.

Recommendations for further Study

This research focused on supplier selection practices. There was a study of theories that make up this construct. There are some theories and practices that were discovered in the literature but not included in this article. These practices can be studied independently due to their scope and size. As such the below areas are recommended for further study:

1. There is an opportunity to explore whether this approach satisfies maximum contingencies of state enterprise.
2. A supplier integration strategy will have to be explored by SOEs to ensure organisational effectiveness as per the literature
3. There is the opportunity to explore the penetration impact of digitisation to both the soliciting of information for supplier selection and the internal evaluation of supplier information. Will SOEs have an opportunity to modernise the candidate supplier evaluation process to digital computation thus potentially making use of computations like Multiple Criteria Decision Making, Data Envelope Analysis, Fuzzy Logic, and Technique for Order of Preference by Similarity to Ideal Solution.

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APPENDIX A - Consistency Matrix

<table>
<tr><td colspan="5">Research Problem: The objective of the research is to explore the supplier selection practices in South African State-Owned Enterprises.</td></tr>
<tr><th>Literature Review</th><th>Research questions</th><th>Sub-questions / Source of data</th><th>Type of data</th><th>Analysis</th></tr>
<tr><td rowspan="3">References most referred to in the literature review:
• Babalola (2003)
• Beil (2010) ,
• Bouchard (1998),
• Chen (2011),
• Chou (2002),
• Subramanian (2001)</td><td>1. How do State-Owned Enterprises in South Africa select their suppliers?</td><td>1.1. How does your organisation select its suppliers?
1.2. Is competitive strategy considered before selecting suppliers?
1.3. How are suppliers evaluated before selection?</td><td>Nominal</td><td>1. Coding
2. Content analysis</td></tr>
<tr><td>2. Is supplier selection a qualitative or quantitative process among South African State-Owned Enterprises?</td><td>2.1. How is information solicited from suppliers?

2.2. Is comprehensive or numerical information collected from suppliers and about suppliers?

2.3. How is the information solicited from suppliers interpreted?</td><td>Nominal</td><td>1. Coding
2. Content analysis</td></tr>
<tr><td>3. Is supplier selection dependent on a decision maker?</td><td>3.1. Is the decision to select a supplier dependent on a calculated output or is it dependent on a single decision maker?
3.2. Does dependence on a decision maker introduce any bias to the decision?</td><td>Nominal</td><td>1. Coding
2. Content analysis</td></tr>
</table>