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Identification of Stakeholders in the Project Life Cycle of a Capital Project for a State-Owned Enterprise in South Africa

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Abstract
The aim of this study is to identify stakeholders in project life cycle of capital projects in a State-Owned Enterprise in South Africa. The research was conducted in a bulk water supplier state-owned enterprise and it has found that identification of stakeholders is a known phenomenon in the enterprise, but that the process has not fully matured yet. Despite the effort by the Project Management Body of Knowledge to update the 4th and 5th addition by adding stakeholder management as knowledge area, it is not fully practiced in industry. The study presents a stakeholder identification framework and recommends that the organization improves the internal stakeholder identification processes by employing the framework for reduced project delays and cost minimization. Furthermore, the framework represents foundational work to study and advance stakeholder identification within the capital project environment.

Keywords
Stakeholder Identification, Capital Projects and State-Owned Enterprise

1. Introduction

The South African Government infrastructure projects are aimed at water, oil, gas, energy and minerals as a Strategic Investments Projects (SIP) for state owned enterprises (Bond, 2014). Infrastructure represents fundamental facilities and systems that serve a country, a city or area, and it plays a significant role in promoting economic growth and function. (Snieska and Simkunaite, 2009). State owned enterprises (SOE) are organizations or bodies partially or entirely owned by the government to perform specific functions (Kowalski, Buge, Sztajerowska and Egeland, 2013). SOEs contribute significantly towards promoting and supporting urban growth and development especially with transportation, energy and bulk infrastructure therefore effective and efficient implementation of SOE projects is important given the extent of their influence (*ibid.)*.

In South Africa SOEs are responsible for mega capital projects, for example the coal fired utility plant known as Medupi (2005 - 2040) built by Eskom with an estimated budget of $10 billion and the Transnet expansion of the country's mineral-energy-petroleum rail pipeline port complex with an estimated budget of $25 billion. Despite the mega capital projects executed and managed by SOEs, it is still challenging to ascertain the methodology employed to identify stakeholders and to keep them engaged throughout the life cycle of the project (Bond, 2014). These identification procedures assist in controlling and preventing deviations to the scope of a project and ensuring that project milestones are met, since all stakeholders are involved in the project (Amoatey and Hayibor, 2017).

The challenges currently being faced by SOEs include projects not being able to be completed for years or projects not being handed over after completion due to unhappy end users (Eskerod and Huemann, 2013). The concept of state-owned enterprises in South Africa is broad hence it will be difficult to assess all the SOEs per sector. The current research only focuses on a water supply SOE based in Johannesburg with the aim of identifying its stakeholders in capital projects and evaluating the process used in identifying stakeholders to develop a framework for stakeholder identification and analysis throughout the project life cycle.

2. Literature Review

2.1 Project Life Cycle

The Project Management Book of Knowledge (PMBOK) (2013) describes the project life cycle (PLC) as sequential phases that a project undergoes from its inception up until its closure. The life cycle provides a basic framework for managing the project irrespective of the specific work involved. There are different types of project cycles depending on the objectives of the project and the kind organization. Balaji and Murugaiyan (2012) describes project life cycle models such as waterfall and agile as models that are suitable for software development and the important phases are planning, analysis, design and implementation. Kerzerner (2009) defines the project life cycle to include the following phases: conceptual, planning, testing, implementation and closure. It is evident from researchers that there are similarities in project cycles; however, their application differs depending on the process followed whether PMBOK or Projects in Controlled Environments (PRINCE 2) as shown on Table 1. Most South African SOEs follow the PMBOK project life cycle and involves a significant number of activities which require different stakeholders.

Table 1. Comparison of project life cycle

Name of Model	PMBOK	Prince 2	Agile	Waterfall
Phase or stages	Initiation	Start up	Planning	Analysis
		Directing	Analysis	
		Initiating		
	Planning	Planning	Design	Design
	Execution and Controlling	Controlling	Implementation	Development
		Managing a project delivery		Testing
		Directing		Implementation
	Closing	Closing		Maintenance

2.2 Stakeholder Management

A stakeholder in an organization is defined as anyone who can affect or who is affected by the achievement of the organization's strategic objectives (Castro, Rosa and Pinho, 2015). Emerson, Mainardes and Raposo (2012) adds that the theory of stakeholder management combines parties who have interest in a project other than the shareholders, clients or suppliers. This is to ensure that organizations identify, observe and examine features of individual groups that are impacted by organizational conducts and activities.

2.3 Stakeholder Identification

Stakeholder identification plays a major role in stakeholder management as it is vital to know who the stakeholders are before they can be managed. Researchers such as Mitchell, Agle and Wood (1997) and Bourne and Walker (2005) identify stakeholders in terms of power (the power they have to influence the project outcomes); legitimacy or proximity (how far are they from the project); and urgency (what lengths are they prepared to go to influence the outcome).

Stakeholder identification occurs concurrently with stakeholder analysis which, as described by Brugha and Varvasovszky (2000), involves collecting information about the important individuals in a project, understanding their

conduct, purposes, interest and influences or what they have to bring to the table. This information is employed for the development of strategies for managing these stakeholders and to expedite the execution of particular decisions.

2.4 Stakeholder Identification Framework

Stakeholder identification differs depending on the organization and the type of project that is being implemented. However, the generic form of stakeholders as described exists for most organizations including SOEs. The models and frameworks are summarized in Table 2. Even though there are a few stakeholder management models available in literature, these models are effective on projects where stakeholders are identified at the start of the project with their expectation clear from the beginning. However, for the capital projects of state-owned entities which endure for many years, stakeholders emerge during the course of the project. The Table below gives a summary of how the frameworks discussed in the previous sections can be used to identify stakeholders in projects.

Table 2. Summary for stakeholder identification frameworks

Framework	**Description**
Stakeholder circle	Assesses influence of each stakeholder and their pattern of influence (Bourne and Walker, 2008).
Stakeholder issues framework	Identifies stakeholders with their issues (Van Offenbeek and Vos, 2016).
Stakeholder salience model	Power, legitimacy and urgency are employed to classify stakeholders to measure the level of attention that project managers must give them (Mitchell, et al., 1997).
Social network analysis	A tool for stakeholder identification only if multiple stakeholders are involved (Shing, et al., 2016).

The PMBOK emphasizes the identification of stakeholders during initiation phase; and therefore a framework that focuses on stakeholder identification of stakeholders in the project life cycle is required. A combination of the models in Table 2 was employed to derive the framework on Figure 1, which represents the proposed framework for state-owned entities employed in this research. The framework includes a process that project managers can employ throughout the project cycle to ensure proper stakeholder identification in addition to and supporting the tools in the PMBOK.

3. Methodology

The research approach chosen for this study is case study. Case study research allows for great depth of understanding of the problem and it is best suited to examine a topic that has multiple aspects which may vary depending upon cultural settings (Yin, 1994). The case organization is a South African state-owned entity that supplies potable water

to Gauteng and other parts of the country. Infrastructure projects in this utility include water treatment plants and distribution pipelines.

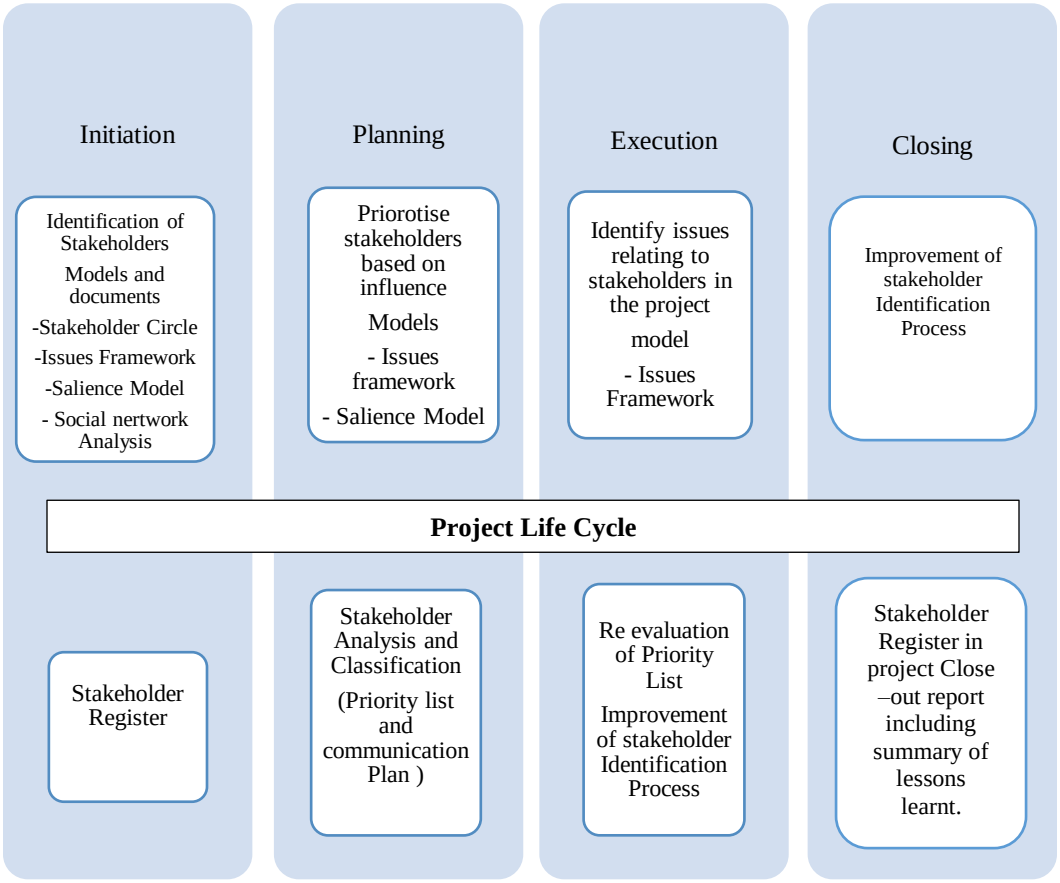

Figure 1. Framework for stakeholder identification in an SOE

3.1 Data Collection

A mixed method approach was employed for data collection, including document review and analysis, as well as a survey. The theoretical framework was validated through the application of data from the case study. Project files for four capital projects in the selected SOE were assessed for the stakeholder identification process to check the alignment between the followed process and the stakeholder identification process framework derived from literature. An electronic research questionnaire was drafted and distributed to the capital projects department staff. An electronic administration process was selected as it allows for a faster response time and respondent anonymity. The data collection process is presented in Figure 2. Data from the questionnaires were grouped and analyzed in Microsoft Excel to determine common themes in response to the research questions and literature. The project files from the different projects were analyzed employing checklists developed from the literature review.

3.2 Reliability and Validity

Multiple sources of data were employed to respond to the research questions and to ensure reliability of the findings. The first source of data to assess the process employed to identify stakeholders was the evaluation of the completed projects in the SOE in the years 2016 to 2018. The second source of information was the questionnaire to which the unit of analysis was employees who are involved in the managing of projects in the selected SOE. The similarities and differences between the two sources of data were linked to findings from literature. For the Likert scale questions Cronbach alpha was calculated to assess the reliability of the scale by measuring internal consistency (Sekaran and Bougie, 2009).

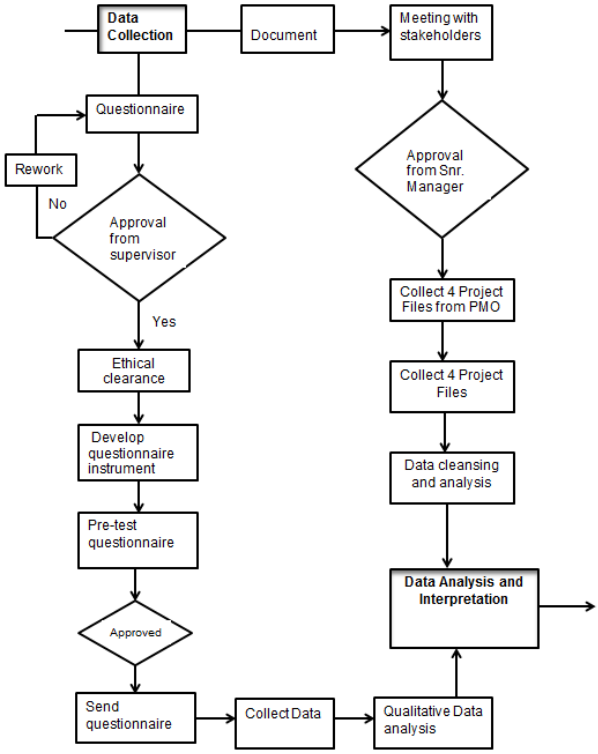

Figure 2. Data collection process flow

4. Results

4.1 Document Review and Analysis

Four projects were assessed to determine the process followed to identify stakeholders during the different phases of the project life cycle by using the stakeholder identification process framework derived from literature in Figure 1. In doing so, the theoretical framework was tested and validated. The results are illustrated in Table 3 and indicate the stakeholder identification activity associated with each phase per project.

Project AB – The first capital project involved the upgrade of an existing water treatment pumping room infrastructure which included an upgrade of mechanical, automation and electrical components in the project. The end user of the project was the selected SOE and the execution of the project was based on the premises of the SOE. The project was worth ZAR179 Million (South African Rands).

Project BC – The second capital project enabled the installation of corrosion protection equipment (cathodic protection) on existing pipelines of the selected SOE. The project cost was ZAR2 Million.

Project CD – The third project entailed an increase in the treatment capacity at the selected SOE treatment plant. The location of the plant is close to a small community. The extent of the work included construction of a 600Ml/day treatment facility worth over ZAR500 Million.

Project DE – The fourth capital project involved renovation of existing valve chambers and other associated works in the distribution network of the selected SOE. The project cost exceeded ZAR30 Million. The extent of the work included demolishing of existing chambers and excavations.

Table 3. Stakeholder identification

Project Phase	**Literature**	**Project AB**	**Project BC**	**Project CD**	**Project DE**
Initiation	**Stakeholder identification** - Stakeholder register	x			
Planning	**Stakeholder identification and analysis** - Stakeholder register with priority list - Communication plan	x			x
Execution	**Stakeholder identification and analysis** - Identify stakeholders based on issued raised in the project - Update stakeholder register and priority list	x	x	x	x
Closing	**Stakeholder identification and analysis** - Summary of lessons learnt - Improvement of stakeholder identification process	x			x

4.2 Survey Results

31 survey responses were received from the following designations: 50% from Project Managers, 50% from Project Engineers and 6% from Program Managers. The remaining respondents were engineers.

The survey results indicate that the project stakeholders from industry mostly aligned with the project stakeholders identified in the literature review, as indicated in Table 4. However, additional stakeholders identified from the survey include owners of land and rights, other SOEs, support functions in the SOE, politicians, operations, environmental, other government institutions and health and safety. The Cronbach alpha for this question was found to be 0.744 which was found to be acceptable.

Table 4. List of stakeholders involved in capital projects

	Total	Weighted Average	Mean
Project Manager	31	4.72	4.58
Owner/customer/client	31	4.58	4.58
Project Management Team (Engineers, Planner, scheduler)	31	4.61	4.42
Contractor/ Performing Organization	31	4.47	4.42
Sponsor/Government	31	3.96	3.87
Influencers/Community/Nearby residents	31	3.9	3.87
Other (internal/external investors, subcontractors, team members and their families)	31	3.93	3.90

In addition, the respondents were requested to indicate how they conducted stakeholder assessment and analysis; and during which project phase stakeholder analysis was executed. The results in Figure 3 indicate that, during the project initiation phase, stakeholders are identified based on their roles and levels of influence. During the planning phase, stakeholders are identified equally based on their roles, level of influence, the issues raised in the project and their power, urgency and legitimacy. In the execution phase, stakeholders are identified mostly on the issues that are raised in the project; and during closing of the project, stakeholders are placed on a priority list based on their power, urgency and legitimacy.

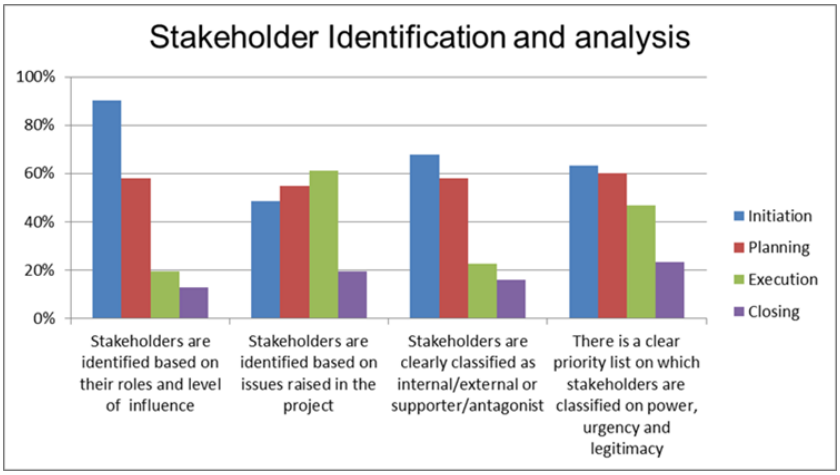

Figure 3. Stakeholder identification

The research found that the respondents are aware of stakeholder identification models; but that it is not standard organizational practice. The Cronbach alpha for this question was found to be 0.76 which is acceptable as indicated in Table 5.

Table 5. Stakeholder identification framework

	Weighted Average	Mean
You know of stakeholder identification models used to identify stakeholders in capital projects.	3,65	3.65
My organization has a specific model for stakeholder identification that I am aware of.	2,97	2.97
It is easy for me to find stakeholder registers from previous projects.	3,03	3.03
I include stakeholder identification and analysis in my lessons learnt report	3,06	3.06

4.3 Stakeholder Identification in Capital Projects in an SOE

The study indicates that most project stakeholders are identified during the execution phase; and that stakeholders are not involved during the initiation and planning phases of the project. Consequently, the organization identifies stakeholders based on the issues that arise during the project, and not all projects held stakeholder registers.

Stakeholder identification is a known activity in the organization but as an important project requirement it has not fully matured in the organizational project management procedures. A summary of the findings is indicated in Figure 4.

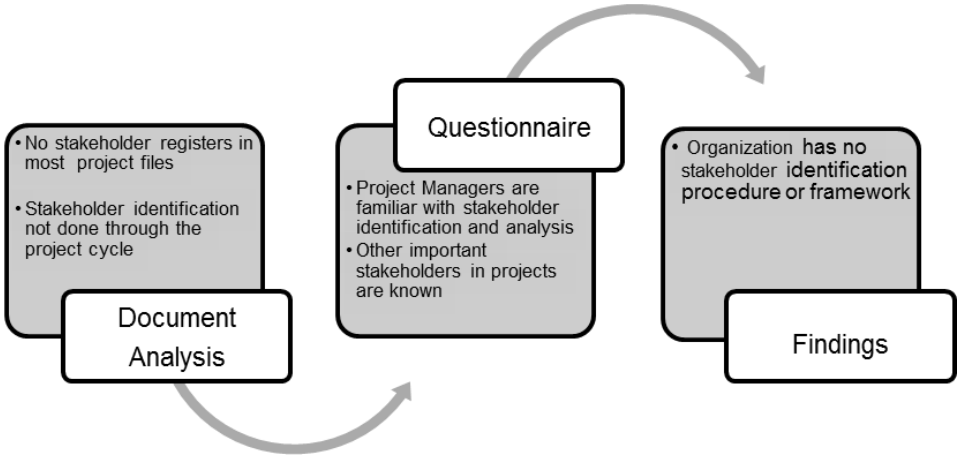

Figure 4. Summary of research findings

5. Conclusion

This study presented a framework for stakeholder identification by an SOE throughout the project life cycle of its capital projects. The findings indicate that there are gaps between the framework derived from literature and the actual process followed in the organization.

This study has shown that identification of stakeholders is a known phenomenon in the SOE. However, the process has not fully matured as in practice it is not executed. Stakeholders are important throughout the life cycle of a project and their identification is a significant step in the project lifecycle since all stakeholders have the ability to influence project delivery and outcomes. The identification process in the initiation and planning phase was not conducted, thus ignoring some of the potentially influential stakeholders. Therefore, despite the effort by PMBOK to introduce Stakeholder Management as a knowledge area in the PMBOK 4th and 5th edition, the process is still not fully implemented in practice.

6. Recommendations

A project is successful when it achieves its objectives and meets or exceeds the expectations of the stakeholders. This success is directly related to the perception of stakeholders for the value created by the project and the nature of the relationship with the project team. Failure to apply proper stakeholder management principles and coordination will potentially result in project failure which is related to either the project not being signed off or accepted by the end users, or the project not meeting its timelines. It is recommended that a similar study be conducted in different SOE environments to ensure that effective stakeholder identification is implemented in SOEs. Furthermore, it is highly advisable that the organization integrates the stakeholder identification framework in their project management processes.

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Biographies

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