Management of teaching and learning material in no-fee schools: The case of Ekangala Township in Tshwane Municipality

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Thesis presented in partial fulfilment for the degree of Master of Management (in the field of Public Sector Monitoring and Evaluation) to the Faculty of Commerce, Law, and Management, University of the Witwatersrand

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DECLARATION

I Joyce Maimela declare that this research report entitled 'Management of teaching and learning material in no-fee schools: The case of Ekangala Township in Tshwane Municipality' is my own unaided work. I have acknowledged, attributed, and referenced all ideas sourced elsewhere. I am hereby submitting it in partial fulfilment of the requirements of the degree of Master of Management (Public sector monitoring and evaluation) in the University of the Witwatersrand, Johannesburg. I have not submitted this report before for any other degree or examination to any other institution.

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Signed at Johannesburg on 30th June 2021

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ABSTRACT

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Thesis title: Management of teaching and learning material in no-fee schools: the case of Ekangala Township in Tshwane Municipality

The gist of this quantitative study was to empirically establish how no-fee schools manage their teaching and learning material (TLM), employing the case of Ekangala Township in Tshwane municipality. To accomplish this, the study seeks to empirically determine the functionality of financial resources, human resources, and procurement processes of TLM in no-fee schools. A cross-sectional design was adopted. A combination of purposive and stratified random sampling techniques was used to draw HODs, Deputy Principals, Principals, SGBs, educators and administrative officers, yielding a total sample of 101 respondents. Data was collected using a questionnaire and inferential statistics were used to establish validity.

The study was framed on the general systems theory, and the programme theory, used for converting research results to research findings. The preliminary findings revealed a linear relationship between effective management and budget processes of TLM, although not strong. However, there was no statistically significant linear relationship between management and procurement processes. The results concluded that there is ineffective management of TLM in no-fee schools in Ekangala Township. The researcher recommends that periodic audits be conducted when required, to ensure appropriate application and compliance with the policy. A further recommendation is the use of a Resource Management System (RMS), a web-based system designed to facilitate planning, online procurement, inventory updates and budget tracking of all TLM at schools at both district and provincial levels.

Keywords: Teaching and learning material (TLM), management, procurement, financial resource, human resource

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1. INTRODUCTION TO THE RESEARCH

1.1 Background

In a general capacity, this research investigates the management of teaching and learning material (TLM) in no-fee schools, employing the case of Ekangala township in Tshwane Municipality. However, before getting to the research problem statement (Section 1.2.1) and, consequently, the purpose of this research (Section 1.2.2) as well as the research questions (Section 1.2.3), we briefly introduce the terms and concepts used in conceptualising this research. Section 1.1.1. as well as Section 1.1.3 broadly introduces the research context, while Section 2.1 has a related but more specific and detailed discussion on the research context. Section 1.1.2 briefly introduces the programme under study, as well as accompanying key terms and concepts. Similarly, Section 2.2 provides for a more detailed discussion on this intervention.

1.1.1 Brief description of no-fee schools in Ekangala Township

Predominantly, the study began by reviewing South African literature to appreciate the physical context, which is Ekangala Township. Ekangala is located in Tshwane Municipality, north part of region 7 (Bronkhorstspruit) which is 100 km away from Johannesburg (City of Tshwane 2018; Stats SA, 2018). The land was formerly a portion of the KwaNdebele homeland before relocating to Mpumalanga (Makanjee, 1987). Ekangala Township is now repositioned from Mpumalanga Province and falls under Gauteng Province. Ekangala inhabitants are typically classified as low-income earners. The living standard of Ekangala residents range from abject (poverty) to moderate (hand-to-mouth) hence, the schools in the community meet the criteria of being declared no-fee.

The South African education system prior to 1994 was subjugated by apartheid system, where the country experienced inequalities in terms of resource allocation. African black schools encountered resources shortages as opposed to their sufficiently resourced white counterparts, which had an impact on curriculum delivery (Maswangaye, 2010; Riet, 2012). The Educational Laws Amendment Act 24 (Republic of South Africa, 2005) introduced the system of classifying public schools into five quintiles. Poor schools are classified, as Quintile 1, 2 and, more recently, 3; and are declared no-fee schools. Wealthy schools (formerly Model C schools) are classified as Quintile 4 and 5 and are declared fee-schools; they are minimally subsidised by the government and are thus allowed to charge fees. A no-fee school is a public school in which the school

governing body (SGB) cannot levy compulsory school fees (Nkosi, 2013; Mestry & Ndlovu, 2014; Phakathi, 2015). Thus, no-fee schools are more significantly subsidised by the state than fee-schools (Nkosi, 2013; Mestry & Ndlovu, 2014, p.3). A study conducted by du Plessis & Mestry (2019) confirms the existing trend of previously disadvantaged schools (no-fee), being that they lack resources. Hence, this study seeks to investigate how no-fee schools manage their resources. As educational resources are scarce and limited, the management thereof requires skills, training, careful planning, supervision, coordination and a degree of control (Bodalina, 2012; Phakathi, 2015). The South African Schools Act (Republic of South Africa, 1996b) gives authority to SGBs to formulate policies such as finance, procurement and textbook retrieval (Bodalina, 2012; Phakathi, 2015). Financial accountability is a difficult onus, which may in practice pose a challenge for rural-based SGB members with low levels of literacy and financial skills (Kwinda, 2013).

1.1.2 Teaching and learning material

Teaching and learning resources denotes to all the facilities essential for effective teaching and learning such as classrooms, desks, playgrounds, fences, textbooks, water, and sanitation (Clarke; 2007, Manqele, 2012; Phakathi, 2015). Resource materials refers to "the teaching aids or physical tools to support teaching and learning in a school" (Manqele, 2012, p.13). The Gauteng Department of Education (2011, p.9) refers to TLM as "all materials (print and electronic) used in classroom to facilitate learning and teaching in all public schools".

Teaching and learning materials are classified into textbooks, basic stationery, consumables e.g. laboratory chemicals, non-consumables, other materials such science equipment, duplicating paper, and e-learning materials, e.g. tablets and smartboards (Gauteng Department of Education, 2011; Kwinda, 2013; Phakathi, 2015). Demisse (2018) states that all materials used as input or facilitating resources can be classified as educational materials. For the purposes of this study, the researcher focuses on the management of textbooks, stationery, resources for specialised rooms and library resources as TLM. The study therefore submits that TLM is everything that assists the teacher to do his/her class work effectively and that assists learners to learn (Bizimana & Orodho, 2014; Navidad, 2019). The availability of TLM enhances the effectiveness of schools, as they have the potential to increase the general quality of academic performance (Yara, 2010).

To clearly understand the process, we present the results chain: inputs, activities, outputs, and outcomes; as well as a results framework: indicators, baseline, target value and the assumptions or risks that may influence the success or failure of the intervention (UNDP, 2009). The results

chain is defined as a visual instrument that explicitly explains what the intervention is doing and why. It is specifying an arrangement of activities to undertake in order to achieve the intended results (Bester, 2012; Kusek, 2012). The results chain serves as a map that illustrates an assumed causal linkage between the inputs (financial, human resource) and activities (procurement) and the results produced as the outputs (procured TLM), outcomes (effective management) and impact (high quality education).

1.1.3 An introduction to management

There have been scholars, for example, Margaretta (2002) who discussed the concept of management. Almost all confirmed that management is the art of getting things done. For example, Ibrahim and Abdalla (2017) attest that management is the realisation of the policies of the school and the efficient and effective maintenance of the school's current activities. However, there are conflicting views as well. One camp seems to propose that management is about dealing with difficulties. This is much more apparent in the work of Fraser & Greenhalgh (2001) who elaborated that management is about coping with complexity.

Ibrahim and Abdalla (2017) clearly stipulate that educational management is an applied field of management. Educational management refers to the application of theory and practice of management to the educational field or educational institutions. Management as an academic field of study encompasses elements of the results chain (inputs, activities, outputs, outcomes and, to an extent, impact) as its components (Nelly, Mills, Platts, Richards, Gregory, Bourne, & Kennerly, 2000; Canadian Transport Agency (CTA), 2000; Wotela, 2017).

TLM management in this study entails planning, organising, leading, monitoring controlling and evaluation of TLM that are acquired, utilised and stored effectively, economically and efficiently to achieve school goals (Ayaga, 2011; Bodalina, 2012; Ibrahim & Abdala, 2017). To achieve this, the school as an organisation needs structure such as a TLM committee, systems, processes and policies to be operational (Bodalina, 2012; Zuma, 2015). According to Davidoff and Lazarus (2002), management holds that the school maintain its well-being and ensure that the systems set in place are working well.

Regardless of the efforts made by the government to provide funds, no-fee schools are experiencing shortages of resources which makes their management questionable (Bodalina,

2012; Phakathi, 2015). Hence, this study seeks to investigate how no-fee schools manage these resources. The study will therefore employ a self-completion survey questionnaire to gather cross-sectional data to quantitatively measure variables using descriptive and inferential statistics to discover extant relationships. Teaching and learning material are major components of well-organised educational systems.

1.2 Towards TLM management in Ekangala Township

1.2.1 The research problem statement

The pre-apartheid era adopted an exclusive education practice based on a biased funding model designed specifically to stimulate certain groups more than others (Mestry, 2018). Before the apartheid era was obliterated in 1994, former Model C schools were prioritised above the black schools situated in Township and rural areas. Post-Apartheid, changes were made to address this inequality. The South African government introduced the National Norms and Standards for School Funding (NNSSF) policy (Republic of South Africa, 1998a). The NNSSF, as a social justice and equity mechanism, ensures that poorer schools receive the bulk of the education budget for resources (Republic of South Africa, 1998a). Since the implementation of the South African Schools Act (SASA) (Republic of South Africa, 1996a), resource management has become a key aspect of school governance (Mestry & Bodalina, 2015). The Gauteng Department of Education's (GDE, 2011) teaching and learning material policy ironically emphasises the need to prioritise the provisioning of learning materials to all learners to achieve curriculum objectives of one textbook per learner per subject (100 per cent TLM universal coverage).

However, no-fee schools experience shortages of resources regardless of efforts made by the state to provide budget (Kwinda, 2014; Phakathi, 2015). The effective management of resources has a large influence on the quality of learning in classrooms. It is submitted that ineffective TLM management results in, amongst other consequences, the death of resources. Consequently, acute deficiencies of resources lead to high failure rates that trigger learner dropouts. This further leads to unemployment, spearheading to poverty with an ultimate long-term result of negatively affecting the socioeconomic status of the country. Past and current studies confirm that a dearth of resources is caused by, for example, governing bodies' lack of financial expertise, procurement flaws and untimely delivery of resources (Bodalina, 2012; Phakathi, 2015). Consequential symptoms include, for example, low rates of textbook retrieval and decreased access to quality

material. Textbook Retention and Retrieval Records (TRR) for three years reveal a decline in retrieval target achievement (69 per cent in 2016, 63 per cent in 2017, and 66 per cent in 2018) (Gauteng Department of Education, 2018). This development has negative consequences whereby government wastes significant amounts of taxpayers' money.

It is argued that in the absence of effective budget and procurement planning, organising and monitoring of TLM by human resource management, schools may not be able to carry out effective teaching and learning. It is purported that poor learner performance is rooted in the scarcity of resources that emanates from poor management (Nyundu; 2016). Demisse (2018) affirms that good performance by schools is advocated by availability of resources. However, Hanushek (1997) has a divergent view that higher levels of school resources are not related to learner performance. This study does not aim to assess academic performance but rather investigate the process that leads to good academic achievement, in terms of effective TLM management in Ekangala Township. This study therefore investigates the research problem by employing a self-completion survey questionnaire to gather cross-sectional data to quantitatively measure variables, as well as the utilisation of descriptive and inferential statistics to determine if a relationship does exist. The study is housed within the management discipline and adopts the general system theory (Butterlanfy, 1968) and programme theory (Bickman, 1987) to interpret the research results, converting them to research findings as indicated in the developed conceptual framework.

1.2.2 The research purpose statement

The purpose of this research is to empirically establish how no-fee schools in Ekangala Township manage their TLM. To accomplish this, this study seeks to empirically determine the functionality of financial and human resources, and procurement processes of TLM in no-fee schools. The study also aims to establish the effectiveness of TLM management in no-fee schools, and to determine the effects of budget, human resources, and procurement processes in TLM management in no-fee schools Ekangala Township.

This study reviewed literature to understand the physical research context by detailing its history and description (Section 2.2.2). The study analysed management challenges and identified the trend of symptoms, underlying root causes and consequences of the intervention (Section 2.2.2). Further, the study constructed and presented the results chain and its complementary results framework underlying the proposed theory to determine the anticipated causal linkages – from

inputs way up to the desired goals of the intervention to guide the study (Corlazzoli and White, 2013). The results chain and results framework (Section 2.2.5) for TLM will give precision to the monitoring and evaluation measures, in order to manage the intervention and answer the research questions.

Similar past and current studies were reviewed by pointing out their research approaches, findings and conclusions (Section 2.3). The studies uncovered, amongst other issues, that (i) reviewed studies discussed theories but did not use them to interpret research results; (ii) there is no study about the research problem conducted in no-fee schools in Ekangala and; (iii) no programme theory was applied to interpret the research findings. This study therefore employed a quantitative research strategy and cross-sectional design to determine how Ekangala no-fee schools manage their TLM. The stratified random sampling procedure and self-completion fully structured questionnaire are applied to reach participants within their roles in the management of the intervention. A statistical programme (SPSS Version 25) as well as Microsoft Excel are used to capture and export data for processing, analysis, and presentation of empirical results. The one-sample Wilcoxon Signed Rank tests and Pearson correlation coefficient are utilised to test the hypothesis (Bryman, 2016; Creswell & Creswell, 2018). Subsequently, interrogation on key variables provided for determining frameworks were utilised, such as the general system theory (Bertalanffy, 1968) and programme theory (Bickman, 1987) for interpreting results. Complementary, both theories present the results chain (inputs, activities, outputs, outcomes) as an important tool to measure the performance of TLM management.

In conclusion, this study contributes by making recommendations on how no-fee schools should manage TLM effectively based on the findings of the study. Furthermore, it contributes to the theoretical and empirical knowledge gap on TLM management studies. This study hopes to contribute to the body of knowledge regarding the effective implementation of management systems in line with TLM policy in order to address, amongst others, financial resource, human resource, procurement and inadequate TLM gaps in no-fee schools (Kunene, 2004; Phakathi, 2015). Further, local schools may use intervention strategies recommended by this study to revise their monitoring and evaluation systems to ensure efficient and effective management of resources (Bodalina, 2012; Phakathi, 2015; Gamakulu & Wotela, 2016).

1.2.3 The research questions

The main research question is: how are no-fee schools in Ekangala Township, Tshwane municipality managing their teaching and learning material? This study answers this question by interrogating the following secondary questions and testing the hypotheses:

1.2.3.1 How are budget, human resource and procurement systems of TLM functioning in Ekangala Township no-fee schools?

H0: The budget, human resources, and procurement systems of TLM are not fully functional in Ekangala Township no-fee schools.
Ha: The budget, human resources, and procurement processes of TLM are fully functional in Ekangala Township no-fee schools.

1.2.3.2 How effective is the management of TLM management in Ekangala Township no-fee schools?

H0: There is no statistically significant evidence that TLM management is effective in Ekangala Township no-fee schools.
Ha: There is statistically significant evidence that TLM management is effective in Ekangala Township no-fee schools.

1.2.3.3 To what extent are budget, human resource and procurement systems affecting TLM management in no-fee schools?

H0: Budget, human resources, and procurement systems are not significantly related to effective TLM management in no-fee schools.
Ha: Budget, human resources, and procurement systems are significantly related to the effective TLM management in no-fee schools.

1.3 Delimitations of the research

The study investigated TLM management in Ekangala Township no-fee schools. Having understood the broad field of study, which is management, its components (inputs, activities, outputs, outcomes) and the variables as illustrated in Section 2.2.5 (budget, human resources, procurement, distribution, retention and retrieval) the study did not incorporate all variables. However, this study limited the focus to key variables as budget, human resource, procurement, TLM (stationery, textbooks, resources for specialised subjects and library resources) as well as the

effective management variable, due to time limitations. In achieving the purpose of this study, a self-completion questionnaire was used to gather cross-sectional data to answer research questions and to identify relationships between variables. This study used probability sampling, more specifically employing stratified random sampling. The representative sample was drawn from the target population for generalising the results to the population research (Bryman, 2016, Leedy & Ormrod, 2015). This study is delimited to descriptive statistics and inferential statistics.

The management theories nested in the management academic discipline have been discussed. Important as they are, they do not integrate all variables of research interest. Having highlighted their limitations, they cannot be used to interpret the results of the study and empirical findings (Wotela, 2016). The study focused on the general system theory and programme theory explanatory frameworks utilised in converting results to research findings (Swanson & Chermack, 2013; Abend & Gabriel, 2008; Wotela, 2017). Ethics consideration was applied through obtaining ethics clearance certificates and employing validity and reliability test regarding the data collection instrument. Regrettably, the research did not evaluate the impact of the intervention but limited the focus to the outcome of the intervention.

1.4 Justification of the research

The research study contributes to a theoretical and empirical knowledge gap by empirically determining the functionality of financial resources, human resources and procurement processes of TLM in no-fee schools, establishing the effectiveness of TLM management, and by unravelling the causal relationship between independent variables (financial input/budget, human resources/TLM committees, procurement, and the outcome-dependent measure of effective management in Ekangala Township no-fee schools in Tshwane Municipality.

Section 2.2.2 alerts to problems underlying the absence of effective resource management. An interrogation of literature in this section shows that most researchers have previously performed groundwork in broadly establishing resource management challenges in schools despite the existence of advanced policies, as there are implementation gaps. The ineffective management of TLM and poor procurement practices in public schools continues to the attention of both education ministry reports and the media (Phakathi, 2015). The poorest schools receive the greatest per-learner allocation, based on the assumption that schools in wealthier communities require less support from government. Subsequently, the state has occupied the role of funding these schools, to increase access to quality education, and to improve the provision of key resources in education (Thwala, 2010; Phakathi, 2015).

Observations informed by the researcher's practical experience, whilst conducting physical verification such as learner head counts and checking learner enrolment against available textbooks, revealed inadequacies. For example, three learners sharing one book, and the incorrect capturing of data in an electronic textbook quarterly audit tool, which can mislead ordering. A study conducted by Dunne, Humphreys, Sebba, Dyson, Gallannaugh and Muijs, (2007) stated that "children sharing textbooks, given the poor reading levels of some children, squinting at a text sideways or even reading it upside down, probably proved difficult". Some of the pupils clearly gave up trying. In such a situation, it would be logical to expect some gaps in the management and utilisation of educational materials (Mengistu, 2014).

This study seeks to investigate how no-fee schools manage their available resources and identify possible interventions to improve the implementation of effective management practices. The study will enable departmental officials, SGBs, TLM committees, and learners to improve attempts at successfully retrieving textbooks. An improvement in retrieving textbooks will save government a significant amount of money; given the huge investment of government in education (Phakathi, 2015). This study seeks to contribute to the body of literature on the management and procurement of resources. The research results will be generalised to the entire population and will be of use to all public schools. The study will assist all stakeholders (Department of Basic Education, GDE, the district office, principals, School Management Teams, SGBs, teachers, learners, and parents) to clearly understand their roles and responsibilities in managing resources effectively and efficiently for curriculum delivery (Motala, Morrow & Sayed, 2015).

If the problem is left unattended, it will have a negative impact on learner performance (Mohono, 2010 & Bodalina, 2012). The recommendations of this study will assist in maximising the strength of effective TLM management, as well as remedying the gaps. Therefore, investigating TLM management in no-fee schools in Ekangala is imperative with a view to ensure that the investment of quality education is not wasted.

1.5 Preface to the research report

To this end, the report has six chapters. Chapter 1 provides the research background where the context under which this study on TLM management is undertaken. The study briefly introduces the terms and concepts used in conceptualising this research. Chapter 1 introduces the research context broadly, briefly presenting a description of no-fee schools in Ekangala Township. It

introduces TLM which is the intervention understudy where key terms of elements of the results chain and logical frameworks are presented to measure the performance of the intervention. Management is generally presented as the aspects that connects it with the research problem. Further, the research conceptualisation: the research problem statement, research purpose statement, research questions and accompanying hypotheses, as well as the delimitation and justification are outlined in this research report.

Chapter 2 presents six interlinked subcomponents of the conceptual framework as proposed by Wotela (2016, 2017a): (I) The key attribute of physical context analysis, which presents a detailed discussion of no-fee schools in Ekangala Township – a poor community where schools meet the requirements to be declared no-fee. (ii) Research problem analysis, where the study details symptoms, root causes and consequences of TLM management challenges. (iii) Research knowledge gap analysis: the study reviews relevant aspects of international and local literature (methods, data, findings and conclusions) that evaluate absent and ineffective TLM management. (iv)Academic field of study: the introduction of management as the academic discipline of the study as well as its components (inputs, activity, outputs, and outcomes). (v)Attributes/variables: the study uses system thinking (Gharajedaghi, 2006) to breakdown management components to indicate key attributes/variables that guide data collection. (vi) Identifying and discussing the interpretive framework: key variables/attributes assist in establishing interpretative frameworks, namely general system theory and programme theory, used to interpret empirical results and subsequently converting them to the research findings.

In Chapter 3, the study discusses the research strategy, design, procedures, reliability and validity measures as well as limitations as outlined in the conceptual framework. A quantitative research strategy and a cross-sectional design were adopted to investigate the research question and test the hypotheses. The research was conducted in Ekangala Township, no-fee schools in Tshwane Municipality, focusing on school management teams, precisely school TLM committees (STLMC). Stratified probability sampling was utilised for the selection of participants. An online fully structured self-completion questionnaire was the data collection tool. Ethics considerations and limitations are presented. The process of data analysis is presented, and data was captured in Microsoft Excel. The chapter provided descriptions of respondents, including the analysis, to reinforce the research in respect to reliability and validity measures. In conclusion, the chapter outlined the research strength and weaknesses by briefly discussing the technical and administrative limitations.

Chapter 4 presents the research results on TLM management in no-fee schools in Tshwane Municipality. Descriptive statistics were employed for frequency distribution, and both the One-Sample Wilcoxon Signed Rank and correlation coefficient were used to test the hypotheses. The research results are presented according to the posed research questions and the hypothesis test respectively. The results for determining the functionality of procurement process reveal that there is no significant statistical evidence that the school TLM committee validates the priority list of TLM needs before submission to the SGB for approval, with a mean score of 1.51. Further, there is significant evidence that the schools develop TLM in accordance with GDE policy guidelines, with mean score of 4.56 to determine the functionality of human resource.

Chapter 5 discusses and interprets the research results by subsequently converting them to research findings. The study used general system theory and programme theory to convert the results into findings. Both theories provided for foundation priori hypotheses pertaining to what the data revealed. The logical model presented by the two theories is that when inputs (financial and human resources) are adequate, the achievement of activities (procurement), outputs (delivered TLM) and outcomes (effective management) are positively impacted. This chapter concludes by indicating that there is ineffective TLM management in Ekangala Township no-fee schools, however there is room for improvement.

Lastly, Chapter 6 presents the summary of the research study and makes conclusions about the research study results and findings in more detail. Limitations are presented in detail to highlight what the research could not achieve and why. This research offers recommendations towards TLM management interventions and suggests future studies regarding TLM management interventions in achieving its objectives. The summary highlights the important aspects relating to the absence or ineffective TLM management, and the failure of the intervention in using a problem tree. The chapter presents the knowledge gap by reviewing empirical past and current studies which ultimately led to the proposition of the strategy, design procedure and method to be applied in resolving the problem. Additionally, the study highlights the usage of interpretive frameworks in converting results into research findings. This chapter presents and interprets research results and concludes that there is ineffective TLM management in no-fee schools. To conclude, the chapter discusses limitations of the research, as well as recommendations on the policy implication in relation to TLM management intervention.

2. REVIEWING LITERATURE TO DERIVE THE CONCEPTUAL FRAMEWORK

This chapter has four broad objectives; namely to understand the research problem (Sections 2.1 and 2.2). To identify the knowledge gap (Section 2.3), to develop a theoretical framework for interpreting the findings (Sections 2.4 2.5 and 2.6), and to conceptualise the research approach (Section 2.7). Section 2.1 specifically provides a historical description of Tshwane municipality and Ekangala no-fee schools in preparation for Section 2.2 which detail the research problem that is management challenges of teaching and learning material, symptoms, root courses and consequences. In Section 2.3, we rigorously review literature (methods, data, findings, and conclusion) on international and local studies that have attempted to evaluate absent and ineffective management of teaching and learning material. With this knowledge, we situate our research within management studies and its key component and attributes in Sections 2.4 and 2.5 Having identified the management theories and models as the most relevant explanatory framework for this research, we discuss these theories and the management framework in Section 2.6 The last Section (2.7) provides a road map of how this research intends to explore main research question.

2.1 The history and description of Tshwane municipality with specific reference to Ekangala Township

This first subcomponent of the conceptual framework presents a brief history and description of no-fee schools in South Africa generally, then zoom in to no-fee schools in Tshwane municipality. However, the main focus is Ekangala Township in relation to TLM management as an indication of physical context. Further, it is in preparation for subcomponent 2.2 where the study contextualises the research problem analysis with the main purpose of understanding a research problem, opportunity, or question. Discussions subsequent to this subcomponent contribute to pitching the research context, the research problem statement (absence of TLM management) as well as the research delimitation and justification as outlined in Chapter 1. Further, the subcomponent contributes to the discussion of the target population and largely informs the limitation constraints in the research strategy, design, procedure, and methods (Wotela, 2017).

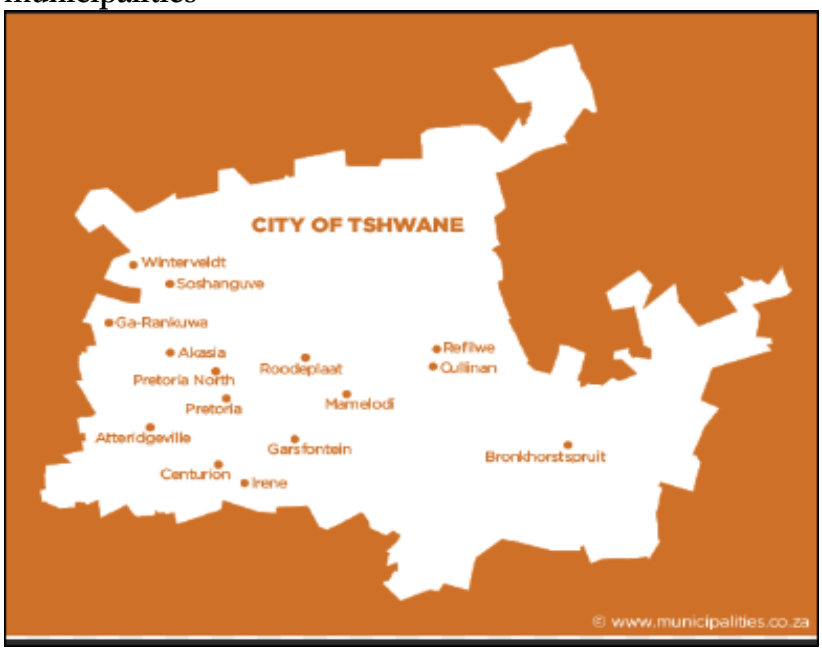
Figure 1 below displays a map of South Africa, specifying its neighbouring countries. It also indicates that South Africa consists of nine provinces; however, the study focuses on Gauteng Province, which is situated in the north-eastern side of the country (Hlatshwayo & Wotela, 2017).

Figure 1: Map of South Africa depicting neighbouring countries

Source: Hlatshwayo & Wotela (2017, p.111)

Historical literature, (Nawa, 2012; City of Tshwane, 2018; City of Tshwane, 2019) shows that the City of Tshwane was established on the 5th of December 2000. It is regarded as the largest municipality in South Africa and the third largest in the entire world in terms of land mass (Moeti, 2013). Literature, for example Nawa (2012) and City of Tshwane (2019) shows that the city has merged with 14 municipalities as displayed in Figure 2, which were serving the greater Pretoria and neighbouring areas. The city encounters inefficient infrastructure challenges, which compromise service delivery (City of Tshwane, 2019). Figure 2 displays the map of the City of Tshwane Metropolitan Municipality, showing its surrounding municipalities.

Figure 2: Map of city of Tshwane Metropolitan Municipality and its merged municipalities



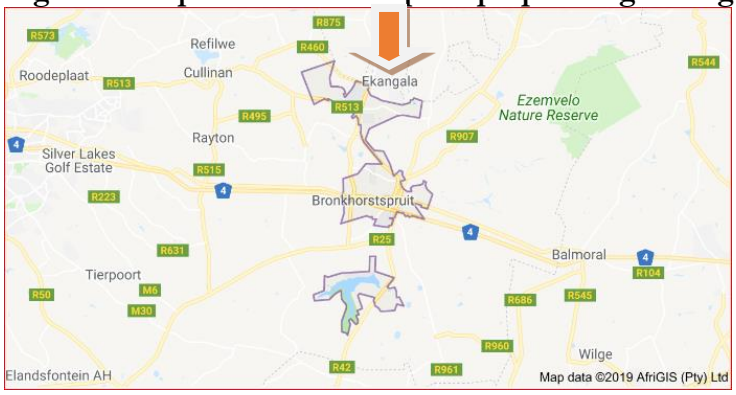
Source: Municipalities of South Africa (n.d)

Research conducted by Makanjee (1987), City of Tshwane (2018) and StatsSA (2019) agree that Ekangala Township is positioned in City of Tshwane Metropolitan Municipality, in the north part of region 7 (Bronkhorstspruit), 100 km from Johannesburg. The land was formerly a portion of the KwaNdebele homeland before it relocated to Mpumalanga. Eventually, the Ekangala land was transferred from Mpumalanga to Gauteng due to the complication of the zone, and the process was completed in April 2018 (Naidoo & Gumbo, 2019).

Ekangala residents are categorised into low-income earners. It is an officially disadvantaged zone with subsidised and Reconstruction and Development Programme (RDP) housing with bottleneck infrastructure provision. The economy of the country should be stimulated and harnessed, as there are inadequate economic and employment opportunities in the area (Makanjee, 1987; City of Tshwane, 2018). StatsSA (2011) states that the total population of Ekangala Township is 48, 493 (1 053,09 per km^2). In terms of education demographics, 7.5 per cent of individuals aged 20 years and above have no schooling; 9.6 per cent of those aged 20 and above have higher education; 33.3 per cent of those aged 20 and above are educated to matric level. Household demographics reveal that there are a total number of 13, 618 households, with 83,9 per cent being formal dwellings. Although Ekangala is mainly a Black African township, it is ethnically diverse. Spoken languages are isiZulu (31 per cent of the population), IsiNdebele (29 per cent), Sepedi (15 per cent) and Xitsonga (1 per cent). Figure 3 portrays map of

Bronkhorstspruit signifying Ekangala Township location. There is no available published map of Ekangala Township specifically.

Figure 3: Map of Bronkhorstspruit pinpointing Ekangala Township



Source: Municipalities of South Africa (n.d)

2.1.1 The legal framework governing the management of Teaching and Learning Material

The management and administration of the education system is designed around two spheres, namely: the national and provincial departments of education. The legal framework that governs education through the establishment and functioning of the different structures at this levels is the National Education Policy Act (NEPA) 27of 1998 (Republic of South Africa, 1998). Even though the national and provincial departments of education have original powers, both are interdependent and interrelated. The Minister of Basic Education is responsible for education in South Africa and carries out this function through the members of Executive Council (MECs) for Education at the provincial level. The Head of Department (HoD) in each province, who is accountable to the MEC, delegates authority and tasks to persons at different levels in the Provincial Department of Education (DoE) (Bodalina, 2012). The success of these responsibilities is underpinned by national legislations in education.

Some of the core policies and acts that inform how systems should be run, are as follows: The National Education Policy Act, 1996 (Act No. 27 of 1996), as amended, South African Schools Act, 1996 (Act No. 84 of 1996), as amended., Public Finance Management Act, 1999 (Act No. 1 of 1999), as amended., National Archives and Records of South Africa Act, 1996 (Act No. 43 of 1996)as amended. , several Education Laws Amendment Acts, Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000) ,Copyright Act, 1978 (Act No. 98 of 1978), Gauteng Schools Education Act, 1995 (Act No. 6 of 1995), as amended. National Norms and Standards

for School Funding policy as well as Gauteng Department of Education TLM policy. These legislation framework made several inroads into the governance and management of all South African schools mainly public schools (GDE,2021). However, this Section only focuses on the South African Schools Act, 84 of 1996, the National Norms and Standards for School Funding policy and Gauteng Department of Education TLM policy.

2.1.1.1 South African Schools Act (SASA) 84 of 1996

The South African Schools Act (SASA), Act 84 of 1996 is one of the fundamental pieces of education-related legislation in the post-apartheid era. The clearly formulated aim of this Act is "to provide for a uniform system for the organisation, governance, and financing of schools…" (Republic of South Africa, 1996, p. 5). With regard to financing or funding schools, in Chapter 4 of the SASA, the responsibility of the state and norms and standards for school funding are clearly stipulated. According to the SASA, it remains the responsibility of the state to ensure that public schools are funded from public revenue on an equitable basis to ensure the proper exercise of the rights of learners to education and the redress of past disparities in educational provision (Republic of South Africa, 1996b; Phakathi, 2015)

Ten years into implementation of the South African Schools Act, 1996 (Act No. 84 of 1996) amendments to the National Norms and Standards for School Funding (Republic of South Africa, 2006) were affected. The amended national norms and standards for school funding in terms of the South African Schools Act, 1996 (No. 84 of 1996) outlines the procedures to be adopted by Provincial Education Departments (PEDs) in determining resource allocations to their schools. The norms replace any previous school funding norms issued in terms of Section 35 of the South African Schools Act, 1996 (No. 84 of 1996). For this reason, schools are allocated funds, and, on the allocation, there are a number of items which the school may cover. These items include: "Learning support materials (LSMs), including textbooks, library books, charts, models, computer hardware and software, televisions, video recorders, video tapes, home economics equipment, science laboratory equipment, musical instruments, learner desks, chairs. (These items, and the ones under (ii) to (iv) below, would typically support the SASA Section 21(c) function.). This category is subdivided into capital items and non-capital items" (Republic of South Africa, 2006b, p. 27).

The researcher has unpacked various sections of the South African Schools Act that are relevant to the management of TLM.

Subject to SASA Act, Sections 15 and 16 (1) declares that every public school is vested in its Governing Body. Mestry (2012) and Van Dyk and White (2019) note that the SASA creates categories of public schools; section 20 (Non section 21.1.C) and the Section 21.1 C schools. The Section 20 schools receive an allocation in terms of the Resource Targeting List, but they do not receive the allocation in cash (Department of Education, 1998). Section 20 schools are required to present a budget to the Department of Education, and purchases are made against the budgeted items (Department of Education, 1998). In contrast with Section 21 schools SASA allocated them a function to purchase textbooks, educational materials, or equipment. Section 21 schools are regarded as almost equal with self-managing or self-reliant schools (Department of Basic Education, 1998). Section 21 school, instead of having to work through the Department when spending the state allocation, a lump sum transfer is made to it and the school can then negotiate directly with its suppliers (Department of Education, 1998).

SASA empowers SGB to take 'all reasonable measures within its means to supplement the resources supplied to the school to improve the quality of education provided for all learners (Republic of South Africa 1996b). The functions gave birth to the development of TLM policy in which guidelines are given on how the SGB are to administer, manage and control these functions. This study focuses on Section 21 schools.

2.1.1.2 The National Norms and Standards for School Funding (NNSSF) 1998

The National Norms and Standard for School Funding policy (Republic of South Africa, 1998) is viewed as an equity instrument that aims at distributing the bulk of recurrent non-personnel expenditure to poorer schools based on the assumption that such an approach will lead to improved performance and the provision of quality education. Norms and Standards "were developed in terms of Section 35 of the SASA which provided for the Minister of Education to determine norms and standards for funding of public schools" (Phakathi ,2015).

The principal goal of SASA was to provide for a uniform system of the organisation, governance, and funding of schools (Republic of South Africa, 1996b). To ensure that children from poor parent communities have the right to education as guaranteed by the Constitution of the Republic of South Africa. The national Department of Education (DoE) has introduced a 'no-fee schools'

policy (Republic of South Africa, 1996b). The policy involves the exemption of poor parents from payment of mandatory school fees levied in schools. The no-fee policy is based on the amended NNSSF (Department of Education, 1998).

Section 35 of the amended NNSSF sets criteria for a fair and equitable distribution of state-allocated funding to public schools and provides for a system that places public school learners into national quintiles based on school poverty score. NNSSF policy (South Africa, 1998a) provides a quintile ranking mechanism to address equity in schools. Poor schools ranked Quintile 1, 2 and 3 are declared no-fee schools and are allocated a higher state subsidy than the affluent schools that are declared Quintile 4 and 5 (Nkosi, 2013; Mestry & Ndlovu, 2014). The schools sampled for this study, are 'no-fee paying schools.

According to NNSSF all public schools are funded using the Resource Targeting Table (RTT), in terms of which schools are funded based on the need. The RTT lists all public schools in the province and sorts them by the level of poverty prevalent in the school community (Department of Education, 1998). Each school is linked to a specific geographic area. Income, unemployment, and the level of education in the community are other factors used to determine the poverty scores of schools (Department of Education, 1998). Provincial Education Departments (PED) were tasked with developing policy instruments for ranking public schools.

The major policy mechanism to address inequalities in the education financing system was the equitable share formula, which considers provincial variables such as the size of the school age population, the number of learners enrolled in ordinary public schools, the distribution of capital needs, the size of the rural population in each province and the size of the population for social security grants weighted by a poverty index. The aim is to ensure that every province, whatever its financial standing, can spend an equitable amount on each learner (Mestry, 2012, Mestry & Ndlovu, 2014). The lists of no fee schools are determined by each Provincial Education Department (PED) using a standard national procedure. Each school is assigned a poverty score using data from the community in which the school is located. The three poverty indicators utilised for this purpose are income, unemployment rate and level of education of the community, which are weighted to assign a poverty score for the community and school. The school will then be assigned to one of the poverty quintiles determined nationally see table 1 (Sayed & Motala, 2012; Phakathi, 2015). Department of Basic Education (DoE) and the quintile ranking determines the amount of money allocated to the school (Dyk & White, 2019). The said ranking of schools,

reflecting national targets as well as the percentage of learners in each quintile, is summarised in Table 1 (Department of Basic Education, Republic of South Africa, 1996b).

Table 1 shows national poverty distribution in terms of paragraph 112 of the NNSSF. Table 1 further alludes that, in 2019, the poorest schools (Quintile 1 - 3) received allocations of R1 390 per learner. Wealthier schools are allocated smaller amounts. In the same year, schools in Quintile 4 received R697 and schools in Quintile 5 received R268 per learner per capita (du Plessis & Mestry, 2019).

Table 1: National table of targets for the allocation (2019-2021) in terms of paragraph 112 of the National Norms and Standards for School Funding

	2019	2020	2021
NQ1-N. Q3	**1,390**	**1,466**	**1,547**
NQ4	**697**	**735**	**776**
NQ5	**241**	**254**	**268**
No fee threshold	**1,390**	**1.466**	**1.547**
Small schools: National fixed amount	**32,197**	**33.968**	**35.836**

Source: Department of Education (2019, p.2)

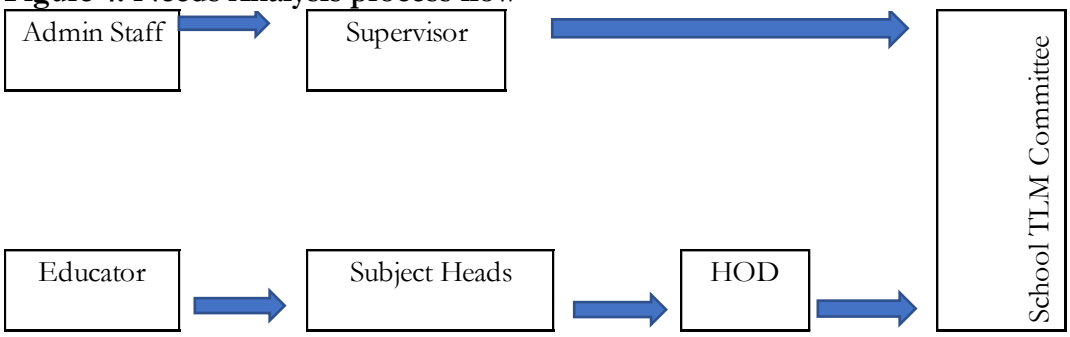
2.1.1.3 Gauteng Department of Education teaching and learning material policy

TLM policy has been developed to ensure that there is an increased access to resources; and that there are sound systems to manage the available resources, procure additional materials and to improve learner performance through the provision of quality education. According to SASA and provincial TLM policy, it is mandatory for public schools' SGB to establish school TLM committee (STLMC) (Republic of South Africa, 1996b; GDE, 2018). The STLMC should comprise of the following officials:(a) SGB Member who is a parent (Chairperson of the committee, (b) Principal (Ex-officio member), (c) All members of the SMT (d) TLM Coordinator. (e) Administration Assistant, (f) Librarian/Library Coordinator, (g) ICT Coordinator. The SGB "develop the school TLM policy in line with the provincial policy which stipulates clear, achievable and realistic Traditional and e-TLM needs analysis, selection, procurement, distribution, retention and retrieval processes" (Gauteng Department of Education, 2021, p.10). TLM policy.

The main function of STLMC is to ensure that the TLM policy is implemented in the school. The STLMC conduct an audit of available Traditional and e-TLM before making requisitions for new stock. Managing resources includes identifying, accessing, and controlling resources (Mohono, 2010; Phakathi, 2015) which are the functions of the TLM committee in schools. According to Bodalina (2012) the school's curriculum needs should be established through a consultative process (needs analysis) which takes place during the last term of the academic year in preparation for the following year. (Figure 4)

The process is informed by auditing the available stock and retrieval of all textbooks loaned to learners. Educators determine the curriculum resources they need for their specific subjects and forward them via Subject Head to the Head of Departments (HOD) to plan which TLM to be requested for the following year (figure 4). The HOD submit the required needs to the school TLM committee for prioritisation and processing. The administrative staff submit their office needs to their supervisor who in turn submits to the school TLM committee. The committee must confirm coordinate, compile, and validate the priority list of TLM needs for all Departments and submit to the SGB for procurement. Schools are only allowed to top-up not buying new textbooks. It is the School TLM committee who decides on which textbooks are going to be purchased for the entire school. New textbooks can be procured by the schools that have changed their curriculum or new schools that have opened (Phakathi.2015).

Figure 4: Needs Analysis process flow



Source: (GDE, 2014, p.29)

Further roles and responsibilities are discussed at subsection 2..5.1

On annual basis, schools receive procurement memorandum, procurement plan and TLM procurement priorities that they should adhere to. The budget split of the resource allocation of

schools is as the follows: (i) TLM (50 per cent), (ii) services (38 per cent) and (iii) maintenance (12 per cent) of the total budget allocation (Bodalina, 2012; Phakathi, 2015; GDE, 2018). In terms of Grade R (i) TLM (65%), (ii) services (15 per cent) and (iii) maintenance (20 per cent) of total budget allocation. The purpose of the fund is to ensure that each learner in a school from Grade R to Grade 12 should be found without a textbook and a basic stationery pack / resources (GDE, 2011, GDE, 2018, GDE, 2019).

TLM budget (i.e., 50 per cent of the total allocation) is further split in table 3. Table 3 below explicitly depicts that 70 per cent of the total allocation should be utilised for textbooks and 30 per cent for other TLM. In full Information and Communication Technology (ICT) schools, 35 per cent of total allocation should be used for textbooks and 30 per cent for electronic books (tablets) and 30 per cent for other TLM (GDE, 2019).

Table 2: TLM Resource Targeting Table for financial year 2019/2020 (budget split)

Resource allocation as per Resource Targeting Table (RTT) and South African Schools Act (SASA) Section 21 functions allocated (%)	
Textbooks :70%	Other TLM 30%
In case of full ITC schools (as listed in the enclosed Annexure B)	
e-Books: 35%	Other TLM 30%
Textbooks: 35%	

Source: GDE (2019, p.3)

To achieve the universal coverage on Curriculum Assessment Policy Statement (CAPS) textbooks as per national mandate, the following priorities must be served when procuring (i) TLM: Textbooks (printed or electronic (ii) Learner stationery packs, (iii) Classrooms learning resources (v) Library resources for example books, library stationery, (vi) Assistive deceives for learners with special needs, (vii) Consumables for subjects with Practical Assessment Tasks (PAT) Other TLM as outlined in Section 11.1 of TLM policy for example, duplicating papers, science equipment data projectors (GDE,2018)

Procurement processes for section 21.1. C schools are clearly outlined at Subsection 2.5.2
When TLM is delivered to the school, titles and quantities must be entered into the school's textbook inventory. The books must be stamped and given a unique number. All TLM must be kept safely in a storeroom whilst not in use (GDE, 2018). The Department of Basic Education as well as the provincial education departments have the right to visit schools at random to check

if supplies have been delivered according to specification and that they are recorded safely stored and effectively utilised. Before the proof of deliveries (PODs) are certified as correct, the items delivered must be checked against the items listed on the requisition form to ensure that only items that were ordered are delivered. One of the official signatories who have the authority to receive TLM, checks, signs, and files a copy of the POD. TLM suppliers must deliver the orders within the specified date included in the survive level agreement (Phakathi, 2015 ; GDE,2018).

Retaining textbooks in the school system for the stipulated period of five years requires the effective annual retrieval and maintenance of books. To achieve effective textbook retention each school must develop and implement a Textbook Retention Plan (TRP). At the end of the school year, books must be handed in to the subject/class teacher on a specified day. The teacher must check each book against the book's number and the learner's name.

At the beginning of the school year, learners must sign for each book issued to them on a list against each book's number. A parent/guardian must sign an undertaking to replace lost or damaged books. Signed booklists must be kept in the school's safe room by the TLM Committee. Books should be covered to extend their life span. A process must be in place to dispose all damaged/obsolete TLM. The TLM committee must enter all damaged and obsolete items in a disposal register. Once authorised by a designated authority, the disposal process can be followed (GDE,2011;GDE,2018,GDE 2021),

The living standards of Ekangala residents range from abject (poverty) to moderate (hand-to-mouth) hence, the schools in the community meet the criteria of being declared no-fee (Hlatshwayo & Wotela, 2017). The schools are allocated Section 21. (1) (c) status according to South African School Act 84 (1996). As previously explained, this implies that SGBs can procure TLM using their own procurement system. "Whilst most of the funding to public schools is provided by the state, the demands of budgeting and physical resource management on principals and SGBs has been proven challenging in Gauteng Province" (Bodalina, 2012). Public schools are anticipated by the PED to be governed and managed according to set policies so that the deviation from the norms is limited.

2.1.2 The benefits of teaching and learning material in schools

Resources are the ingredients for effective teaching and learning (Ayaga, 2011; Bodalina, 2012). Where resources are available and adequate, a qualified and motivated teacher will deploy methods that centre the learners. Such an approach emphasises practical activities and involves

the pupils experimenting, solving problems, discussing with each other, and practical hands-on activities. This approach keeps the lesson exciting and captivating to the learners (Ayaga, 2011). Educators should be made aware of all available resources, as well as have the competencies to skilfully manage and use these resources to ensure successful learning.

Mengistu (2014) asserted that educational curricula cannot be sound and well-operated with poorly managed TLM. Effective learning occurs when suitable resources appropriate to the curriculum are used. Learning requires "both concrete and abstract subject matters and therefore a well-chosen mixture of learning resources" (Ayaga, 2010, p.29). The abovementioned factors will be achievable if the schools have functional SGBs, SMTs, and school TLM committees. Therefore, there should be transparency, accountability, efficiency, and effectiveness in the utilisation of funds allocated for the procurement of TLM (Gumbi, 2009; Bodalina, 2012; Kwinda, 2014). Availability of budget, human resources, procurement of resources and adequate TLM are the pillars of effective management (Labane, 2009). The need to conduct research on this area comes from the need for better management of educational materials, since the provision of quality education depend on the quality and standards of these materials (Mengistu, 2014).

In summary, we presented a detailed discussion of physical research context analysis. By doing so, the study highlights key aspects of the research context or setting as well as aspects that connect it to the research under study namely, legislative framework, the national poverty distribution and the benefits of teaching and learning materials in schools.

2.2 Management challenges of teaching and learning material, symptoms, root causes and consequences

In the previous subsection, we presented a historical picture and description of no-fee schools. This subcomponent of the conceptual framework, which is research problem analysis, develops the research and informs the literature review process. It contributes to all subcomponents in the introduction of the research, problem statement, purpose, questions, and its accompanying hypotheses. We review academic and theoretical literature to understand management challenges as highlighted in the problem statement. Challenges include poor resource management where there are procurement flaws, untimely delivery of resources, poor retention and retrieval of textbooks, and the recording and storage of resources in the research context. The first part of this subsection, 2.2.1, provides brief history of the South African education system before and after 1994 in relation to resource allocation. The second part, 2.2.2, details the ineffectiveness of

the resource management trend**.** The third section, 2.2.3, describes the root causes of ineffective TLM management, followed by 2.2.4 which presents the consequences of ineffective management. The final section, 2.2.5 describes the results chain and the results framework relating to teaching and learning material.

2.2.1 History of resourcing in schools before and after 1994

The South African education system before 1994 was dominated by the apartheid system in which the country experienced segregation, acute racial discrimination, and inequalities in terms of resource allocation. African black schools experienced shortages of resources as opposed to white schools, who were adequately resourced. As a result, this had an impact on curriculum delivery (Maswangaye, 2010; Riet, 2012 ; Nkosi, 2013).

Monyokolo (1993) confirms that textbook shortages and insufficiencies in financing, provision and distribution are not unique to South Africa. They are typical of the education systems of an extensive variation of developing countries including Zambia, Tanzania, Nigeria and many other African countries, as well as the Philippines, Indonesia, India and Nepal. This study shows that problems are experienced at every solitary stage in South Africa, and that courtesy needs to be paid to a comprehensive, rather than a piecemeal, overhaul of the system. Textbook provision in no-fee schools (black schools) is as poor as in many developing countries, whereas in fee schools (white schools) it is as good as in developed countries (Monyokolo, 1993).

The allocation of funding in previously disadvantaged schools has gradually increased during the post-apartheid regime in comparison with the apartheid era. However, the gap between rural/township schools and urban schools is still in existence (Rammala, 2009). Low school and learner performance is attributed to poor management of resources and insufficient finances (Thwala, 2010; Dangara, 2016; Changala, 2019). A study conducted by Maile (2019) confirms the current trend of previously disadvantaged schools (no-fee), being that they lack essential resources such as science laboratories, computer laboratories and adequate textbooks. Hence, the study seeks to investigate how no-fee schools manage their resources.

2.2.2 Ineffective TLM management symptoms and trends

This area presents four measurable symptoms (Figure 5) highlighted as follows: (1) low academic performance, (2) decreased access to high-quality learning material (3) increased learner-to-textbook ratios and (4) high number of textbook shortages.

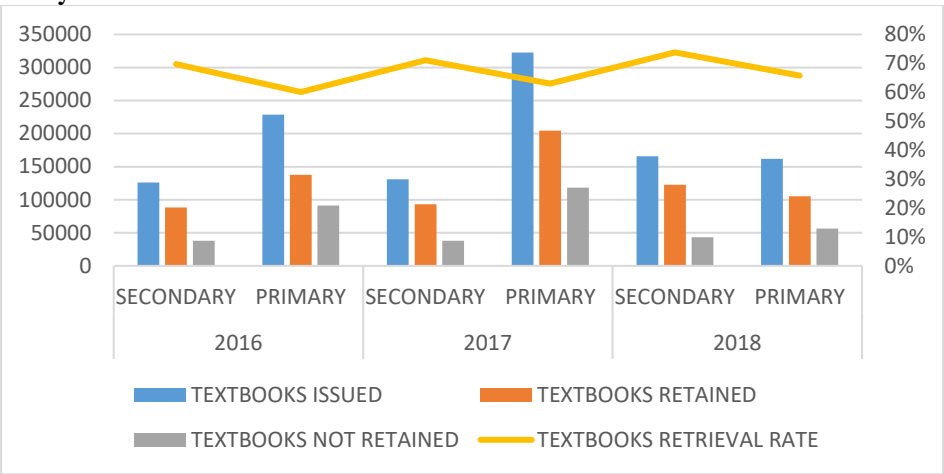
Ineffective management and leadership, which results in inadequate educational resources such as textbooks, laboratory, and infrastructure, negatively affects the curiosity of learners towards their studies (Mogonediwa, 2008; Mutshaena, 2008; Thwala, 2010). South African Human Rights posits that South Africa encounters critical challenges as far as access to high-quality TLM is concerned. Further, it is evident that there is a risk of schools accessing inappropriate TLM which exacerbates inequalities and social exclusion, thus affecting the South African Education system.

These schools are encountering high numbers of learners sharing textbooks. This makes the management and monitoring of textbooks by school management teams (SMTs) and teachers questionable. The sharing of textbooks makes it difficult for learners to study at home, it is an obstacle to effective teaching and learning (Mohono, 2010; Kwinda, 2013; Phakathi, 2015). The reasons underlying TLM shortages are as follows: poor requisition systems, low rate of textbook retention and retrieval, lack of record keeping, procurement flaws, incorrect textbook supply, and high overcrowding (Mohono, 2010; Kwinda & Phakathi, 2015). These symptoms emanated as far back as 1993 and persisted in 2010 to 2018.

Studies conducted by Bodalina (2012), Kwinda (2013), and Phakathi (2015) confirm that schools have appropriate textbook retention and retrieval systems in place, however they are unsuccessful in retrieving 100 per cent of the textbooks from learners due to a lack of management authority in schools. It is evident that there is a gap in school management plans, as they do not indicate proper action on how to successfully retrieve 100 per cent of textbooks. Therefore, this suggests that failure to retrieve books from learners leads to negative consequences in schools and the government, amongst others, waste significant amounts of taxpayer's money annually (Phakathi, 2015).

A record of textbook retention and retrieval in Tshwane municipality (District 1) further confirms that textbook retrieval rates are below 100 per cent, shown in Figure below. The graph shows that in 2016, 126 130 textbooks were issued to secondary school learners at the beginning of the year. Only 88 123 of the textbooks were retrieved, and 38 007 were not retrieved, placing the textbook retrieval rate at 69 per cent. In 2016, 228 956 textbooks were issued to primary school learners at the beginning of the year; only 137 743 of the textbooks were retrieved and 91 213 were not retrieved, which indicated an overall textbook retrieval rate of 62 per cent (GDE, 2018).

Figure 5: Tshwane Municipality (District 1 office) textbooks retention and retrieval analysis 2016 to 2018



Source: by author (2019)

Since the establishment of the Gauteng North District (D1) office in Tshwane Municipality in 2008, efforts to obtain official textbook retention and retrieval records from 2008 to 2015 have been unsuccessful.

2.2.3 Underlying root causes of ineffective TLM management

School Governing Bodies are responsible for procuring and managing physical resources effectively, but they do not have the relevant skills and experience to exercise their authority, as illustrated in Figure 6. This contributes to the internal inefficiencies that make schools' improvement and development slow (Thwala, 2010; Xaba, 2011; Bodalina, 2012). These studies further indicate that many SGBs and principals lack relevant financial management skills to manage resources effectively. Another contributing factor to incompetency maybe accounted to lack of training, mistrust and conflict between the parent wing and the school principal. Without prior measures to equalise the existing inefficiencies, supplementary resources may still be misused (Kwinda, 2013; Dibete, 2015; Mnyeni, 2017). Several authors, for example Thwala, (2010) and Dibete (2015), believe that in some schools, the principal has undue influence on procurement processes. There is lack of systems to monitor the evolvement of quotations from service providers. There is extant evidence of a lack of transparency (Thwala, 2010; Dibete, 2015; Ndaba, 2017).

Research findings (Bodalina, 2012; Rangongo; Mohlakwana & Beckman; 2016) prove that poor monitoring and control of procurement systems leads to wastage, corruption, and fraud. It has

also been noted that schools make incorrect projections for learner enrolment for the following year, which is against policy (Rangongo; Mohlakwana & Beckman; 2016). The policy guideline stipulates that the school should project 10 per cent of anticipated enrolment to avoid a dearth of textbooks. The schools encounter inaccurate capturing of learner enrolment statistics, which result in incorrect quantities of books to be procured (Kwinda, 2013; Rangongo; Mohlakwana & Beckman; 2016).

In many schools there are no policies that regulate TLM. The lack of such policies results in anomalies that affect school planning, control, and operations, as well as unplanned ordering of textbooks in a failing procurement system. Policy must be implemented, rather than being left on paper only (Mnyeni, 2017; Changala, 2019). In some schools, the composition of the school TLM committee is not conducted properly, as neither the deputy principal nor the HOD are coordinators of the committee as per TLM policy (GDE, 2018). Majority of school principals and governing bodies encounter problems of lack of communication, battle over spending priorities and are unable to implement decisions taken at governing body meetings (Bodalina, 2012; Kwinda, 2013).

2.2.4 Consequences of ineffective management

Shortages of teaching and learning resources among other things result in low academic performance and decreased quality of education as reflected by the high number of learners repeating the class and, consequently, increased dropout rates as illustrated in Figure 6. These problems are particularly severe in the lower quintile schools, especially among coloureds, followed by African learners; and drop out is more pronounced in poorer, rural provinces such as Eastern Cape, where only 20 per cent of Grade 2 pupils from the 2001 cohort passed matric in 2011(Modisaotsile, 2012; Mnyeni 2017). Warranting that TLMs reach the schools in time at the beginning of the year is a primary challenge, which is consistently not met by service providers because of a lack of planning. Successively, these leave teachers with no option but to improvise, or make use of unsuitable methods that are not appropriate for the lessons (Phakathi, 2015, Mnyeni, 2017, Demisse, 2018).

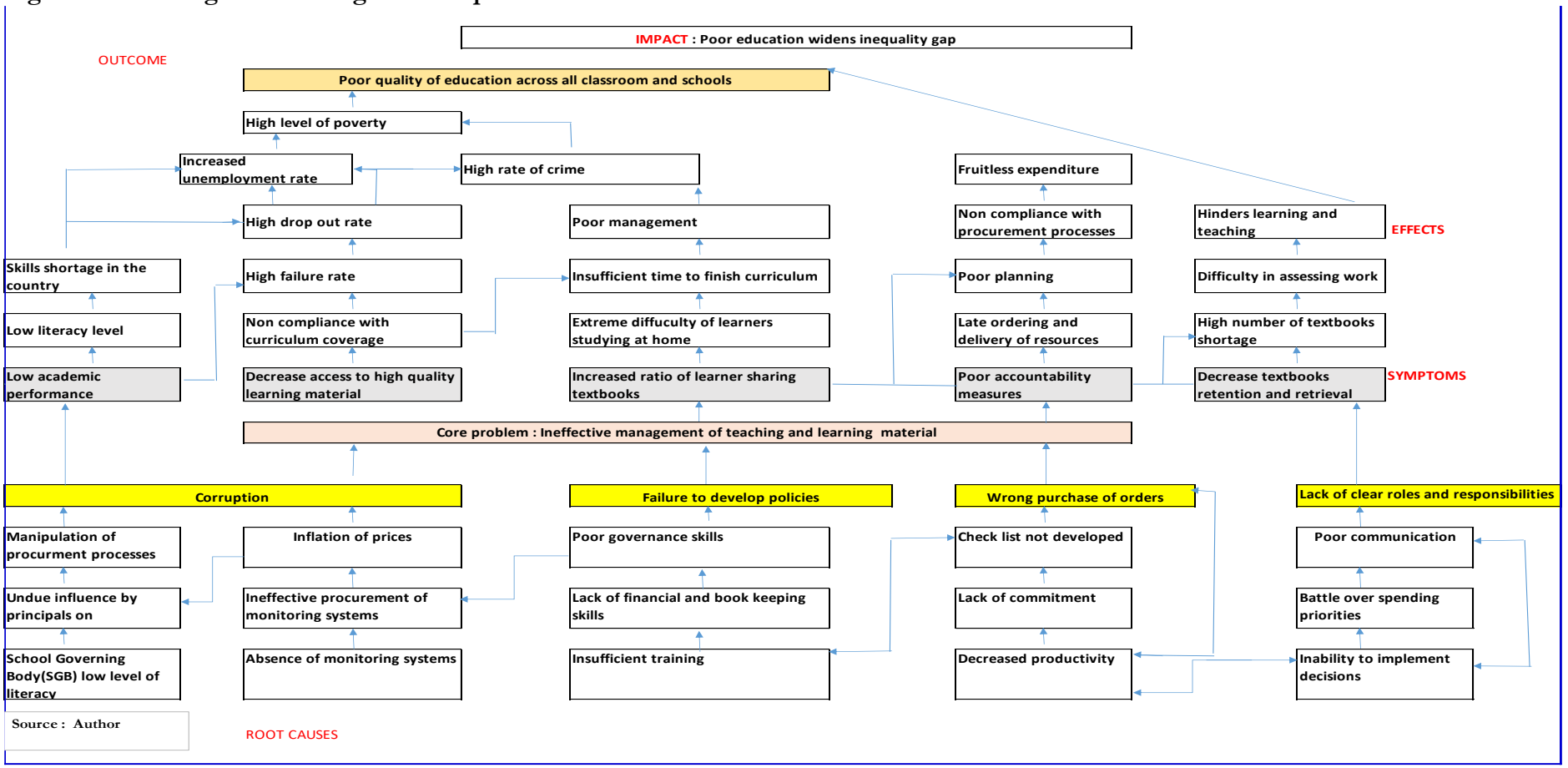
Literature confirms that high rates of unemployment occur due to many challenges, including poor educational outcomes and poorly coordinated education systems which allow many young people to drop out and become vulnerable. Persistent unemployment among the youth has negative effects on their physical and mental well-being and feed the malicious cycle of rejection

and poverty. It also has negative impacts on the socioeconomic status of the country (National Treasury, 2011; De Lannoy, Graham, Patel & Leibrandt, 2018).

A lack of accountability for textbooks that are either not delivered or delivered erroneously was cited as an example of an effect of ineffective TLM management. Financial accountability is a challenging requirement for SGBs, which may in practice pose a challenge for rural-based SGB members with minimal levels of literacy and financial skills (Thwala, 2010; Spaull, 2013; Rangongo, Mohlakwana & Beckman, 2016). Findings of Auditor General on Provincial Audit outcomes for the financial year ended 31 March 2004 revealed that unlawful, unbalanced, fruitless and wasteful expenditure costed 3,5 per cent (R5 833 billion) of total expenditure (R167,4 billion). This is regardless of the South African Schools Act 84 (1996), which outlines plans and systems in place to deliver poverty-based funding to public schools.

The ineffective use and poor management of physical resources result in unreasonable resource wastage for the state. This contributes to learners' uneven schooling, low attendance, dropping out of school; and teachers' and learners' inability to engage in the teaching and learning process (Nkosi, 2013; Bodalina 2012; Phakathi, 2015). Figure 6 illustrates the problem tree analysis of the intervention consisting of the core problem, symptoms, underlying root causes and consequences, outcome, and impact.

Figure 6: Teaching and learning material problem tree



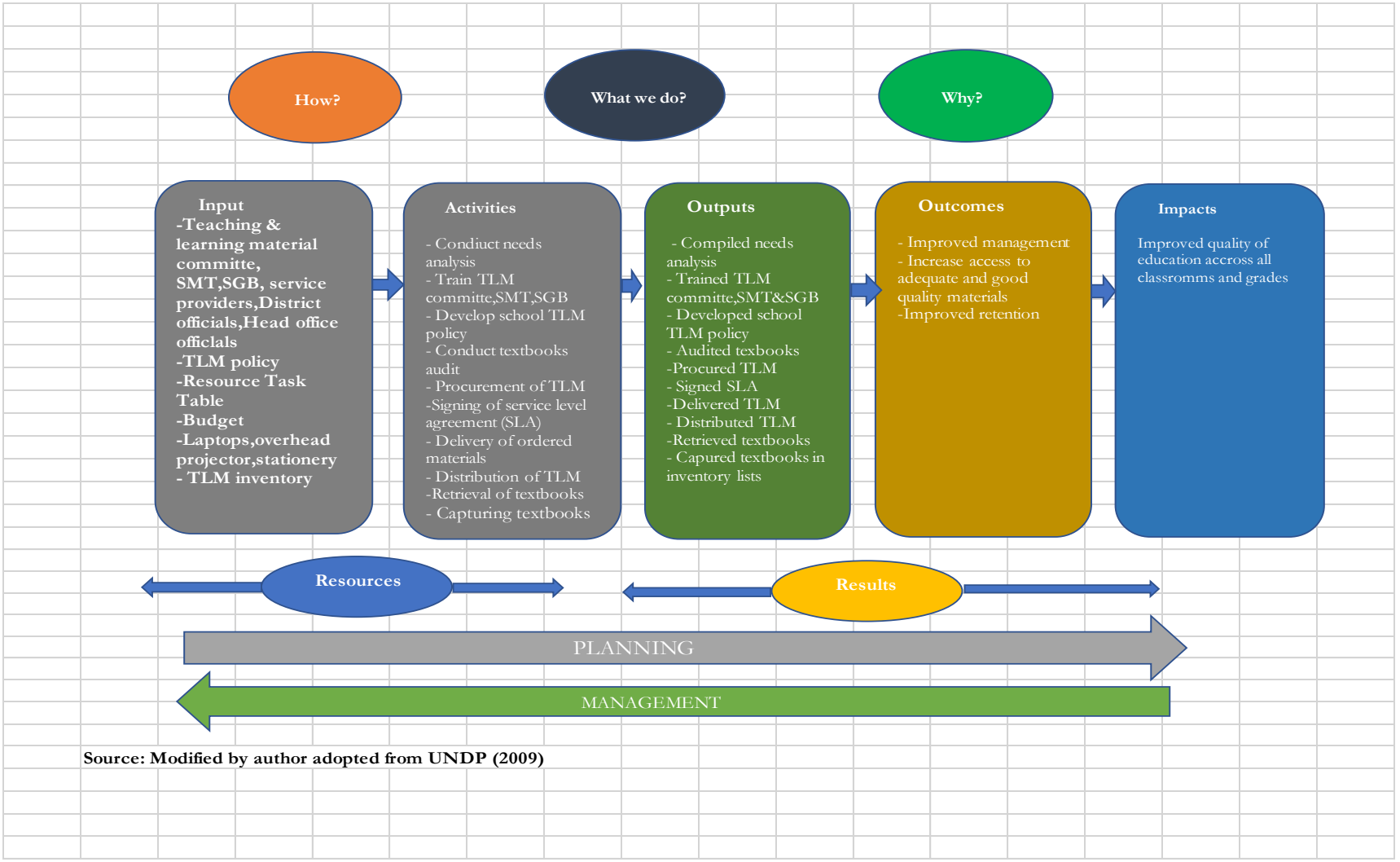
2.2.5 The results chain and the results framework relating to teaching and learning support material

This section describes the results chain and framework of TLM as illustrated in Figure 7. The results chain is defined as a visual instrument that explicitly explains what the intervention is doing and why. It specifies an arrangement of activities to undertake to achieve the intended results (Kusek, 2012; Bester, 2012). The results chain serves as a map that illustrates an assumed causal linkage between the inputs and activities, and the results produced as the outputs, outcomes, and impacts (Kusek, 2012). Figure 7 illustrates the results chain with five key monitoring and evaluation attributes (inputs, activities, outputs, outcomes, and impact) that are important for the study.

The results chain measures the performance of TLM because it is unclear what needs to be monitored and evaluated without proper planning, as well as a clear indication of the intended results. A logical framework is a management tool used to improve the design of TLM. It encompasses identifying strategic elements (inputs, outputs, impact) and their causal relationships, indicators, baselines, target values and the assumptions or risks that may influence a success and failure of the intervention (UNDP, 2009).

Impact refers to constructive and undesirable, intentional, or long-term consequences of development interventions in society (NORAD, 1999; Kusek & Risk, 2004; Görgens & Kusek, 2010). It is a higher-order level of the results chain, which hopes that its intervention (TLM) will lead to change. As shown in Table 3 the vision and long-term goal of the intervention is to improve the quality of education among South Africans by ensuring provision of and access to high-quality TLM to learners, which will enhance their performance by passing all grades, including Further Education and Training (FET) (Hurlbut,2018). Learners would be employed or would utilise their skills to participate in the broader South African economy. According to the National Development Programme (NDP) 2030, the quality of education for most black children is poor (Spaull, 2013).

Figure 7: Results chain of teaching and learning material



Source: Modified by author adopted from UNDP (2009)

Studies conducted by Norwegian Agency for Development Cooperation (NORAD) (1999), Kusek & Risk (2004), Gorgens & Kusek (2009) and Wotela (2017) affirm that outcomes are changes brought about by development intervention outputs which can be immediate, and short to medium term. Outcomes set the operational purpose to achieve the goal. Further, collective effort by the stakeholders is key when determining and choosing the outcomes (Kusek & Rist, 2004). The TLM intervention has three outcomes (illustrated in Table 3) committed to it to achieve its goal: (i) Improved/effective management of teaching and learning resources to all schools. (ii) Increased access to adequate and quality materials. (iii) Improved retention.

Outputs are products produced because of services provided from the activities of an intervention (NORAD, 1999; Kusek & Risk., 2004; Gorgens & Kusek, 2009). Parsons, Gokey & Thornton (2013) suggest that outputs are generally time-bound, measured quantitatively, and are related to inputs and activities. In the context of this study, outputs include delivery of TLM ordered, distributed materials to learners and teachers, and signed service-level agreements (Bodalina, 2012; Kwinda, 2013; Phakathi 2015). In practice, when an intervention fails to achieve its output, there is a high chance of it being unsuccessful. However, having achieved the outputs does not guarantee a successful programme (Moiloa, 2016).

There is widespread agreement (Parsons et al., 2013) that a focus on actions or processes is what needs to be done to achieve results. To achieve the above-mentioned outputs, the organisation of inputs such as funds to yield TLM intervention, outputs should be executed (NORAD, 1999; Kusek & Risk, 2004). The activities for the intervention include conducting a needs analysis and procuring resources (GDE, 2019; Bodalina, 2012; Phakathi, 2015).

Inputs are the resources (financial, material, and human) needed to implement the development intervention, programme or project as illustrated in Figure 7 and Table 3 (NORAD, 1999; Kusek & Risk, 2004). Inputs are among the imperative elements of the planning phase of an evaluation but are usually ignored during evaluation processes. The inputs for TLM are human resources such as the school teaching and learning material committee, school governing body (SGB) and educators. All stakeholders mentioned above should ensure that financial resources, such as TLM budgets and expenditure reports, are properly managed.

Indicators are defined as a specific unit of measure used to determine the success or achievements of TLM management. They can either be qualitative or quantitative (NORAD, 1999; Gorgens & Kusek, 2009; Wotela, 2017). Regardless of whether the indicators are CREAM (clear, relevant, economic, adequate, and monitored) or SMART (specific, measurable, attainable, realistic, and time-bound), they should be in line with TLM management objectives, be technically implementable, policy-relevant and practical (Kusek & Rist, 2004). Examples of the relevant indicators measuring the performance in achieving this goal, as illustrated in Table 3, are: (1) the Gini ratio/index and (2) unemployment rate reduction.

A baseline indicator is a base from where the measurements can be taken and a yardstick against which measures/impact indicators can be compared (Kusek & Risk, 2004; Gorgens & Kusek, 2009; Wotela, 2017). In the context of this study, baseline values are for example: (1) Gini coefficient dropping to 62.8 in 2017; (2) 29.1 per cent unemployment rate in 2019; (3) 87.9 per cent approved material in 2018. Baselines enable the researcher to determine and monitor the progress or change, in line with set goals (Kusek & Rist, 2004).

Targets are values of impact indicators describing expected results that should be realised by a specific group because of an intervention (NORAD, 1999; Kusek & Risk, 2004; Gorgens & Kusek, 2009; Wotela, 2017). Further, Wotela (2017) argues that a target value is what the situation is anticipated to be at the end of the activity or project. Table 2 highlights target values of the intervention, for example an estimation of 80 per cent of schools with improved TLM management by 2020.

Assumptions are hypothetical statements about the factors that might contribute to the success of an intervention (Kusek & Risk, 2004; Wotela, 2017). According to World Bank, the assumption about the results chain (impact) as illustrated in Table 3 is that there are proper resource distribution mechanisms, all schools have well-improved storerooms, and there are adequate learning resources to be distributed to teachers and learners.

Risk is hypothetical factor, event, decision, or condition outside the control of an intervention that negatively affects the achievement of desired impacts (Kusek & Risk, 2004; Dmeforpeace, 2011; Wotela, 2017). The identified risks are as follows: continued state capture and the monopolisation of the economy (StatsSA, 2018), insufficient budget allocation, dysfunctional TLM committees, and failure by schools to implement GDE TLM policy guidelines.

The management team of the TLM intervention developed a costed operational plan and an annual work plan guided by the Department of Basic Education where they are provided with goals and strategic objectives to align their operational plans with provincial ones. However, the description of terms is not in line with the results chain and framework. For example, outputs are described as outcomes, and operational plans lack assumptions and risks. The intervention is rolled out regularly but hardly achieves the desired results. The intervention results chain is not in place; one cannot attach the results framework that describes and links the indicators, baseline, targets, assumptions, and risks. The management should utilise the results framework to enable tracking the intervention and to allow for its assessment, which is the monitoring and evaluation function (Gamakulu & Wotela, 2016).

Table 3: Teaching and Learning Material (TLM) Monitoring and Evaluation results chain and log frame

Results chain level	Description	Indicators	Data source/ information source	Baseline value	Targets	Assumptions	Risks
Impact	Improved quality of education across all classrooms and schools amongst South Africans	Gini ratio/index	World Bank (2018)	Gini coefficient dropping to 62.8 in 2017	Gini coefficient dropping to 59.5 in 2030	Education will enable skills development	Continued state capture and monopolisation of the economy
		High rate of unemployment	Stats SA	29.1% unemployment rate (2019)	14% employment rate increase by (2020)	There are readily available employment opportunities for graduates	Continued corruption making it difficult for fair employment distribution
Outcome 1	**Increased access to adequate and quality material**	Percentage of high-quality curriculum material that is approved and selected for curriculum implementation	TLSM GDE policy	87.9% approved material (2018)	87.9% approve material (2020)	DBE appointed screeners managed to screen and select good quality material for schools to enhance curriculum delivery	Curriculum material not well screened
Output 1.1	Improved quality of teaching and learning through provisioning of teaching and learning materials (textbooks and DBE workbooks)	Percentage of learners having access to the required textbooks in all grades and in all subjects	Five-year strategic plan 2015/2016-2019/20	61% of learners with access to required textbooks in all grades and subjects (2011)	61% of learners with access to required textbooks in all grades and subjects (2020)	Increase rate of learner performance due to provisioning of adequate material	Poor provisioning of quality of textbooks to learners
Output 1.2	Adequate teaching and learning material	Number of schools with 100% universal coverage	Head office universal coverage report	60% schools with textbooks universal coverage (2017)	100% schools with textbooks universal coverage (2020)	Availability of budget	Mismanagement of funds

Results chain level	Description	Indicators	Data source/ information source	Baseline value	Targets	Assumptions	Risks
Output 1.3	Procurement of teaching and learning material	Percentage of TLM procurement reports captured	District consolidated procurement report	N/A	100% of schools with ordered TLM as per requisition forms	Adherence to schools and head office procurement management plan	Manipulation of procurement systems
Outcome 2	**Improved management of resources**	Percentage of schools with improved management of TLSM	Schools master files	40% of schools with improved management of TLSM by (2018)	80% of schools with improved management of TLM by 2024	There are adequate learning resources to be distributed to teachers and learners	Deviation of TLSM funds
Output 1.1.	Trained TLM committees	Number of TLM committees trained	Attendance registers	30 out of 45 committees were trained (2019) TLM processes	All 45 TLM committees to undergo training in 2020	Trained coordinators are able to implement GDE TLSM policy	Budget constraints and COVID-19 pandemic
Output 1.2	Functional SGBs and TLM committees	Number of schools with functional SGBs and SMTs	Head office school readiness reports	40% of schools have functional SGBs and SMTs	All public schools should have 100% functional SGBs and TLSM committee	SGBs and TLM committees perform their roles effectively	Lack of adherence to meet submission deadlines

Results chain level	Description	Indicators	Data source/ information source	Baseline value	Targets	Assumptions	Risks
Output 1.3	Improved storeroom management	Number of schools with improved storeroom management	TLM profiling	20% of schools improved their storerooms by 2014 and have not nominated storeroom managers	All public schools in Tshwane municipality should nominate storeroom manager and have well managed storerooms by 2022	All schools have well improved storerooms	Sealed boxes of textbooks are not visible and damaged/worn-out books and old books are scattered which makes it hard to get new books. This leads to wastage of resources
Outcome 3	Improved retention and retrieval	Number of learners appearing on textbooks retrieval list	TLM profiling	100% unsuccessfully retrieved textbooks	100% of completed retrieval lists by all schools in 2020	Appropriate resource distribution mechanism	Lost and damaged textbooks
Output 1.1	Improved distribution of resources which is reversal process of retention and retrieval	Number of learners appearing on the resource distribution list	Schools master files	N/A	100% of completed distribution lists by all schools in 2020	Proper resource distribution mechanism	Failure by parents to sign textbooks loan forms
Output 1.2	Improved textbooks quarterly audits	Percentage of audited books in electronic tool	District file	N/A	100% of completed audits by end of each term	Properly audited books and free from errors	Miscalculated stats and omission of other subjects
Output 1.3	Updated inventories	Number of all textbooks per grade per subjects in captured inventory lists	District file	40% of schools did not up-date their inventory lists	100% of updated inventory lists by all schools in 2020	All textbooks per grade per subjects are correctly captured both manually and electronically	Inventory list not up-dated, omission of newly delivered stock not captured.

2.3 Methods, data, findings, and conclusions of studies on and evaluations of absent and ineffective management

This section reviews studies that focused on management of resources in South Africa and international . Interrogating literature allows us to uncover research knowledge gaps and affords us an opportunity to select methods for research studies. In this section, we specify interpretive/theoretical frameworks as well as attributes and variables that similar studies employed. We propose methodological options to employ for our own research as part of our conceptual framework informed by literature. Ultimately, a research knowledge gap analysis should help us reflect on 'how' we should undertake our respective incumbent research to answer the research questions such that the research purposes and problem are addressed. Reviewed studies below are chronologically arranged.

Within a South African context, Kunene et al., (2004) undertook a study on the impact of resource provisions on the Implementation of Curriculum 2005. The open systems theory was used to best argue the impact of society on education system. Quantitative research strategies described the factors that affect provisional systems and the incorporation of the resources into the teaching and learning context. The study used a questionnaire as a data collection instrument and discovered that no clear lines of accountability between the teachers at school and the district TLM official. Teaching and learning material committees at school level do not ensure that all teachers are engaged in the management of resources. The Department of Education should revisit the school TLM structures and ensure that they are managed by curriculum specialists.

Yara and Otieno (2010) postulate that the education system in Kenya is developing gradually, though it is faced with several shortcomings, including inadequate TLM in secondary schools due to corruption and inefficient planning. The study used questionnaires to collect data. Data was collected by using descriptive surveys and was analysed by multiple regression analysis. The study was grounded on the Reinforcement Theory of Motivation (Skinner, 1985). The results show that a lack of TLM such as textbooks, teaching aids stationeries and laboratories affect learners' academic performance. The study concluded that government's financial support to the schools would go a long way in providing most of these learning/teaching resources required for good performance.

A study by Mohono (2010) qualitatively adopted a multiple case study design to explore the management of teaching and learning resources in three primary schools in Lesotho in the context

of free primary education. Data collected through interviews, observations and document analysis were then transcribed, organised, and categorised according to themes and patterns of responses. The findings show that the schools studied had functional resource management committees. However, the schools experienced a high shortage of resources, late deliveries of textbooks and poor record management.

Through empirical observation, Bodalina (2012) utilised experimental design to investigate the perceptions and experiences of teachers towards the management of physical resources at Gauteng East public schools. The study employed Giddens's structuration theory and quantitative research strategy framed the study. The study distributed structured questionnaires to a sample of 30 public schools by using stratified random sampling. The study results highlighted a critical shortage of physical resources in schools where the governing body was ineffective. Most public schools do not have procurement and asset management policies, which often results in unreliable and unplanned ordering of textbooks in a dwindling procurement system. There is little incentive for learners and parents to return books. In conclusion, poor textbook retrieval rates ranged between 40 and 50 per cent, which cost the country large sums of money each year.

Kwinda (2013), employing unstructured in-depth interviews, assessed the effectiveness and efficiency of the supply chain practices of textbook delivery to public schools in Limpopo Province. The study qualitatively discovered general shortages of textbooks in all three schools observed. The results indicated that the supplier's performance is not adequately evaluated. The study concluded that before an order is placed with suppliers, the department should first go through enrolment verification at each school across the province. The research-limiting factor is that the findings were based on information obtained from a limited number of schools.

Mengistu (2014) utilised a quantitative research approach and cross-sectional design to investigate the practice of educational materials management in Jimma town (Ethiopia) secondary schools. The results reviewed that management and utilisation of educational resources is insufficient. Committees for purchasing educational materials in schools are available, however there is a shortage of quality and specifications on purchasing due to the shortage of appropriately trained people. The practice of need assessment on educational material, purchasing, distribution and inventory control in the schools was found to be in poor condition. Therefore, it is fair to conclude that the management and utilisation of educational resources is mainly affected by a

lack of leader and staff skills on how to manage and utilise these resources for educational purposes. The study does not explicitly indicate which theoretical framework was used to understand the broad field of study and which conceptual framework was applied to interpret the results.

Academics, Mutungwa and Orodho (2015), undertook a study to analyse the main resource management constraints that influence students' academic performance in primary schools in Kenya. The study was based on the theory of project management. The results indicated that there was insufficient funding and inefficient management of the available physical resources. As a result, it was concluded that the teachers required better communication, and may be involved in the decision making of their school administration. Schools should have diversified ways of improving on their existing resource management strategies.

Phakathi (2015) investigated the role of the School Management Team (SMT) in TLM management in public schools guided by qualitative research and the interpretivist paradigm. More specifically, this case study design was theorised in terms of the Resource Based Theory. The data was generated through document reviews. The results indicated that the most highly rated challenges were inadequate funding and inefficient management of available physical resources. The study established that the SMT developed the school's TLM policy in consultation with the teachers in Section 20 schools, unlike in Section 21 schools where the TLM policy was developed solely by the SMT. The study concludes that it is significant for the school to develop a school TLM policy to manage textbooks effectively. The Department of Education needs to ensure that the SGBs are fully informed about their roles and responsibilities to appoint a TLM committee.

A study by Osaat (2017) quantitatively investigated the availability of resources for managing functional secondary education in River's state, Nigeria. The results highlighted that the availability of resources in schools in River's state is generally low. The study concluded that the government should adequately fund the educational sector. Parents and community leaders should provide support in the form of donations and contributions.

Demmise (2018) conducted a mixed methods study to explore the management of educational material resources in secondary schools in Yaya Gulele Woreda (district) in the North Shewa Zone of Oromia state. The findings indicated that the schools do not apply purchasing processes as planned and lack store facilities. Further, a lack of appropriate training and inefficient

administrative services were discovered. The conclusion drawn is that the management of educational material resources in secondary schools under consideration was below expectations. The study does not highlight the model, theoretical framework and conceptual framework applied to interpret the results.

Recently, Navidad (2019) used a quantitative approach to assess the status of learning resource materials utilisation and the level of management of these resources in selected public schools of Philippines. The conceptual framework addressed the problem of teachers' capability to manage and utilise Learning Resource Materials Development Systems (LRMDS) effectively. The study found that policies or guidelines set forth for learning resource materials are not utilised. Therefore, a training programme is hereby recommended for persons-in-charge or focal persons to enhance their competence in determining usability, quality, quantity, and accessibility of learning resource materials for school use.

An empirical study by Changala (2019) explored challenges faced by school management in the procurement of TLM and their perceived effect on pupils' academic performance in selected secondary schools in Zambia. The qualitative results revealed that strategies employed by school management in TLM procurement included facilitating the planning and budgeting processes, approving budgets, allocating material and financial resources, sourcing for funds and monitoring the purchase of materials. The challenges faced by school management in the procurement of teaching and learning materials included severe conditions attached to allowances from government, which downgraded the purchasing of TLM as well as absence of full-time and trained procurement officers.

Darcho (2019) employed a mixed methods study to evaluate the practices and problems of educational material management in secondary schools in Addis Ababa. The study employed a questionnaire, interviews and an observation checklist as data gathering tools. The limiting factor is that the researcher was unable to collect 5.5 per cent of the questionnaire from teachers, as there were problems of clarity and were not properly completed. The study discovered that the level of community participation in material planning and purchasing for the schools were below expectations. The lack of skilled labour on inventory systems were a significant problem, compounded by a lack of training for staff and other stakeholders in the schools' material management. The study concluded that all school leaders should develop the culture of

community participation in school material planning and purchasing since it increases the trust in school management and accelerates school activities towards their goals.

Collectively, these studies examined TLM management resources in schools, investigated the availability of such resources and effects of resource management and provisioning on learner academic performance. With the exceptions of Mohono (2010), Kwinda (2013), Phakathi (2015) and Changala (2019), who employed qualitative strategies as well as Demisse (2018), who employed mixed methods, majority of the studies employed quantitative research strategies that exposed the extent as well as the significance of management challenges. The most predominantly used data collection instruments were questionnaires, and the predominant sampling technique applied was probability sampling. All quantitative studies used descriptive survey research to gather cross-sectional data from a wide range of respondents and draw inferences regarding relationships between variables of interest.

The review uncovered that most public school's experience challenges of the absence, or ineffective management of resources. The most highly rated challenges were inadequate funding, acute dearth of resources, late deliveries of resources, lack of data verification prior to submissions, failure to implement TLM policy, lack of assets registers leading to erratic and unplanned ordering of textbooks, as well as poor record management/failure to manage inventory list. The studies concluded that the SMTs and SGBs should effectively manage the procurement of textbooks in schools. The SGB should develop the school's TLM policy in consultation with the SMT and teachers. The studies recommended that all schools should have procurement or asset management policies, to avoid wrong and unplanned ordering of textbooks. The quantitative studies reviewed have explicitly exposed the extent as well as the importance of the current research problem and answered the research questions that the respective studies pursue.

Regrettably, some reviewed studies implicitly discussed theories to understand the broad field of the study; however, there were notable shortcomings: (ii) Some studies failed to explicitly pinpoint theoretical and conceptual frameworks that were utilised to interpret the research results and findings. (ii) No study on this subject was conducted in Tshwane municipality no-fee schools. (iii) Some studies did not use variables relevant to the academic field of study to select frameworks. (iv).No programme theory was applied to interpret the research findings, which is the main focus of this study. Therefore, this study applied a quantitative research strategy and emailed self-

completion questionnaires to a stratified random sample in order gather cross-sectional data to investigate effective management in no-fee schools (Kunene et al., 2004; Mutungwa & Orodho, 2015). Descriptive and inferential statistics were used to analyse the data.

2.4 An introduction to management and its key components and processes

With the knowledge of research setting, understanding of the research problem, and appreciation of current and past attempts of similar research to identify knowledge gaps, we introduce management as the broad field of study encompassing this research. We review literature to generally understand and discuss management studies and its purpose (2.4.1), discuss some facts and issues in management studies (2.4.2), major components of management (2.4.3) and processes in management (2.4.4). This process makes it easy to understand and identify the most important attributes or variables. Identified attributes/variables provide guidance on data collection in line with the themes emerging from the reviewed literature and how they relate to the broad field of study and its components. We use these relationships to identify the theoretical or explanatory frameworks to interpret the observed findings (Gharajedaghi, 2006; Wotela, 2016). Systematic discussion of the academic field of study within which TLM management is located provides direction in the selection of the research strategy, design, procedure, and methods (Wotela, 2017). This subcomponent is the highest peak of the literature review.

2.4.1 Describing management and its purpose

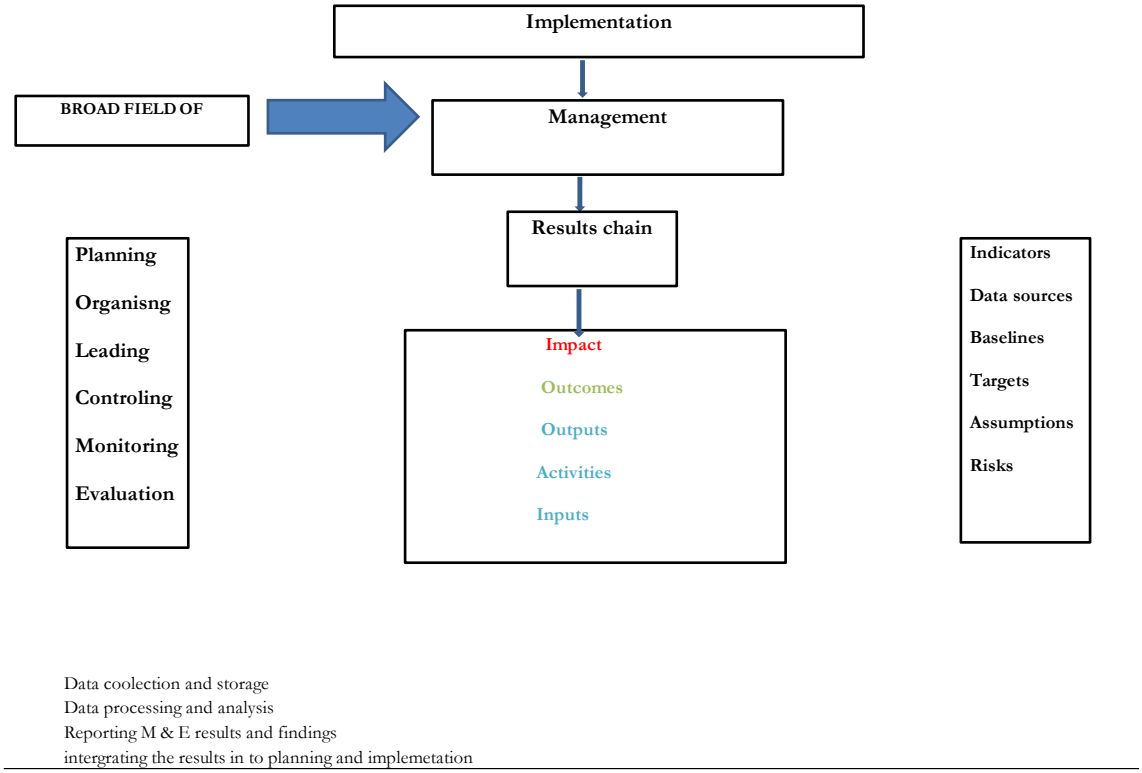
Management is a universal phenomenon. All organisations: whether business, political, cultural or social are involved in management, as that is what directs specific activities towards a defined purpose (Alvesson, 2011). There have been scholars, for example, Margaretta (2002) who discussed the concept of management. Almost all confirm that management is the art of getting things done. For example, Carroll & Gillen (2019) argue that management is a process of coordinating work activities through management functions so that these activities are completed efficiently and effectively in line with the organisational goals. However, there are conflicting views as well. One camp seems to propose that management is about dealing with difficulties. This is much more apparent in the work of Teixeira (2016) who has elaborated, management is about coping with complexity. The second camp is of the view that management requires certain knowledge, skills, and value orientation to perform their management responsibilities successfully (Khoza, Chetty, & Karodia, 2016). Drucker (1998, p.3-4) believes that "management is the organ, the life-giving, acting, dynamic organ of the institution it manages". Further, without the

institution, there would be no management. However, without management there would only be a mob rather than an institution. We therefore submit that management is the art of creating a performance and cooperation-conducive environment in which people attain organisational goals effectively and efficiently way.

Further, Figure 8 illustrates management and its components, or attributes/variables, namely inputs, activities, outputs, and outcomes. This also includes, to an extent, impact (Mills et al., 2000, CTA, 2000; Bouckaert & Doreen, 2015, Wotela, 2016) and its processes; namely planning, organising, leading, controlling, monitoring and evaluation. Figure 8 also highlights the logical framework as a management tool used to improve the design of the intervention. It should be noted that management stems from implementation which emanates from public policy. Gamakulu and Wotela (2016) doubtless argue that it is not possible to discuss monitoring and evaluation (M&E) systems without discussing implementation and its components because M&E is pertinent in the implementation of an intervention. Implementation is the use of inputs to carry out activities to achieve the short-term outputs and medium-term outcomes (Sidzumi, 2016).

The study submits that management; monitoring and evaluation would not be of existence without public policy and implementation (Sidzumo, 2016). It is therefore correct to pinpoint implementation as priority in the management discipline. In addition, monitoring and evaluation are important processes of management.

Figure 8: Management and its components



Source: Modified by author from Gamakulu & Wotela (2016)

The purpose of management is to ensure that employees comprehend their individual work goals and how the attainment of these goals are linked to the organisation's victory. Several authors such as Margaretta (2002) and Drucker (1998) agree that the purpose of management is to give direction through the organisation's mission, vision, goals, objectives, and strategies and how to achieve them, in order to reach organisational targets. Additionally, management protects the organisation's machinery and resources. The goal of all managers is to be productive by achieving a favourable output-input share within an exact period with due consideration for quality.

Therefore, we can conclude that good management includes being both effective and efficient. Being effective means conducting the appropriate task; that is, fitting square pegs in square holes and round pegs in round holes. Being efficient means doing the task correctly at the least possible costs, with minimal wastage of resources (Dean & Dean, 2012). In relation to the intervention under study, the schools' management would not be able to achieve their goal of managing and procuring adequate resources without the employees (teachers, non-teaching staff). These employees help with managing and distributing resources, conducting textbook audits, and retrieving textbooks from learners at the end of the year with the aim of making no-fee schools the centre of excellency. This study seeks to evaluate these assumptions (Dean & Dean, 2012).

2.4.2 Some facts and issues in management studies

The successful execution of management responsibilities necessitates knowledge, skills, and value orientation. The most fundamental management skills that a manager should have are technical, interpersonal, conceptual, communication, decision-making, and time management skills (Drucker, 1998; Kroon, 1990; Smit, Botha & Vrba, 2016). While management as a science requires knowledge about theoretical principles, management as an art requires the application of these principles (Kroon, 1990; Lamond, 1998; Margretta, 2002).

There are debates about whether management is a profession or not. The viewpoint of management being a profession is supported (Vegter, 1980). Drucker (1998) also supports the professional character of management by pointing that managers should be professionals and identifying the enterprise as the client of the profession. It is generally acknowledged that management involves some degree of skills. However, beyond that there is continuous debate about how to classify management as: an art, science, or profession. Cofer and Appley's (1964) view that management is a profession, a science, and an art, is generally accepted.

The most important argument in favour of social responsibility is that managers have the skills and power to deal with social problems by availing capital and making provision for facilities. Relatively, the principle of economy – where the organisation should seek to achieve the highest possible output with the lowest possible input – should be used as a measure of managerial and organisational performance (Daft & Alan, 2016). Wotela (2017, p.10-11) argues that "management points to operations management or public management of inputs, activities, outputs and, to a limited extent, the outcomes." He further confirms that operations management of activities refers to performance management as well. Further, central discussion regarding operations and performance management of interventions is a choice between the traditional public sector approach and the managerialism approach. The former is 'rule-bound and ranked, built around centralised power and authority' with pre-programmed, systemised measures highlighting compliance rather than results. The latter uses private sector management philosophies and practices to 'get things done' and, therefore, implications are results oriented. According to Wotela (2017), this debate has lost attention in recent literature.

2.4.3 Components of management

Specifically, as posited in Figure 7, the major components of this study are the elements of the results chain (Wotela, 2017). Through monitoring of an intervention, these elements – inputs, activities, and outputs – are imperative since they are crucial for accountability. Kusek and Rist (2004) define inputs as financial, human, and material resources used for the development of an intervention. These are obligatory for the implementation of interventions.

Inputs are significant for the study since they are essential in the implementation of the interventions. Intervention inputs include school TLM committees and TLM budget (Figure 7). Data collected from these inputs will assist in examining the effectiveness of the intervention. Activities are actions taken through which inputs are organised to produce outputs (Kusek & Rist, 2004). TLM activities include, for example, procurement of TLM by utilising financial inputs (TLM budget) to produce adequate TLM (outputs). Data collected from activities assist TLM unit, M&E, to prepare performance insights (Gamakulu & Wotela 2016).

Kusek and Rist (2004) suggest that outputs reflect more on immediate results of an intervention. TLM units utilise data collected from schools such as the quantity of TLM procured, and number of textbooks retrieved, to produce performance insights. As illustrated in Figure 8, data collected from schools are routine and will be utilised to assist in examining the effectiveness of the intervention. The findings will be integrated into planning and implementation (Figure 8). The variables/attributes; namely, inputs, activities, and outputs indicate the direct link they share. They also represent the change caused through the cause-and-effect relationship.

2.4.4 Processes in management

Regardless of their level, most managers perform four basic managerial tasks, which are planning, organising, leading and controlling. An additional two tasks to be noted are monitoring and process evaluation. These make up the management processes to determine and accomplish stated objectives using human and other resources (Smit, Botha & Vrba, 2016; Daft and Alan, 2016).

Researchers, for example Tshukudu and Nel (2015), describe planning as outlining the intervention goal, objectives, inputs, activities, and outputs as well as indicators, baseline values and targets for implementation. They further point out that planning is based on the vision and

mission of the institution as well as the strategic objectives of the development interventions. It is necessary to plan to use human and non-human resources effectively. It is all pervasive, it is an intellectual activity, and it helps in avoiding confusion, uncertainties, risks, and wastages (Sidzumo, 2016).

Organising is the process of bringing together physical, financial, and human resources and developing productive relationships amongst them for the achievement of organisational goals. Further, it involves determining and providing human and non-human resources to the organisational structure. Organising as a process involves the (i) identification of activities, (ii) classification or grouping of activities, (iii) assignment of duties, and (iv) delegation of authority and creation of responsibility (Ducker, 1998; Daft & Alan, 2016). The abovementioned factors are applicable to TLM intervention.

Leading refers to directing human resources of the organisation and motivating them to stimulate enthusiastic productivity towards reaching the organisation's goals. Leading the organisations means using influence and power to motivate employees to achieve organisational goals (Smith, Botha & Vrba, 2016). School management teams and SGBs must lead the intervention by advising on fundraising, procurement and TLM management (Bodalina, 2012). In the leading process, school management teams bridge the gap between formulating TLM plans and reaching goals. They transform plans into reality by influencing teachers, parents, as well as learners and create environment conducive for teaching and learning (Smith, Botha & Vrba, 2016).

Controlling implies the measurement of accomplishment against explicit standards; and the correction of deviation, if any, to ensure achievement of organisational goals. An efficient system of control helps to predict deviations before they occur. Controlling is consciously monitoring the performance of a person, group, or organisation, and taking corrective action when actual performance differs from planned performance. Monitoring and control of overall TLM budget spending, keeping documents, records, and the auditing thereof (Mohono, 2010; Bodalina, 2012; Phakathi, 2015).

Monitoring is a management tool that can be used to oversee the use of inputs, the conduction of activities and producing of outputs. However, these three parameters are not an end in themselves; they need to extend to outcomes and, consequently, impact (Wotela, 2016). Monitoring entails steady tracking of execution activities to measure progress towards targets, which includes assessing the efficient use of resources (Kusek & Rist, 2004). Monitoring operates during implementation, together with management to point out what is happening during

implementation (Porter & Goldman, 2013). However, during this stage, we should check at critical intervals if the intervention (TLM) is working and why or why not.

Process evaluation, also known as ongoing performance evaluation, is well known in research management. It is conducted primarily for internal use to address the glitches the intervention might encounter on spot during implementation; however, it is focused on the general and broad features. Progress must be monitored to keep track of the period, the spending agenda, the development towards objectives and the quality and quantity of outputs. The types and amount of services delivered, beneficiaries of those services, resources used in delivery of the services, practical challenges in the execution and their solutions should be the focus of a process evaluation. This focus is common in research management (Cloete, 2006; Gamakulu & Wotela, 2016.

In summary, we established and discussed the academic context and pointed out key aspects of the academic lens as well as aspects that makes it suitable for this study. It will thus benefit this study to consider all the identified components which are interrelated as indicated in section 2.4.3. In the absence of effective planning, organising, monitoring, and evaluating of physical assets, teaching, and learning will not be successful (Bodalina, 2012).

2.5 Attributes and variables in management studies that are key to teaching and learning material

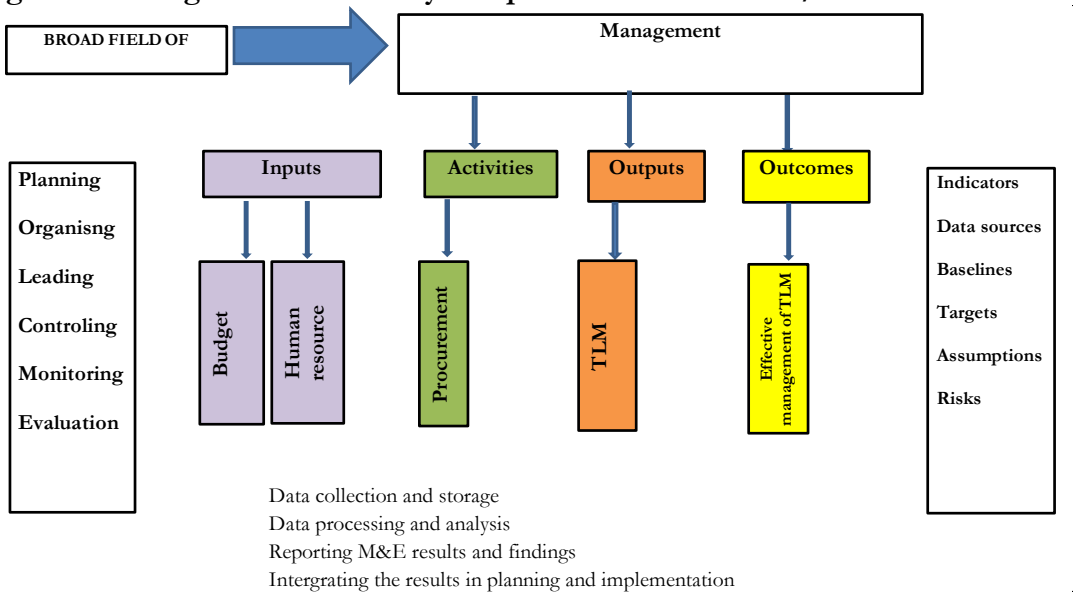
In subcomponent 2.4, we discussed the management academic field of study, where the management of TLM is housed. Subcomponent 2.5, the conceptual framework, which discusses important attributes or variables, is closely associated to subcomponent 2.4. The interrogation in this subcomponent is contextualised within the management academic discipline, which is the academic lens of this study. This subsection is a continuation of the discussion about management studies and its components (2.4.3) which assist us in reaching the qualitative attributes or quantitative variables. Researchers, for example Christensen, Johnson, and Turner (2011, p. 30) generally define a variable as "a characteristic or phenomenon that can vary across or within an organisms, situations or environments". Wotela (2016, p.147) defines attributes as "elements or features on which one collects information" and variables as "elements or features on which one can collect data that can be processed to answer research questions or test hypotheses or prove prepositions".

We systematically break down the components of the management discipline into key elements or subcomponents, which make up the attribute or variables. We apply systems thinking methodology as described in Gharajedaghi (2006) to discuss and appreciate management components until we reach key attributes/variables and indicating their linkage with management discipline. We detail resources necessary for implementing the programme at the beginning signifying how they interlink with our research questions and hypotheses to fulfil our research purpose and therefore address our research problem, being the absent or ineffective TLM management (Bodalina, 2012; Phakathi, 2015).

This subsection is pivotal as it assists in identifying the interpretative framework, model, or construct (2.6) that can potentially interpret the empirical results of our study (Wotela, 2017). Sections are presented as follows: inputs (2.5.1), activities (2.5.2), outputs (2.5.3), outcomes (2.5.4) and impacts (2.5.5). We conclude by highlighting sources of data on these variables as well as how we intend to capture this data or information of our investigations. Figure 9 depicts the academic field of management study and its key components as well its key variables of the intervention (TLM). The results chain (inputs, activities, outputs, and outcomes) is the key component of the intervention, which also acts as attributes/variables of the academic field of management (Mills et. al., 2000; Canadian Transportation Agency (CTA) 2014; Bouckaert & Doreen, 2015). It is useful to look at this process as a sequence of cause-effect relationships, in which each level of the results is related to the next one by means of achieving the previous one (CTA,2014). Key variables of the intervention as shown in Figure 9 are the key starting point for the development of a data collection tool, namely TLM budget allocation, human resource (SMT, SGB and TLM committees), procurement of TLM, procured TLM, and effective management (Bodalina, 2012; Kwinda, 2013).

Figure 9 illustrates that data is collected processed, analysed, and produces the monitoring and evaluation performance information. Data collected from schools are routine and will be utilised to assist in examining the effectiveness of the intervention. The findings will be integrated in to planning and implementation (Gamakulu & Wotela, 2016).

Figure 9: Management and its key components and variables/attributes



Source: Author

2.5.1 Inputs and key variables

Inputs are resources that a programme consumes from the environment for the management of an intervention to achieve activities and outputs (Parsons, Gokey & Thornton, 2013). The purpose of inputs is to pronounce costs and other necessities for the realisation of performance development objectives. Components of inputs encompass, for example, human resources, infrastructure, material, financial and physical resources (Kusek & Risk, 2004; Parsons et al., 2013; Wotela, 2017).

Input for the intervention includes TLM budget, material resources, stationery, laptops, and TLM policy (GDE, 2018). Therefore, the study limits its focus to budget and human resources to achieve activities, outputs, and outcomes (Parsons et al., 2013; Chen, 2015).

The school budget is a crucial aspect of the financial school management function, serving as a planning device by making use of its physical and financial resources. To put it differently, budget is a managerial tool providing an estimation of anticipated income and expenditure (Bodalina, 2012). The main purpose of the budget is, in monetary terms, to advance the best interests of the school and by leeway, the best interests of the learners. Annually, schools are allocated budget in accordance with the NNSSFP as indicated in Section 2.1. Budget allocated to schools should cover expenses linked to TLM, maintenance and services. TLM funds form part of the budget,

which consists of 50 per cent of the total allocation, which is ring-fenced and should strictly be utilised for acquiring TLM.

Kwinda (2013), Phakathi (2015) and GDE (2019) confirm that TLM budget is ring-fenced and is further split according to the following components: textbooks, learner stationery, office equipment and stationery, resources for specialised rooms such as laboratory, computer centre, and library resources. Questionably, no-fee schools always lack resources, due to either budget limits of inequitable allocation, which account for the poor performance of administrators of academic institutions (Bodalina, 2012).

The human resource variable constitutes a vital vein of any institution. Educationally, human resources in the school system consist of the principal, deputy principal, teachers, and support staff (Dangara, 2016). Additionally, the Department of Education and service providers are a part of human resources. The purpose of school human resource management is to manage, nurture, educate, plan, organise, coordinate, control, manipulate and maintain other forms of resources (Dangara, 2016; Otiento, 2010; Owino, 2012).

The variables for this study are SMTs and SGBs. Elsewhere, Phakathi (2015) and Dangara (2016) suggest various factors that affect the effectiveness of SMTs, for example incompetency as well as a lack of clear roles and responsibilities. It is significant for school structures to understand their roles in the management of schools as well as in managing TLM to be effective in their callings (Dangara, 2016).

The South African School Act (Republic of South Africa, 1996b) empowers SGBs to establish the TLM committee in the school and ensures that a member of the SGB chairs the committee. Amongst other roles, SGB develops TLM policy, and approves and signs off the needs analysis in line with allocated TLM budget. It ensures timeous procurement and delivery of TLM and sensitises parents about their liability pertaining to lost and damaged TLM including e-TLM. The TLM committee consists of members of the SMT where the deputy principal acts as the TLM co-ordinator, principals, admin clerk, e-learning representatives, and teacher librarians (GDE, 2011; GDE, 2018). The TLM committee has functions such as ensuring the implementation of TLM policy, conducting audits, compiling, and validating needs analysis, holding meetings at least twice per term, and maintaining and updating inventory. Further, committees facilitate selection of TLM and nominate a storeroom manager (GDE 2011; Owino, 2012; Phakathi, 2015; Dangara, 2016; GDE, 2018).

2.5.2 Activities and key variables

Activities are described as actions or labour that consume inputs such as purchasing equipment, building, and appointing legal guidelines and mobilising other resources (inputs) to produce outputs (Parson et al., 2013; Kusek & Risk, 2004). Components of activities relevant for the intervention include the facilitation of training, conduction of a need's analysis, procurement equipment, management of human resources, and the management of finances (Parsons et al., 2013). The study limits focus to procurement activity.

Procurement is defined as the predominant process of describing the activities and processes of purchasing goods and services from an external source. Allowing institutions to have a greater say in procurement gives them greater autonomy to determine equipment needs to satisfy curriculum and training standards requirements (Parsons et al., 2013; Jensen, 2017). Procurement in schools is either a central/close system (schools without section 21.1 c function) or decentralised/open system (schools with section 21.1. c function). Parsons at al., (2013) proves that tuning from monopolistic competitive sole sourcing from the private sector to accepted book lists has removed the need for traditional bulk procurements of TLM. Decentralisation puts procurement decisions in the hands of schools. Overpricing, and even misappropriation of funds by billing for TLM that are never delivered, is still a challenge in some systems (Parsons et.al., 2013; Jensen, 2017).

The TLM procurement process is outlined by TLM policy (GDE, 2018) as schools conducting stocktaking to determine their needs, compiling a prioritised list according to TLM budget allocation, submitting the prioritised list to the District for approval, requesting a minimum of 3 quotations from suppliers, and keeping quotations in a sealed quotation box to be opened in front of the committee during selection meetings. During the evaluation of quotations, the SGB will ensure that all quotations to be selected meet the school's specifications while considering value for money. The preferred supplier(s) is/are appointed by the SGB in a formal meeting in which all decisions are captured in minutes. Service Level Agreements (SLA) are completed and signed with the appointed supplier(s), orders are placed with the appointed supplier(s), and proof of orders is submitted to the District (GDE, 2021).

2.5.3 Outputs and key variables

Outputs are well-defined as direct products, tangible and intangible, and shorter-term changes in the capacity of persons or an organisation that results from project activities; for example, the number of clients served, number of classes taught, and amount of goods distributed (Parsons et al., 2013; UNICEF, 2017). Outputs are accomplished with the resources available and within the specified period. Output results in attainment of specified outcomes. The short-term outputs that are relevant for the intervention as displayed in Section 2.2.5 include trained school management, procured goods, distributed TLM and retrieved textbooks. The key variable as illustrated in Figure 8 is procured TLM (Parsons et al., 2013; Jensen, 2017).

TLM are "materials that are created of high quality and relevancy to meet the demands of teaching and learning of all learners in all schools" (GDE, 2011, p.4). The availability of TLM to every learner helps promote both teaching and learning in all schools. Their benefits are discussed in Section 2.1.2. TLM are categorised into textbooks, basic stationery, consumables, materials for subjects with practical assessment tasks (e.g., science equipment), non-consumables such as workshop tools and machinery, e-learning equipment, i.e., tablets, laptops, smartboards, educational hardware, and software as well as library materials (Kwinda, 2014; Phakathi, 2015; GDE, 2018). The study limited focus to the following TLM:

2.5.3.1 Textbooks

This category of materials refers to printed or electronic texts. They include learners' books, learners' readers, teachers' guides, and reference books (GDE, 2018). Textbooks are fundamental basic resources that all learners must have, and they may be retained for a longer period if they are well managed. It should be viewed as one of many resources that teachers can draw upon to generate an effective lessons and may offer a framework of guidance and orientation (Gak, 2011; Berry, Cook, Hill, & Stevens, 2010).

2.5.3.2 Stationery

This category refers to materials used by learners for writing with and writing on. It includes exercise books, pens, pencils, crayons, mathematical sets, calculators, drawing paper, tracing paper, erasers, glue and other sorts of adhesives, rulers, as well as scissors to facilitate learning and teaching (Kwinda, 2014; Phakathi, 2015; GDE, 2018).

2.5.3.3 Resources for specialised rooms

The facilities in specialised rooms supports teachers and learners in the process of teaching and learning. They include science kits, laboratory equipment, globes, maps, and chemicals (GDE, 2018). Precisely, they are involved in practical hands-on activities (GDE, 2018).

2.5.3.4 Library resources

These are the materials that can be used in the library by learners and teachers for leisure or research purposes. Library materials include resource collections, reference works, library stationery, e-resources, government or GDE publications, as well as library computer systems as stated in the National Guidelines for School Libraries (GDE, 2018).

2.5.4 Outcomes and key variables

Outcomes are anticipated or achieved short to medium term results of intervention's outputs, which are appropriate to the realisation of the intended impact. The benefits subsequent to the programme activities include new knowledge, and improved skills which lead to an envisioned change in the behaviour of beneficiaries and institutional performance (Wotela, 2017; Jensen, 2017). Outcomes signify changes in the organisation or target beneficiaries' behaviour consequently to applying the project outputs. Accurately crafted outcomes indicators are imperative instruments for warranting transparency and accountability, describing the return on donor investments and the benefits that a project delivers (Parsons et al., 2013; Jensen, 2017; Wotela, 2017).

The intervention identifies the three outcomes as follows: (i) increased access to adequate and quality material, (ii) improved retention of textbooks and (iii) effective TLM management. Therefore, this study limits the focus to outcome measures as effective TLM management. As TLM is a government non-negotiable, management should ensure the achievement of departmental objectives of a 1:1:1 ratio stating that each learner must have all learning materials for all subjects (GDE, 2011; Phakathi, 2015). Effective management is measured by the following independent variables: budget, human resource management, procurement and TLM (textbooks, stationery, resources for specialised rooms and library resources) (Gumbi, 2009; Ayaga, 2011; Bodalina, 2012). The intervention assumes that when there is adequate budget, human resource, good procurement systems and adequate TLM it will lead to the effective TLM management (Rogers, 2008).

In summary, the programme supposition is that when schools are adequately resourced, have access to quality material, and resources are properly managed, they will yield improved quality education. Further, the programme indicates behavioural changes with the assumption that learners will be increasingly skilled, contributing to decreased poverty and being employed as graduates as indicated in Table 5 of subsection 2.2.5 (UNDP, 2009).

In conclusion, the management components, and their key variables/attributes (2.5.1 to 2.5.2) have been theoretically discussed. The underlying assumption is that when the inputs are present (budget allocation, human resources), the achievement of activities, outputs and outcomes are positively impacted. Debatably, where the inputs are inadequate or compromised, neither good performance nor quality can be attained (outcome). Hanushek (2016) as cited by Roblin (2011) argues that the achievement of an individual student is directly related to inputs that are directly controlled by policy makers. These variables are directly linked with this study's research purpose (to investigate how no-fee schools manage their TLM), questions and problem, which is the absence or ineffective TLM management.

2.6 Management frameworks for interpreting empirical findings on TLM management

The sixth subcomponent of the conceptual framework is related to subcomponent 2.4, through whose lens we interrogated literature on the key variables (2.5) of this study, focuses on establishing explanatory or theoretical frameworks used to interpret and explain our research findings. This subcomponent (2.6) mainly consists of theories, which can be extended to established models and constructs. We identify and critically discuss all available explanatory frameworks, theories and models, perspectives in management as a broad field encompassing our study. Thereafter, based on the research problem, questions, and hypotheses, as well as the discussion of how our research variables are related, we select a combination of various frameworks that we apply to interpret our empirical research results. Furthermore, to convert research results into research findings. This subcomponent contributes to all research components.

A theoretical framework, as described by Wotela (2016, p.147), "is a generalised type of theory that indicates relationships between constructs or latent variables" (Wotela, 2016, p.147). Interpretive frameworks "help us explain and interpret research results" (Wotela, 2016, p.141). Using both dated as well as the contemporary literature from inventors, followers, and opponents,

we first present all noteworthy frameworks key to our academic field of study (management). Second, (2.6.1) we discuss frameworks that are key to the study (general system theory and programme theory). We discuss interpretative frameworks key for our study based on five themes (Wotela, 2017): (i) Event(s) that led to the development of the framework. (ii) How the framework was developed and its purpose. (iii) What the framework describes. (iii) The advantages and usefulness of the framework; and (iv). The disadvantages and limitations of the framework
Further, we point out how the proposed frameworks will collectively help interpret the anticipated research results and findings in our mission to answer the research questions and test our research hypotheses and in turn fulfil the research purpose and address the research problem.

Table 4 below provides a list of theories, their critical features, opponents, and critiques. After close consideration of all frameworks, the systems theory and programme theory were selected for the interpretation of empirical research data in converting results into findings. The study involves a theoretical framework outside the academic lens (M&E), which is programme theory. Monitoring and evaluation are the processes of management as indicated in the discussion of the academic field of study (2.4); the usage of the theoretical framework is attributed to its capacity to address all key variables of the study.

Table 4: Theoretical frameworks of Management and Monitoring & Evaluation

Theoretical frameworks of management and Monitoring & Evaluation			
Theory	Proponents	Features	Critigue
General systems theory pioneered by Karl Ludwig	Max Weber, F, Taylor (1911) and Fayol (1916)	Systems theory has had a significant effect on management science and understanding organisations. A system is a collection of parts unified to accomplish an overall goal. A system can be looked at as having inputs , activites,output,outcome	A key criticism of this approach is that the collapse of a sub-system can lead to the failure of the system as a whole.
Programme theory pioneered by Bickman(1987)	Robert Lilienfeld (1975);Vitaly Dubrovsky (2004);Adams (2012);Andreas Pickel, 2017	It includes scientific explanations, implicit theories, models of inputs, processes, outputs, outcomes, and the causal assumptions that connect these as well as policy statements.	Programme theory falsifies what an intervention organises and what it can realise. It can lead to monitoring and evaluations that produce an incomplete or inaccurate portrait of what is happening and make erroneous verdicts about what is effective or efficient
The Scientific Management pioneered by Theory Frederick W. Taylor (1911)	Paramboor1, Musah, Hud	The approach aimed at the reduction of operating costs , the elimination of non -essential activities and the reduction of inputs.-Systematic approach is ensure that all activities where accomplish in a systematic and scientific manner	Theory tend to "dehumanise" the workers.it over-rated the scientific methodology as completely value-free whereas this can hardly be.
Human Relations Theory pioneered by (Elton Mayo (1920) & his associates	Sherpard (1954); Kerr (1953)	The features of human elations theory are the individual employee, informal organizations, and participative management. .	Practitioners of the "human relations" approach are concentrating on an increased output in production, using the approach merely to manipulate the workers into accepting the goals of management and accommodating larger production goals.
Classical Organizational Theory Max Weber & Henri Fayol	(Shafritz et al., 2005). Onday (2016)	Highlights the role of human resources in providing, organising,deciding, coordinating, controlling activities, achieving higher returns, predominantly applied in the economic field.	This closed-system, rational theory is too narrowly focused on production and reduces the human component to simply machines
Bureaucracy Theory Max Weber	Olsen (2007)	The division of labour in simple routine tasks, the organisation of work on the basis of clear hierarchy, strict rules and regulations to ensure uniformity, avoidance of personal involvenemt	Criticism for being ill-suited to cope with the tasks, purposes, and circumstances of contemporary democracies. It is too big, powerful, hierarchical, rule-bound, indifferent to results, inefficient, lazy, incompetent, wasteful
Administrative Theory Henri Fayol (1916)	McNamara (2009), Tosi & Carroll,1982)	Theory mainly focuses on the personal duties of management at a much more granular level. Fayol believed that management had five principle roles: to forecast and plan, to organize, to command, to co-ordinate, and to control.	It has not been verified under controlled, repeatable scientific conditions.The administrative theory is accused of being full of inconsistencies and lack of sophistication (Abah,2017)
Behavioral Theory Elton Mayo(1924)	Bateman & Zeithaml (1990)	Is the results of few significant short comings of administrative theory . Management should be regarded as a social process . Function of management analytically and dynamically . (Kroon ,1990)	It neglected human side of the memebers of a business in that it assumed that pepole are only motivated by economic conciderations
Situational or Contingency Theory Fred Fiedler (1958)	Bass (1990)	It asserts that when managers make a decision, they must take into account all aspects of the current situation and acton those aspects that are key to the situation at hand(Olum,2004)	Theory has drawn criticism because it implies that the only alternative for an unalterable mismatch of leader orientation and an unfavourable situation is changing the leader.
Chaos Theory pioneered by Tom Peters (1942).	Koperski(2001)	It emerged to recognize that events are rarely controlled. Chaos theorists suggest that systems naturally go to more complexity, and as they do so, they become more volatile and must, therefore, expend more energy to maintain that complexity.	Standard ways of justifying idealisation in mathematical models fail when it comes to the infinite intricasy found in strange attracotors
Team Building Theory pioneered by Bruce Tuckman (1965)	Johnson(2010)Seck & Helton(2014)Tuckman, (1965)	It emphasizes quality circles, best practices, and continuous improvement. It is a theory that mainly focuses on teamwork	Despite the increasing interest in teamwork, much of the literature on the subject is still inconclusive
"Theory X" and "Theory Y" pioneered by Douglas McGregor (1906-1964)	Maslow (1943)	The Theory X approach assumes that most people are immature and incompetent of taking responsibility. Theory Y assumes that people find satisfaction in their work and function best under a leader who allows them to work towards their goals.	Behaviour of employees was not a result of their inherent nature, but was a results of the nature of industrial organisations, of management philosophy, policy and practice

Source: modified by author adopted from Masiapato & Wotela (2017)

Taylor (1911b) founded scientific management theory as a result of his instigations for developing the science of production studies. Taylor (1911) argued that business and management processes

could be broken down into different parts, analysed, and re-organised into the most effective paths in terms of time and productivity. Further, he claimed that managers put too much emphasis on output and insufficient emphasis on the processes involved in the development of the output. Even though Taylor is known as the father of management science, he has received severe criticism. "Seeing human factor as commodity is one of the primary criticisms directed towards Taylor" (Turan, 2015, p.1105).

Human relations theory supported by Korajczyk (1961) and McGregor (1960) was introduced by Mayo with the aim of proving the significance of employees for productivity, but not machines (Perry, 2017). Its emphasis is on employees as human beings, who should be treated as human beings and not machines. Practitioners of the "human relations" approach are concentrating on an increased output in production, using the approach merely to manipulate the workers into accepting the goals of management and accommodating larger production goals (Sherpard, 1954).

Classical organisational theory established by Taylor, Weber, and Fayol (1911b) postulate the role of human resources in providing, organising, deciding, coordinating, controlling activities, and achieving higher returns, predominantly applied in the economic field. The main merit of the classical school is significant input into the modelling of management science, the limitation of managerial and organisational functions, and the development of scientific management principles (Onday, 2016). The theory is criticised as being a closed system, rationalised, and too narrowly focused on production and reduction of the human component to mere machines.

Weber (1920), a German contemporary of Fayol, founded the bureaucratic theory which emphasises the hierarchical business structure. The theory faced lasting and relentless criticism for being ill-suited to cope with the tasks, purposes, and circumstances of contemporary democracies. "It is too big, powerful, hierarchical, rule-bound, indifferent to results, inefficient, lazy, incompetent, wasteful, inflexible, unaccountable, inhumane, and harmful for democracy, economic efficiency and individual freedom" (Kroon, 1990).

Fayol (1925) established administrative theory, which mainly focuses on the personal duties of management at a much more granular level. Fayol (1925) believed that "management had five principal roles: to forecast and plan, to organise, to command, to co-ordinate, and to control" (Olum, 2004, p.15). Fayol (1925) explained his famous basic functions as follows: technical activities, commercial activities, financial activities, security activities, accounting activities and

managerial activities (Kroon, 1990; Robbin, 1991; Olum, 2004). The administrative theory is accused of being full of inconsistencies and lacking sophistication (Olum, 2004).

Mary Parker Follett, Hugo Munsterberg, and Elton Mayo (1927-1932) are all considered inventors of the behaviourism theory. It neglected the human side of the members of a business and assumed that people are only motivated by economic considerations. Further criticism was that the "theory did not have realistic basis and focused too much on authoritarian leadership" (Bateman & Zeithaml, 1990, p. 48).

Fred Fiedler (1958) pioneered the situational/contingency theory. The essence of a contingency approach is that when managers make decisions, they must consider all aspects of the current situation and action those aspects that are key to the situation at hand (Olum, 2004). The best management style is determined by the situation in which the managers work. This theory has drawn criticism because it implies that the only alternative for an unalterable mismatch of leader orientation and an unfavourable situation is changing the leader (Bass, 1990).

The Chaos Theory, led by Tom Peters (1942), acknowledges that events rarely controllable. Chaos theorists posit that systems trend towards increased complexity and, as they do so, increase in volatility; this means they therefore have to spend more energy to maintain that complexity. The theory is criticised, as standard ways of justifying idealisation in mathematical models fail when it comes to the infinite intricacies found in strange attractors (Koperski, 2001).

Team building theory pioneered by Tuckman in 1965 emphasises quality circles, best practices, and continuous improvement. It is a theory that mainly focuses on teamwork. Despite the increasing interest in teamwork, much of the literature on the subject is still inconclusive (Seck & Helton, 2014).

McGregor (1960) hypothesised management ideas as confined in "Theory X" and "Theory Y". Theory X assumes that people are lazy, dislike work and therefore must be coerced, led, and directed. Theory Y assumes that people find satisfaction in their work and function best under a leader who allows them to work towards their goals (Olum, 2004; Nsuba, 2009). The weakness with this approach was employee behaviour was not a result of their inherent nature, but instead a result of the nature of industrial organisations, of management philosophy, policy, and practice (McGregor, 1960).

The quantitative management approach founded by Frederick Taylor is hardly used and known by managers (Olum, 2004). It emerges from operations research and management science. It is a mathematical and statistical solution to problems using optimisation models, and computer simulations. It is most effective in management decision-making rather than managerial behaviour translated in practice by managers (Kroon, 1990; Olum, 2004).

The management theories nested in the management academic lens have been discussed. Important as they are, they do not integrate all variables of research interest and, therefore, they do not relate to the research questions and hypotheses. Having highlighted their limitations, they cannot be used to interpret the results of the study and empirical findings (Wotela, 2016).

2.6.1 General system theory

The world is interconnected and complicated as such we need new ways of thinking to make life simple, and systems thinking theory is the unsurpassed tool for that. General system theory, pioneered by Bertalanffy (1968), emerged as a result of technology where computers had an intense effect (Leighninger, 1978; Dubrovsky, 2004). In agreement with the pioneer, amongst others, (Leighninger, 1978) argues that GST exploded in the world of human behaviour research as a new way of looking at humans and their environment. Everything one does (input) produces a reaction from others (feedback). As a result, individuals can change the entire system simply by changing their input.

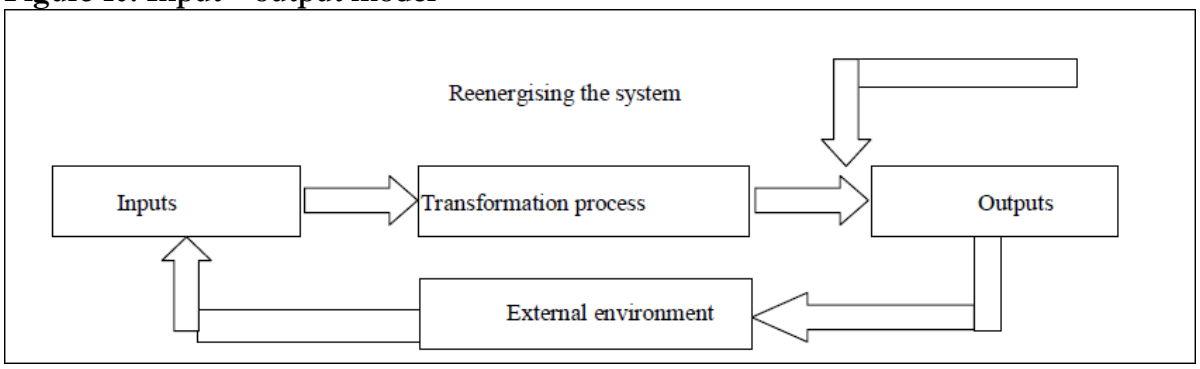
The origins of GST development are multidimensional and have emerged to bridge the communications gaps amongst disciplines. It looks at the whole in relation to its parts (Bertalanffy, 1968; Leighninger, 1978). However, amongst antagonists, the work of Adams (2012, p.210) designates that "the formal correspondence of general principles, irrespective of the kind of relations or forces between the components, led to the conception of a general systems theory".

The purpose of GST is to investigate the isomorphy of conceptions, laws, and models from numerous fields, and to assist in valuable spreads from one field to another. It sets standards which are applicable to systems in general, or distinct subclasses. GST traces out structural similarities, and structural differences, between 'substantively' different systems (Bertalanffy, 1968; Leighninger, 1978). Management can use the theory to solve problems (as highlighted in subsection 2.2.2) by tying together all the specialisms that are needed (Chikere at al., 2015).

The GST is described as the general science of "wholeness". The basic pattern of an operative system depicts an input-processes-output and outcomes model. It outlines an organisation's internal and external behaviour (Chikere et al., 2015). Internally, it can be seen how and why people inside the organisations conduct their individual and group tasks. However, an organisation's dealings with other organisations can be measured externally (Chikere at al., 2015).

Chikere at al., (2015) believe that not every organised enterprise exists in a vacuum. It depends on its external environment – which is a part of a larger system – such as the industry, the economic system, and the society in which it operates. In consensus, Weihrich et al, (2008) as quoted in (Chikere at al., 2015) posit that the organisations (schools) receive inputs (learners), transforms (teaching and learning) them, and exports the outputs to the external environment (graduates) as shown in Figure 10. In their own opinion, the model requires an expansion of processes, or operational management that indicates how the various inputs are formed through the managerial functions of planning, organising, staffing, leading and controlling (Gumbi, 2009).

Figure 10: Input – output model



Source: Chikere & Jude (2015, p.334)

General systems theory is useful as it supplies socioeconomic inputs that will attain organisational goals. The objectives are to produce outputs of maximum usefulness to its system. It provides a general framework of philosophies, which allows an inclusive vision of the field (Bertalanffy, 1968; Leighninger, 1978). GST assist in generating TLM issues, capturing and framing knowledge, sharing concepts, focusing discussion, and reaching consensus.

The work of Bertalanffy (1973) recognised the need of any organisation to interact with its external environment, unlike what was proposed by classical school theorists such as Max Weber, Taylor and Fayol who viewed organisations as a closed system. According to them, an organisation should operate in open system to survive. What made system concepts become

recognised worldwide as an approach to be adapted by organisations was their efficiency and effectiveness in dynamic and changing environments. The GDE adopted this view as it moved away from a closed system where TLM is prescribed and procured by the GDE for the schools, to an open system where schools choose the teaching and learning materials for themselves, some buying them outright and some buying them through the Department (Kunene et al., 2004).

Conversely, input-output printouts proved virtually unintelligible. A complex model can contain more information than a simpler model but translates to increased costs in which more resources are consumed, and more time is spent on internal processing. Scholars completely agree that description by differential equations is not only a clumsy one but, in principle, an inadequate way to deal with many problems of organisation (Bertalanffy, 1968; Adams, 2012; Leighninger, 1978). The key criticism of this approach is that "the collapse of a sub-system can lead to the failure of the system as a whole" (British Academy of Management, 2014).

2.6.2 Programme theory

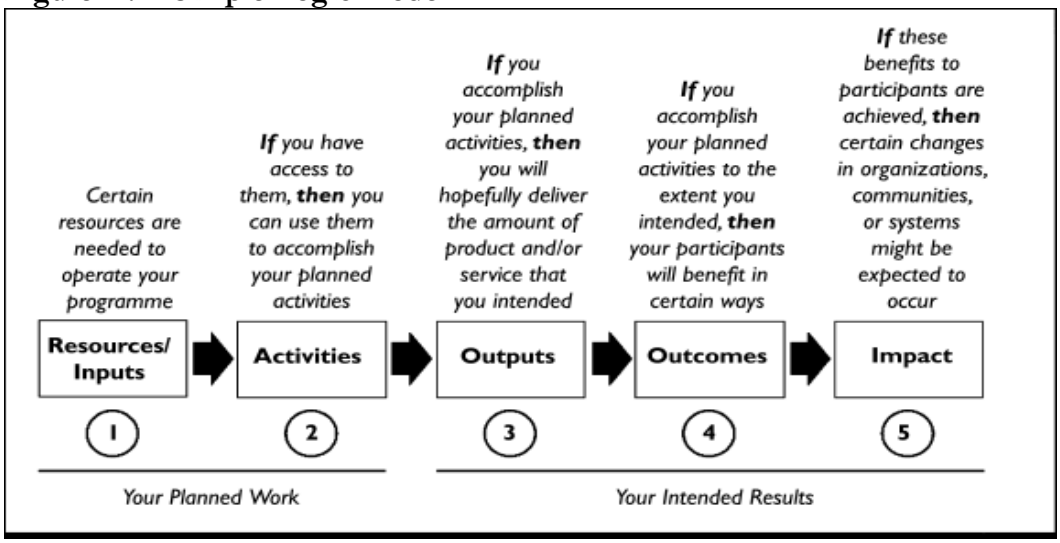
Bickman (1987), a pioneer of programme theory, supported by a multiplicity of scholars such as Weiss (1998), Birckmayer & Weiss (2000) and Chen (2015), investigated the theory to explain how the incentive may function because of the theoretical worthlessness of the study. However, there are divergent views about events that led to development of programme theories. For example, the work of Donaldson (2007, p.2) "examined the history of theories of programme evaluation practice and development of a three-stage model showing how evaluation practice evolved from an emphasis on truth, to use, and then towards integration."

Literature reveals that programme theory arose from the tradition of theory-driven evaluation (Bickman, 1987; Chen, 2015). However, conflicting views, such as Donaldson (2007) postulate that it developed to have an excellent knowledge base about social programmes, and how to construct value judgements. It was developed during the planning process and was tested during the evaluation (Birckmayer & Weiss, 2000). Programme theory improves our ability to generalise from specific evaluations. It assists policy makers to open the box of effective programmes, to understand how they work, and why programmes comprehend the results (or lack of results) that programmes accomplish.

Management of TLM can be understood within the context of programme theory. Noticeably, programme theory is a construction of logical model of how a programme is supposed to work. Logic models, as depicted in figure 11, used in programme theory display a single linear causal

path, linking programme inputs, activities, outputs and intended or observed outcomes, and then use this model to guide the evaluation (Bickman, 1987; Rogers, 2008). The model assumes that if there are extant resources to operate an intervention (e.g., budget) they can be used to accomplish planned activities (e.g., training) if you accomplished your activities then you will lead to the delivery of the amount of products intended (trained TLM committee). If you have accomplished your planned activities to the extent you intended, then participants will benefit in certain ways, such as improved management. If these benefits to participants are achieved, then certain changes in organisations, communities, or systems might be expected to increase the quality of education (W. K. Kellogg Foundation, 2004, Rogers 2008).

Figure 11: A Simple Logic Model



Source: Rogers (2008 p.33)

The uses of programme theory can be categorised into four clusters: planning, management, monitoring, and evaluation, and synthesised for evidence-based policy and planning. Programme theory can help different stakeholders develop a common understanding of the programme or recognise differences in what they value and what they believe happens. It enables the evaluator to check on programme progress and impact before the programme is conducted (Bickman, 1987; Weiss, 1998; Scriven, 1998; Chen, 2015).

Advantageously, programme theory clarifies how a programme is expected to work. It offers a coherent, theory-based link between programme activities and learning outcomes. It assists in setting realistic objectives. It provides accountability to founders and allows professionals to deliberately construct programmes that should theoretically "work" and use assessment in a positive way to test this hypothesis. Furthermore, it provides structure to the interpretation of

result. This is echoed by literature proving that it improves the generalisability of evaluation results (Bickman, 1987; Weiss, 1998; Birckmayer & Weiss; Donaldson, 2007). If a programme theory is clear and has been evaluated successfully, it can afford policymakers the opportunity to implement similar constructs in other relevant programmes (Rogers et al., 2000; Rogers, 2008).

Like any other theory, programme theory also has its hindrances. It can lead to monitoring and evaluations that produce an incomplete or inaccurate portrait of what is happening and make erroneous verdicts about what is effective or efficient. It can demotivate staff and reflect attention from what is important to only what can be easily measured. An instrument to develop programme theory is too simplistic and limits programme theory to linear associations. It is often grounded on guesses, assumptions, or limited personal knowledge (Bickman, 1987; Weiss, 1998; Donaldson, 2007).

2.6.3 General systems theory and programme theory of TLM management

We conclude by implicitly deducing that theoretical frameworks for this intervention are pivoted on GST (Bertalanffy, 1968) and programme theory (Bickman, 1987). Collectively, they complement each other, and help the study to develop research questions, limit the scope of the relevant data by concentrating on specific variables focusing on the measurement of changes that can occur given the strategies operating at systems, programmes, and client level (Swanson, 2013; Abend & Gabriel, 2013). GST and programme theory provide a foundation for one or more a priori hypotheses pertaining to what the data might reveal and to some degree guides the research design and data analyses. They include possible explanation of cause and- effect relationships (Leedy & Ormrod, 2019). Both frameworks afford a worthy foundation for the effective interpretation of empirical data. Objectively, they are geared at showing an understanding of what they are all about and their application in management studies (Abend & Gabriel, 2008).

Literature reveals that the use of both theoretical frameworks can be categorised into four clusters: planning, management, monitoring, and evaluation. Planning of TLM systems in this study such as procurement, distribution, textbook retention, inventory, training of TLM committee should occur before the intervention to increase the chances of programme success. The results chain (inputs, activities, outputs, outcomes) as emphasised in both theories is used as an important tool to measure the performance of TLM management. The underlying assumption of the model as presented in both frameworks is that when the inputs are adequate (budget allocation, SMT/SGB/teachers), the achievement of activities (procurement), outputs (procured textbooks) and outcomes (improved TLM management) are positively impacted.

GST (Bertalanffy, 1968) seeks to understand how no-fee schools "administer resources and procurement systems in an effective and efficient manner in order to ensure the realisation of the outcomes" (Kunene et al., 2004, p.17). Adams (2012) confirms that systems theory is the foundation for understanding multidisciplinary systems. This study will benefit from the application of systems theory as a lens when viewing multidisciplinary systems such as procurement, distribution, retrieval systems and their related problems as posited in subsection 2.2 (Adams, 2012). Systems theory helps SGBs as school TLM policy makers to develop a shared understanding of complex issues and creates innovative and sustainable solutions by using systemic approaches (Ramosaj & Berisha, 2014).

The programme theory requires that a researcher make explicit underlying assumptions about how a programme (TLM) is expected to work (Rogers et al., 2000). It also aids focus on the evaluation on key results and provides structure to the interpretation of results. Further, it improves the generalisability of evaluation results (Bickman, 1987; Birckmayer & Chen, 2015). Therefore, programme theory by Bickman (1987) will be used to assess the usefulness of TLM.

Data was collected and analysed to test the underlying assumptions. Both theoretical frameworks bring together existing evidence, usually after data collection, to explain how the intervention is working. Therefore, we use domains to check if the results that we are getting are within the parameters of the theory, e.g., inputs, activities, and outputs. This implies assessing if what was envisaged can produce the intended outcomes. Subsequently, our study benefits from application of both theoretical frameworks to interpret our research results (Bertalanffy, 1968; Bickman, 1987).

2.7 A conceptual framework for TLM management

The purpose of this research was to empirically establish how no-fee schools in Ekangala Township manage their TLM. This paper is limited to conceptualising 'how' we intend to pursue this study. Precisely, we develop a conceptual framework, which is the main outcome of the literature review, that is an advance outline on how the research advanced beyond the literature review (Kumar, 2014; Wotela, 2017). With the aid of a diagram (Figure 12) we summarise the literature that we have reviewed (2.1-2.6) of the (i) research physical setting or context, (ii) research problem, (iii) research 'theoretical' knowledge gap (iv), academic field of study and its components, (v) the attributes and variables key to the research, (vii) the established frameworks

that we will use to interpret our research results (Wotela, 2017). More specifically, how best are we going to collect, collate, process, analyse, present and interpret our empirical research results to be converted to research findings (Kumar, 2014; Wotela, 2017).

The study reviewed literature to present a brief history and description of no-fee schools in South Africa, then focused on Tshwane municipality (Ekangala Township) in relation to the research problem. South African School Act 84 of 1996 gives authority to SGBs to formulate policies such as finance, procurement of TLM as well as textbook retrieval (Bodalina, 2012; Phakathi, 2015).

We reviewed literature and analysed the research problem which identifies general management challenges such as manipulation of procurement processes, failure to develop policy, poor distribution, and retrieval models. Therefore, the study focusses on the following root causes which also links with key variables/attributes of the study i.e. (i) lack of relevant financial and` governance skills by SGB to manage resources effectively, (ii) insufficient or absence of monitoring systems, and (iii) insufficient training which contributes to inefficiencies that slow schools' improvement and development plans (Thwala, 2010; Xaba, 2011; Bodalina, 2012; Phakathi, 2015). Symptoms include decreased retention of textbooks and poor accountability measures. Ineffective management results in inadequate TLM, low academic performance and high dropout rates (Etsey, 2005; Mogonediwa, 2008; Phakathi, 2015). Table 5 below collectively summarises literature on international and local studies that have attempted to investigate absent/ineffective TLM management to detect knowledge gaps.

Table 5: Summary of past and current similar studies

Similar past and current studies reviewed for research knowledge gap analysis	Kunene (2004), Yara& & Otieno (2010), Mohono (2010), Bodalina (2012), Mengistu (2014) Mutungwa & Orodho (2015) Phakathi (2015) Osaat (2017) Demisse (2018) Rowenda & Navidad (2019) Changala (2019), Darcho (2019)
Aims and objectives	The studies examined management of teaching and learning resources in schools, determining the availability of such resources in schools
Research strategies, design, procedure, and method	Four studies employed qualitative strategy, majority of the studies employed quantitative research strategy using descriptive survey to gather cross sectional data and case study design was also employed. Most studies used a questionnaire to collect data as well as probability sampling techniques
Results they presented	Inadequate funding, acute dearth of resources, late deliveries, lack of data verification, failure to implement TLM policy as well poor record management
The key discussions and conclusions	The studies concluded that the SMTs and SGBs should effectively manage the procurement of TLM in schools. The SGB should develop the school's TLM policy in consultation with the SMT and teachers

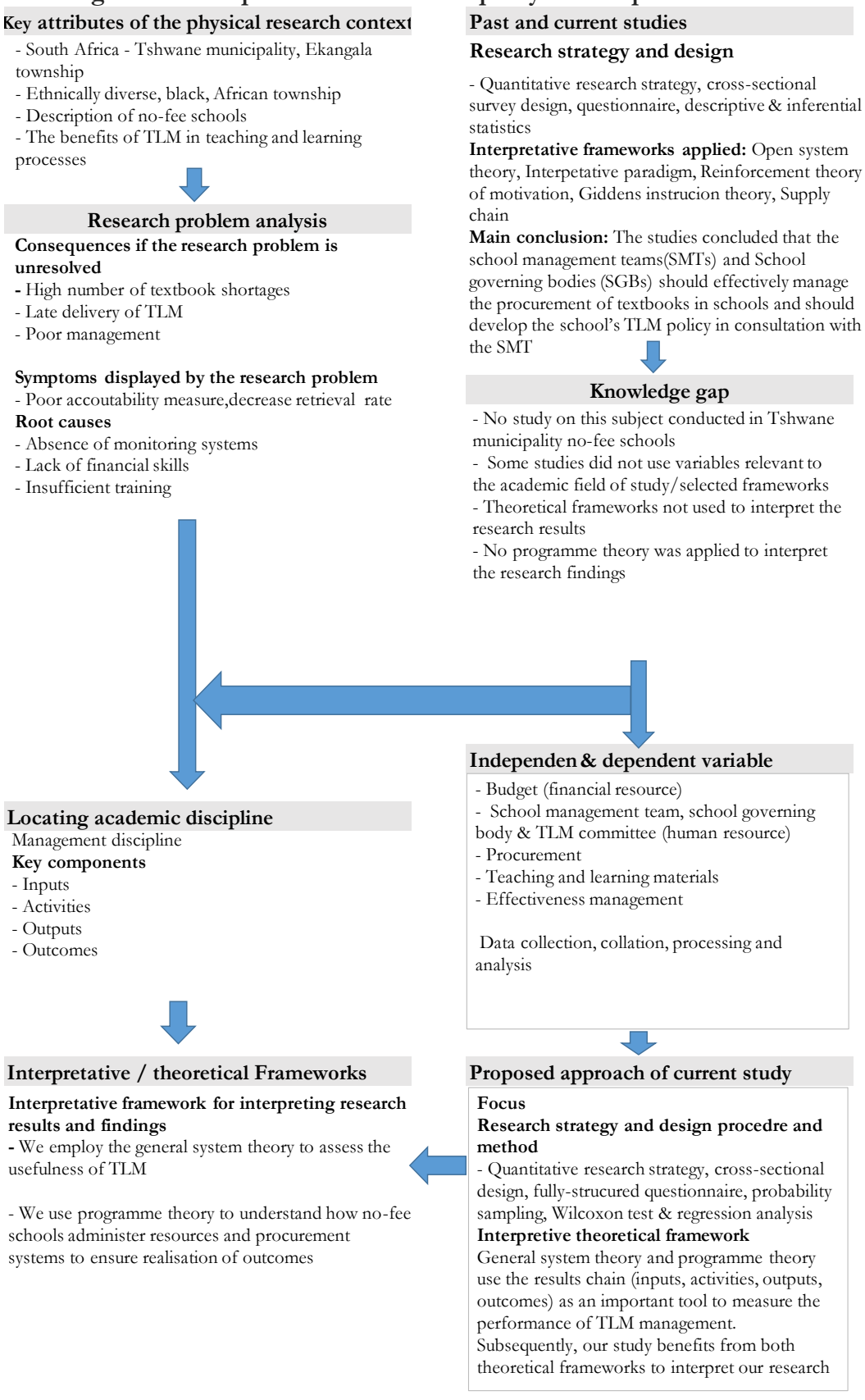
Source: Author

We propose contextualising this research within the academic field of management (2.4). Major components are the elements of the results chain. Arising from the decision above, we systematically break down the components of management (2.4) into key elements or subcomponents by applying systems thinking methodology Gharajedaghi (2006) in anticipation of reaching key attributes/variables and indicating their linkage with management discipline.

Moreover, the study employed a quantitative research strategy to investigate the effectiveness of TLM management (2.3). Cross-sectional research design is suggested to gather data from a wide range of respondents (Kunene et al., 2004; Mutungwa & Orodho, 2015). The data collected was analysed using descriptive statistics, and the Wilcoxon test and correlation coefficient are used to

test the hypotheses. Chapter 3 below details the approach mentioned above and why is deemed suitable for this evaluation research.

Figure 12: Management of teaching and learning material in no-fee schools: The case of Ekangala Township in Tshwane Municipality : Conceptual Framework



Source : Author

3 RESEARCH STRATEGY, DESIGN, PROCEDURE AND METHODS

This study addresses the main question of how no-fee schools in Ekangala Township manage teaching and learning material. The study reviewed literature and developed an interpretative as well as a conceptual framework that will guide the choices of techniques that are used in the study. This chapter describes the research strategy/approach, research design, procedures and methods employed to collect, process, and analyse the data. Broadly, this chapter covers five key areas: namely, identifying and describing the research strategy (Section 3.1), the research design (Section 3.2), as well as the procedure and methods (Section 3.3). The chapter also describes the reliability and validity measures (Section 3.4) that this research applies to ensure credibility as well as the technical and administrative limitations of the choices made (Section 3.5).

3.1 Research strategy

Research strategies are plans, procedures, and practices that govern the research, providing guidance on how research is to be conducted as well as on choices from philosophical assumptions to detailed research designs, data collection methods, analysis, and interpretation. Further, it converts ontological and epistemological principles into guiding principles showing how the research is to be conducted and administered (Bryman, 2016; Babbie, 2016; Creswell; 2018). In the discipline of social research, there are three research strategies; namely qualitative, quantitative, and mixed methods (Bryman, 2016; Babbie, 2016; Creswell & Creswell 2018).

In view of the conceptual framework, the study applied quantitative research based on the research questions and accompanying hypotheses, existing knowledge on the subject, the population and the assumptions made when reviewing relevant literature. The strategy emanates from the positivist approach paradigm, implying that the researcher deals with a cause-effect relationship derived from general theory, then comes to the measurements of the social world (Neuman, 2014). The latter applies to research that was undertaken in the investigation of TLM management by exploring the variables affecting said management and the results helping the practical implementation of sustaining TLM.

Quantitative research strategy relates to the application of numerical data to collect, process, and analyse empirical data (Kumar, 2015; Bryman, 2016; Babbie; 2016). The strategy involves a deductive approach to the connection between theory and research (Kumar, 2015; Bryman, 2016;

Babbie, 2016). Such research focuses on the variables under investigation and how they relate to each other, how they affect different groups, or how they might be defined. The emphasis of this research is specifically on measuring and examining relationships amongst variables to answer research questions and test hypotheses through survey and experiments (Neuman, 2014; Kumar, 2014; Bryman, 2016).

Bryman (2016), posits that quantitative research exemplifies external objectives of social reality, employs logic that is systematic, and follows a linear research path. The abovementioned features of a quantitative research strategy offer copious value for this study as it allowed for testing objective theories by examining the rapport among variables. These variables (budget, human resources, procurement, TLM, effective management) in turn, were typically measured and analysed using statistical techniques. Over and above, this strategy has successfully been employed in similar empirical studies.

Similar study, Kunene (2004) employed a quantitative strategy to investigate the impact of resource provisioning at schools. Quantitative strategy was applied to describe the factors that affect provisional systems and the amalgamation of the resources into the teaching and learning context. The advantages are that variables could be quantitatively measured. The strategy explicitly and precisely specified the independent and the dependent variables under investigation. The incumbent study managed to measure its objectives and uncover if the relationship does exist amongst variables.

Bodalina (2012) conducted a study to probe perceptions and experiences of teachers towards the management of physical resources at public schools. Quantitative research was utilised to attempt to discover relationships that will predict the influence of physical resource management at schools. Quantitative strategy is beneficial as it can generate hypotheses from the theoretical framework and answer questions through applications of scientific procedures. Since the strategy uses deductive reasoning, the study benefited in terms of theory and hypothesis testing.

Finally, a study by Mengistu (2014) investigated the practice of educational materials management to determine the major challenges that affect the effective utilisation of educational materials in Jimma town secondary schools. The quantitative approach was used to answer the basic research questions better. The strategy entails a deductive approach to the relationship between theory and research, it also has incorporated the practices and norms of the natural scientific model and of positivism and embodies a view of social reality as an external, objective reality. Like the study

above, the study undertaken was able to test for the hypotheses and ensure that the research questions are answered.

In sum, previous studies have proven how the systematic and objective nature of the quantitative research strategy, together with its statistical tools, enabled them to answer their research questions. Consequently, as proposed in Section (2.7) this study also applied the quantitative research strategy. Further, its systematic and observation measures qualified the researcher to collect data that was in turn used to quantify the results of TLM management in no-fee schools in Ekangala Township. There is possibility to generalise research findings to a certain extent.

3.2 Research design

A research design provides a framework for the collection and exploration of data (Bryman, 2016). It is a logical, systematic, and comprehensive plan for providing specific direction in research in order to empirically collect data in research (Leedy & Ormrod, 2019; Bryman; 2016; Creswell & Creswell, 2018). Phrased differently, it is a blueprint for empirical research aiming at answering the research questions or testing hypotheses and must specify the process of developing data collection instruments and sampling processes (Bryman; 2016; Creswell & Creswell, 2018). When conducting research, there are five generic research designs to select from: cross-sectional, longitudinal, case study, quasi-experimental, and comparative design (Neuman, 2014, Kumar, 2015; Bryman, 2016).

The study utilised a cross-sectional design which comprises of observations of a sample, collection of data on a sample, a cross-section of a population or phenomenon that are made at one point in time. Both descriptive and explorative studies are often cross-sectional. Participants from two or more age groups are sampled and the groups' characteristics or behaviours associated. Quantitative data is collected linking with two or more variables, which are then examined to discover patterns of connotation (Leedy & Ormrod, 2019; Kumar, 2016; Bryman, 2016).

Bryman (2016) further posits that, for researchers to establish variation between cases, it is necessary to have a systematic and standardised method for gauging variables. It involves the observations of cross-section, which is simply a sample of population or phenomenon of interest (Babbie, 2016). It is usually the simplest and least costly alternative, but rarely captures social processes or change (Neuman, 2014). It is only conceivable to survey relationships between variables with a cross-sectional design. "There is no time ordering to the variables because the

data are collected simultaneously and the researcher does not manipulate any of the variables" (Bryman, 2016, p.50). The latter denotes how the case of Ekangala schools was treated without manipulating variables as it was done simultaneously.

This study takes after Mutungwa and Orodho (2015) who used cross-sectional survey design to examine the resource management strategies in relation to learners' performance in national examinations in public primary schools of Makindu district, in Makueni County. The study gathered cross-sectional data from a wide range of respondents and noted interrelationships between the various variables of interest (2013; Orodho, 2009).

A study by Ahmed and Khanam (2014) utilised a cross-sectional survey to investigate the relationship between learning resource management strategies and academic achievement. The cross-sectional research design was used as it captures data at a specific point in time for all the schools in the Ekangala area. The design is not costly to perform and is time efficient. Like Ahmed and Khanam (2014) this study utilised cross-sectional research design, as it contains multiple variables at the time of the data snapshot.

Mengistu (2014) conducted a study to investigate the practice of educational materials management and to determine the major challenges that affect the effective utilisation of educational materials in Jimma schools. Data was collected by employing a cross-sectional design. The cross-sectional design is considered appropriate for this research as data was collected at one point in time regarding people opinions and beliefs. It is beneficial to the study as it also allowed the researcher to gather current data about the problems that comes across in those particular school's representative of Ekangala Township and the definite practices they accomplished as well as their commitment regarding efficient and effective TLM management.

This study preferred cross-sectional design over others as it informed the researcher about the possible results that could be similar and applied to the rest of Tshwane, and to similar settings in no-fee schools. The study was able to measure the independent and dependent variables at the same point in time using a single questionnaire (Demisse, 2018).

3.3 Research procedure and methods

This section documents the actual procedure and the methods employed in this research to collect, process, and analyse empirical evidence. Broadly, we detail the data and information collection instruments (Section 3.3.1), research target population and selection of respondents

(Section 3.3.2), the ethical considerations (Section 3.3.3), research data and information collection processes and storage, (Section 3.3.4) research data and information processing and analysis (Section 3.3.5) as well as background descriptions of the respondents who provided empirical evidence (3.3.6).

3.3.1 Research data and information collection instrument(s)

Data collection instruments are generally understood to be the devices or mechanisms used by researchers to solicit primary data from the respondents (Wagner et al., 2012; Johnson & Christensen, 2014) which are used to answer the research questions and test the hypotheses. Further, it includes setting the boundaries for the study through sampling and recruitment as well as establishing the protocol for recording information (Bryman, 2016). The data collection instrument employed in this study was determined by the research questions and the quantitative research strategy adopted. Literature (Nayak & Singh, 2015; Wagner et al., 2012; Bryman, 2016) classifies data collection instruments into interviews, observations, and self-completion questionnaires. For the purposes of collecting primary data, amongst other instruments, quantitative research methods in most cases employ survey questionnaires, and qualitative research methods employ interviews and observations (Babbie, 2016). It is important for the researcher to ensure that the data collection instrument selected is valid and reliable (Wagner et al., 2012). Validity and reliability in this study will ensure that results, particularly through recommendation for further improvement, may be applied to many no-fee schools.

To this end, the study used a self-completion questionnaire (self-administered) to gather data originating from TLM committees without interacting with the participants. Questionnaires are the primary data collection tool and known as the survey instrument involved in asking a large sample the same questions**.** A questionnaire is a self-report data collection instrument that a participant fills out as part of a research study without interviewers' assistance (Bryman, 2016; Neuman, 2014; Leedy & Ormrod, 2019). Researchers use questionnaires so that they can obtain information about the thoughts, feelings, attitudes, beliefs, values, perceptions, personalities, and behavioural intentions of research participants. In other words, with questionnaires, researchers measure numerous dissimilar variables and conduct compound hypotheses testing, and participants answer research questions utilising questionnaires (Johnson & Christensen, 2014; Neuman, 2014).

The content and organisation of the questionnaire corresponds to the main objectives, being to investigate how no-fee schools manage their resources. In this study, participants responded to questions with anonymity – and thus with some assurance that their responses will not come back to haunt them (Leedy & Ormrod, 2019). The study preferred self-administered questionnaires as it is relatively cheap and easy to conduct. Participants complete a questionnaire at a time convenient to them. They are able to check personal records if necessary, there is no interviewer whose presence may affect the respondent, the same instrument can be sent to a large number of people (Wagner et al., 2012; Creswell et al., 2016; Bryman, 2016), which benefited the research study. The study tested the reliability of the respondents using some test statistics. The researcher emailed the questionnaire to schools for TLM coordinators to print and distribute to the participants, which proved to be of value, as some of the participants lack the internet access required to complete the questionnaires.

3.3.1.1 Data collection instrument structure

When designing management of a research study, consideration should be given to the level of structure to be executed. Interview structures range from unstructured to semi-structured to fully structured (Bryman, 2016; Leavy, 2017). Structured questionnaires are usually associated with quantitative research (Nayak & Singh, 2015; Bryman, 2016; Leavy, 2017). These levels of structure exist on a continuum with innumerable possibilities. As unstructured questions ask respondents to provide a response in their own words, structured questions ask respondents to select an answer from a given set of choices. Responses to individual questions (items) on a structured questionnaire may be aggregated into a composite scale or index for statistical analysis (Bryman, 2016; Levy, 2017). This allows the researcher to compare participants' responses per question or item and to focus on the research phenomenon (Nayak & Singh, 2015).

The study utilised a fully structured data collection questionnaire (Wagner et al., 2012; Bryman, 2016; Leavy, 2017) which Christensen et al., (2011, p. 56) define as "a self-report data collection instrument that is filled out by research participants", measuring their attitudes, opinions, knowledge, and perceptions of the research phenomena. Fully structured questionnaires are valued as the most inexpensive way of collecting data (Christensen et al., 2011), given that the research is conducted only for study purposes, hence the choice of this data collection method.

Reviewed studies that have investigated similar phenomenon to this end have utilised a fully structured, self-administered questionnaire successfully. For example, Bodalina (2012) employed a fully structured questionnaire to investigate the perception and experiences of teachers about

management of physical resources in public schools. The questionnaire was administered based on the low cost of the design and the swift turnaround in data collection. It allows for generalisation from a sample to a population, so that inferences can be drawn about characteristics, attitudes, or behaviours of the population. Therefore, like Bodalina (2012) this study employed a fully structured self-administered questionnaire because of the consistent and systematic way in which quality data is collected (Bryman, 2016; Neuman, 2014).

In a similar study, Mutungwa & Orodho (2015) examined the resource management strategies in relation to learners' performance in national examinations in public primary schools of Makindu district. The researcher used a fully structured questionnaire as it is relatively easier to handle and simpler for respondents to answer within short period of time. This study's survey took on a similar structure for the same grounds.

Finally, Kunene et al. (2004) conducted research to investigate resource management in schools. A fully structured self-administered questionnaire was used as data collection instrument. The rationale for this choice was that it is an effective means to collect data on several variables onto single questionnaire. Questionnaires were successfully distributed to a large sample in an economically sound manner. Therefore, this study used selected this type of questionnaire as it allowed for hypothetical testing of variables into one questionnaire, as well as wider reach in an, inexpensive way.

It is therefore against this background that this study used the selected survey structure for investigating TLM management. The structured questionnaire compromised of five sections and 41 questions (Appendix 1.1). The study constructed a consistency matrix (Appendix 2.2) to ensure that the questions in the data collection instrument respond to the research questions (1.2.3) and the key variables identified in section 2.5 (Appendix 2.1).

3.3.1.2 Data collection instrument sources

As important as the forms and structures of the data collection tools are, equally imperative is how and where the questions contained in the data collection tool were sourced, as well as the structure of the data collection tool. Bryman (2016), Creswell and Creswell (2018,) and O'Sullivan et al., (2017) regard literature, social problems, newspaper sources, and our daily experience, as the most suitable sources of research questions. Leavy (2017), for example, posited that the source

of questions can be obtained from users of the research of interest by including them in the questionnaire formulation.

The rationale for the questions largely emerged from the literature reviewed (2.5) to identify the variables (budget, human resource, procurement, TLM management) that should form part of the data collection tool, particularly subcomponent (2.3) which established relationships among concepts tracked by this study. Some questions also emanated from general system theory and programme theory as they both use results chain (input, activity, output, and outcome) to measure performance of TLM management. The study undertaken collected primary data. The questionnaire for the study contained five sections and 41 close ended questions to measure the participants' level of knowledge regarding TLM management. Five-point Likert scales and closed ended questions were included, with the items based on key factors prioritised as having influence on the process of managing TLM in no-fee schools. The questionnaire had a duration of approximately 20 minutes (see the Appendix 1.1).

Section A of the questionnaire contained screening questions to establish whether respondents qualified to take part in the research, as well as in the final analysis, determining if their perceptions could in any way be explained by the duties they performed in the institutions. This section also collected the demographic data such as occupation, age, and gender.

Section B (question 4 to question 19) consisted of close ended questions using a five-point Likert scale where 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4= agree, and 5= strongly agree. Questions were asked to indicate the extent to which they agreed or disagreed with statements dealing with how no-fee schools manage key input variables (TLM budget and human resources). The questions were adopted from Gumbi (2009), Ayaga (2011), Bodalina (2012), GDE TLM policy (2018), Demisse (2019) as well the general system theory which seemed to comprehend how no-fee schools administer resources and procurement systems in an operative and resourceful manner to ensure the realisation of outcomes (Kunene et al., 2004).

Section C (question 20 to question 28) originated from the author as well (Gumbi, 2009; Bodalina, 2012; GDE TLM policy, 2018). This section consisted of close ended questions whereby the participants were requested to indicate frequencies using five-point Likert scale (1=never, 2=seldom, 3= sometimes, 4=often, 5=always) regarding aspects of procurement activity.

Section D (question 27 to question 31) compromised of close ended questions using a five-point Likert scale where 1= strongly disagree, 2= disagree, 3= neither agree nor disagree, 4 =agree, and

5= strongly agree, to measure the participants' knowledge of key output variables (procured TLM). Questions were modelled off the previous works of Gumbi (2009), Bodalina (2012), and the GDE LTSM policy (2018).

Section E (question 32 to question 41) entailed five-point Likert scale choices (1=never, 2=seldom, 3= sometimes, 4=often, 5=always) was used to measure the participants' level of knowledge regarding the outcome variable of the intervention (effective management). Some questions originated from the author, as well as Gumbi (2009), Bodalina (2012), and the GDE TLM policy (2018).

3.3.1.3 Data collection instrument measuring scale

When variables are defined, measurements for those variables are established. There are typically four levels of measurement: nominal, ordinal, interval, and ratio. (Kumar, 2015; Leedy & Ormrod, 2019, Creswell et al., 2018). In constructing the questionnaire, this study used both nominal and ordinal measures. The nominal scale measure (gender) informs regarding the similarities and differences between two people *(*Babbie, 2016), and the ordinal measure describes a variable with attributes that can be ranked or ordered (position/occupation). These measurements were applied to variables of interest and assisted in determining the statistical methods (descriptive and inferential) for data interpretation and drawing conclusions about these variables (Wagner et al., 2012; Bryman, 2016).

3.3.1.4 Data collection instrument testing

Regardless of how vigilant researchers are when designing a questionnaire, there is always the possibility of error. The undisputable safeguarding against such mistakes is to pre-test or pilot test the questionnaire by, for example administering it to ten relevant respondents. Such pretesting may discover uncertainties, lack of clarity, or biases in question wording, which should be removed before administering to the envisioned sample. Phrased differently, it is recommended to use a convenience sample, by pretesting your question before administering it to the respondents in a field setting (Neuman; 2014; Leedy & Ormrod; 2019; Kumar, 2015; Babbie, 2016).

To diminish the problem of a poorly constructed questionnaire, a pilot group consisting of five Departmental officials responsible for TLM were asked to look at the questionnaire. The pilot

testing was conducted to identify potential ambiguity, confusion, and poorly prepared items (Leedy & Ormrod, 2019). After the pilot study was steered it was found necessary to rephrase some questions without compromising the quality of the information needed. Other questions were omitted, and the final, amended questionnaire consisted of 41 questions. The pilot study was a significant component, as the questionnaire formed an important measurement tool for this investigation. It was only after the questionnaire was declared suitable by the pilot group that the data gathering process commenced (Gumbi, 2009).

In sum, similar to previous studies conducted by Kunene et al. (2004), Bodalina (2012) and Mutungwa and Orodho (2015), this study was able to measure all the variables for which it was envisioned. This gives the survey questionnaire an upper hand over other methods when measuring the dependent (outcome) measure of this study, and purports that this questionnaire is more successful in measuring this study's variables than other methods would be.

3.3.2 Research target population and selection of respondents

3.3.2.1 Research target population

A target population is a group of elements/objects (e.g., consumers, companies, or products) from which a sample is drawn to evaluate and, in the long run, make assertions. This can further be described as a large group of many cases from which a researcher draws a sample, and to which results from a sample are generalised (Neuman, 2014; Leavy, 2017; Bryman, 2016). Bryman (2016) for example refers to a population as the universe of units. The term 'units' is employed because it is not necessarily people who are being sampled (Bryman, 2016, p.174).

A characteristic, typically numeric, that describes a population is referred to as a population parameter. The true value of population statistics cannot be observed and is unknown, however it is possible to estimate the true value with some degree of certainty. In traditional quantitative studies, researchers select cases on the basis of statistical probability. Random sampling, stratified sampling, and other probability techniques are premeditated to guarantee that samples studied are representative of the larger population of interest. The target population of this study consisted of all no-fee schools (seven primary and four secondary schools) in Ekangala Township, encompassing a larger group (139) of all TLM committees where a smaller group (sample) was selected (Salkind, 2017; Neuman, 2014; Leavy, 2017; Bryman, 2016).

The target population of Ekangala no-fee schools consisted of adults over 18 years old that work in Ekangala and form part of school TLM committees. The intention was to ensure the participants had reasonable exposure and were old enough to give consent. Further, the population of the study was made up of 6 subclasses (139) comprised of school management teams (STMs), being 50 HODs, 15 deputy principals, 11 school principals, 24 SGBs 28 teachers, and 11 administrative officers.

A prior study by Kunene (2004) effectively utilised their target population by investigating resource management at schools. The target population consisted of Gauteng Department of Education institutions from 12 Districts. The rationale was that they were involved in the provision and incorporation of the resources into teaching and learning processes. This study afforded the opportunity to select participants based on the research aims and objectives, thereby allowing the researcher to achieve the study aims and answer the research questions.

In a similar study, conducted by Gumbi (2009), the main population were principals in the targeted districts focusing on processes of physical resource activities, how they are conducted, as well as factors leading to how they are conducted. This was done in an attempt to obtain a holistic picture of physical resource management in rural secondary schools in order to confirm findings from a quantitative study. The target population consisted of teachers, HODs, deputy principals and principals at schools in the Eastern Cape. The study ensured that the population represented stakeholders that manage physical resources at schools.

Further, Bodalina (2012) investigated perceptions and experiences of teachers regarding physical resource management in public schools. The target population of the study consisted of all 165 Gauteng East District schools because they are directly linked to the research problem. This target population allowed the researcher to both generalise the findings to the population as well as develop a detailed view of the meaning of a phenomenon or concept for individuals. This study focused on no-fee schools in Ekangala Township, and the results may be generalised to other no-fee paying schools regarding TLM management.

Indicative of previous studies conducted by Kunene et al. (2004), Gumbi (2009) and Bodalina (2012), a larger sample provides more accuracy in the inferences made. With the above background the study will benefit by generalising findings of the research study to all population with a similar research problem. The study will be able to select cases based on statistical

probability. The study carefully chose the target population with the advantage indicated in the study that larger samples provide more accuracy in the inferences made.

3.3.2.2 Sampling or selecting respondents from the target population

Sampling is the process whereby several individual objects, items, cases, and biological species are selected from larger population for measurement. The sample should be representative, ensuring that each sampled unit will represent the characteristics of a known number of units in the larger population. The sample should be representative of the population in order to warrant the application of the findings from the research sample to the population. Data collected from this subset/sub-group should be used to draw conclusions about the population from which it has come (Kumar, 2015; Leedy & Ormrod; 2019; Bryman, 2016; Leavy, 2017). Sampling methods are generally classified into two groups: probability sampling and non-probability sampling methods. The choice to use probability or non-probability sampling depends on the goal of the research (Bryman, 2016).

The study employed probability sampling, which is used when a researcher needs to have a certain level of confidence in the data collection. Probability samples can be "rigorously analysed to determine possible bias and likely error" (Nayak & Singh, 2015, p.180). Various authors, for example (Leedy & Ormrod, 2019), confirm that probability sampling consists of specific probability sampling techniques such as simple random sampling, stratified random sampling, proportional stratified sampling, cluster sampling, and systematic sampling.

Stratified random sampling was employed for the study as it has the advantage of guaranteeing equal representation of each of the identified strata. In stratified random sampling, the researcher samples equally from each of the layers in the overall population. It is most appropriate when the strata are roughly equal in size in the overall population (Leddy & Ormrod, 2014).

3.3.2.3 Sample size

The total number (population) of TLM committees in no-fee schools Ekangala Township was N= 11 +16+50+25+11+23= 139, grounded on 95% significance with an estimated sample of 0.1 (10%) and an acceptable/margin of error of 0.05%. This made half of the sample proportion level, where sample size was calculated to 70 ($n= n_1+n_2+n_3+n_4+n_5+n_6 = 25+7+6+12+14+6$) (Salkind, 2017) see Appendix 1. The proportion of the sample size, as per the subgroups from

the sampling frame, was the list of all employees as per their subgroup. These individuals formed part of the sample and participated in the study: 25 HODs, 7 deputy principal, 6 principals, 12 SGBs, 14 educators and 6 admin officers (see Appendix 1 for random sampling and tables).

The minimum required targeted sample size was calculated at 70, however 101 responses were received after distributing the questionnaire to the entire population to maximise the response rate. Therefore, all responses were included in the analysis, which posed an advantage in that a larger sample improves the accuracy of the analysis and its approximation to the population. "Lack of response to the questionnaire by potential respondents in a sample or population is referred to as nonresponse bias, nonresponse bias is a deadly blow to both the reliability and validity of survey study findings" (Converse, Wolfe, Huang, & Oswald, 2008, p.1). Survey researchers have long presumed that the best way to obtain unbiased estimates is to achieve a high response rate.

Mutungwa and Orodho (2015) conducted a study to analyse the relationship between resource management strategies and pupils' academic performance in national examinations in the study locale. Purposive sampling techniques were used to select a head teacher and a chairperson of the parent-teacher associations (PTAs) from each school, yielding 25 head teachers and 25 PTA chairpersons. Simple random sampling was used to select 10 per cent of the teachers, yielding 200 teachers. The entire sampling process yielded total sample of 250 respondents to participate in the study. This sample size constituted 31 percent of the entire population, and was deemed adequate to be representative, and generalisable to the entire population.

Benjamin (2014) conducted a study to determine the correlation between availability of teaching and learning resources and effective classroom management and content delivery in secondary schools in Huye District. Purposive, stratified, and simple random sampling methods allowed the researcher to reach the targeted respondents. Purposive sampling was used to select respondents based on the following inclusion criteria: either male or female, and only those schools that do not have Nine Year Basic Education. Stratified random sampling was used to select respondents from different strata such as school administrators, teachers, and students. Simple random sampling was used to select respondents from qualifying schools.

Kunene (2004) investigated resource management at schools, using a probability sampling procedure. The total number of institutions in Gauteng was 2 323 24 divided into 12 districts.

There were 24 schools in the sample. Two teachers from each school participated in the research. The total number of teachers in the sample was 48. The total number of learners at Gauteng schools, in grade 7 was 125 777. Ten learners were randomly selected from each class. For a heterogeneous population, this method produces a representative sample as it captures diversity which tends to be undermined through simple random or systematic random sampling.

In summary, similar to previous studies the sample was chosen from the overall population by random selection; that is, it was selected in such a way that each member of the population had an equal chance of being included in the sample. This was achieved by using a precise sampling frame, which is a list of individuals in the population (Johnson & Christensen, 2014; Leedy & Ormrod, 2019).

3.3.3 Ethical considerations when collecting research data

Ethics is derived from the Greek word "ethos" which means character. This area deals with right and wrong and is connected with morality, integrity, values, flexibility, fairness, and truthfulness, and how these elements guide human behaviour (Babbie, 2016; Leavy, 2017). Researchers are obliged to take ethical issues into account throughout the implementation of their research. "Most ethical issues in research fall into one of four categories: protection from harm, voluntary and informed participation, right to privacy, and honesty with professional colleagues" (Bryman, 2016; Leedy & Ormrod, 2019, p.120). The researcher disclosed her positionality as follows*:*

> *I am currently pursuing master's degree at the University of Witwatersrand. I am employed by the Gauteng Department of Education as a Senior Education Specialist stationed in the Gauteng North District. I provide professional guidance through the implementation of systems and structures that allow for effective management. This includes ensuring that all the public schools in Gauteng North have functional TLM systems, facilitating correct interpretation, and ensuring effective planning, implementation, monitoring and evaluation of policies. I am conducting this study as part of the requirement to complete my degree. My interest in the study is to gain skills that contribute to the improvement of Monitoring and Evaluation practices in Department of Education.*

Harm comprises of emotional or psychological distress, as well as physical harm. The researcher took precautions not to expose research participants to unnecessary physical or psychological harm. Respondents may be asked questions that provoke anxiety or dredge up hostile memories. This study considered reducing the potential for such distress by using anonymous, self-

administered questionnaires and by carefully phrasing sensitive questions (Leedy & Ormrod, 2019; Leavy, 2017; Babbie, 2016). Ethical endorsement for research involving human participants is obligatory "to protect the rights and welfare of participants and minimise the risk of physical and mental discomfort, harm and/or danger from research procedures" (Nayak and Singh, 2015**,** p. 304-305).

Consent is a norm of informing participants or their legal guardians about the nature of a research study as well as attaining written authorisation before they participate in research. Participants signed a statement signifying their risk awareness and that they select to participate regardless. This form concedes that participants' rights will be protected during data collection (Kumar, 2015; Bryman, 2016; Leavy, 2017; Babbie, 2016). Participants were given comprehensive information in order to make an informed decision to participate (Bryman, 2016). The consent form used for the study is included in the Appendices.

Prior to data collection, the University of Witwatersrand ethics committee provided the researcher with ethical clearance. Gauteng Department of Education (Education Research and Knowledge Management Unit) granted the researcher permission for the survey to be carried out in the institutions. Participants were informed that participation in this study was voluntary. No participant was forced to complete survey questionnaire against their will. A high level of confidentiality was fully maintained about data collected and the respondents involved in the study as participants were assured of anonymity. No identifying information, e.g., names, identification (ID) numbers, were collected. Pseudonyms were used to maintain the anonymity of the institutions, while providing a means to distinguish between responses (Phakathi, 2015).

The researcher informed the participants about their right to withdraw from the study with no consequence before they started filling in the survey. It was also disclosed that the filled-in questionnaires would be safely kept in locked cupboards and be demolished following completion of the study. The researcher also informed the participants that information collected will be captured in a password-protected personal laptop and not be made available to any individual apart from those directly involved in the research.

3.3.4 Research data and information collection process

Data collection is about combining and assembling all the information that the sampled participants have provided. The combined data will be scrutinised for the purposes of attempting to answer the research question. Data can take three forms: namely numerical, verbal, and both numerical and verbal, depending on the relevant research strategy. That is why, according to Nayak and Singh (2015) the data collected may be quantitative or qualitative, depending on the research method employed. Transferring numerical data/information into readable software or tools is necessary for analysis unless online data collection was employed, in which case data is transferred automatically into a readable format (Nayak & Singh, 2015; Wagner et al., 2012; Bryman, 2012). The researcher should verify the data quality by validating the information and the response submissions and assessing their correspondence with the raw data (Wagner et al., 2012; Bryman, 2012). Self-completion questionnaires, interviews, observations, focus groups and documents are different types of data collection that can be employed with respect to the strategy utilised (Nayak & Singh, 2015; Wagner et al., 2012; Bryman, 2012).

This research used online self-completion questionnaires, also referred to as web surveys (Wagner et al., 2012). Most promotion companies prefer this data collection to systematically reach out to larger groups in a relatively short space of time. The questionnaire was distributed to participants online via access to the website or email and, once completed it is transferred back to the originator. The researcher hand delivered the questionnaire to those who had internet access and email challenges. According to Wagner et al. (2012, p. 102) benefits of web surveys include "greater volumes of data, automatic capturing and immediate analysis with fewer errors".

A study by Kunene et al. (2004) investigated how resources are managed in schools by utilising a self-administered survey questionnaire, and converted answers from questionnaires into numerical form, more conducive for statistical analysis. The study developed close ended responses whereby it assigned numerical representations to measuring scales.

Mutungwa and Orodho (2015) examined resource management challenges where data was collected through online questionnaires. The study developed close ended responses whereby it assigned numerical representations to measuring scales. The questionnaire was selected as it offers a quick way to get results.

These studies (Kunene et al., 2004; Mutungwa & Orodho, 2015) benefited the purposes of this study, as careful coding and entering data into computer occurred. The researcher verified coding after the data was entered into a computer. After meticulous coding and data entry, the study checked all questionnaires for errors to minimise the chances of rendering the research invalid through erroneous entry (Neuman, 2014). For code cleaning (or wild code checking) the researcher checked and verified the categories of all variables for impossible codes (Neuman, 2014). Data cleaning occurred where suspicious response patterns, data entry errors, outliers, and missing data were checked. The study encountered some missing data in the questionnaire and recorded it. The research used a Microsoft Excel worksheet where verbal data was converted to numerical data ('strongly agree' was converted to the number 1, 'disagree' to 2, 'neither agree nor disagree to 3, 'agree' to 4, and 'strongly agree' to 5). Similarly, 'never' was converted to the number 1, 'seldom' to 2, 'sometimes' to 3, 'often' to 4, and 'always' to 5.

3.3.5 Research data and information processing and analysis

3.3.5.1 Research data and information processing

The data processing phase in quantitative research involves the organisation (coding, editing, computing scores and preparation of master charts) of written answers and the transmission of all information to a computer. For this data to be analysed, it must be entered into a machine in a readable, numerical format such as a spreadsheet or a text file, to be analysed by statistical programs such as SPSS or SAS. Data processing refers to certain operations such as editing, coding, computing of scores, and preparation of master charts (Kumar, 2015; Babbie, 2016; Bryman, 2016). The researcher captured and coded the questionnaires for analysis.

3.3.5.2 Research data and information analysis

Data was captured and exported for processing, analysis, and presentation. Using SPSS version 25, a data quality check was conducted by determining whether all the values entered lie within the range of the scale. That is, for the 5-point Likert scales, all data values were expected to lie between 1 and 5. They all did, with no values outside the range. This was determined with the use of frequency distributions. The 5-point Likert scales were used to construct the necessary variables (budget, human resources, procurement, TLM and effective management) for further analysis). Budget was constructed using 7 items, human resources using 10 items, procurement using 7 items, and effective management using 14 items. The construction involved calculating the averages of the respective items.

In order to answer the research questions, inferential statistics used in this study included the one-sample Wilcoxon Signed Rank, correlation coefficients and regression analysis. To test the research hypothesis that budget, human resources, and procurement processes/systems are fully functional in Ekangala Township no-fee schools, a one-sample Wilcoxon Signed Rank test was used. This test was used because these variables are measured on an ordinal scale, ranging from strongly disagree (1) to strongly agree (5). The Wilcoxon test was performed on the budget, human resources and procurement variables comparing the means of the variables to a value of 3. For budget and human resources items, the choice of 3 is based on the scale of strongly disagree (1) to strongly agree (5), 3 is in the middle and represents an average point. For procurement, the choice of 3 is based in the scale of the 7 items the responses range from never (1) to always (5), 3 is also in the middle. Moreover, if we reject the null hypothesis that it is equal to 3, it means that they either agree or disagree, implying that budget, human resources, and procurement processes are fully functional or not fully functional. If it is statistically different (i.e., p value < 0.05 or 0.1), we then determine whether the specific mean being tested is lower or higher than 3. If it is lower than 3 it is an indication that budget, human resources, and procurement processes are not fully functional, and if it is higher than 3 it is an indication that the processes are fully functional. Thus, if the mean is equal to 3 the analysis results will be inconclusive regarding whether to reject or accept the research hypothesis being tested but will be indicative of the average functionality of the processes being measured.

Furthermore, to test the research question of how effective the management of TLM is, a one sample Wilcoxon Signed Rank test was also done. The test was used to determine whether the means of TLM management items are equal to 3 or not. The choice of 3 is based on the scale of the item responses which range from never (1) to always (5), with 3 being in the middle. If we reject the null hypothesis that the mean is equal to 3 i.e., p-value < 0.05 and say that mean of the item is statistically different from 3, this means that management is either effective or not. We then looked at whether the specific mean being tested is lower or higher than 3. If it is lower than 3 it indicates ineffective management because it's a 'negative' response and then higher than 3 indicates effective management because it is a 'positive' response. If it is not statistically different from 3, then TLM management is mediocre. The researcher would not confirm its effectiveness, as it represents a neutral stance.

Lastly, to establish to what extent budget, human resources and procurement processes affect TLM management, a Pearson's correlation coefficient was used, while multiple regression analysis was conducted to test if the budget, human resources, and procurement processes are effective in TLM management. To determine statistical significance, a significance level of 0.05 was used for all the analysis in this study (Salkind, 2017; Wagner et al., 2012). A p-value that is less than 0.05 indicates statistical significance, while a p-value that is greater than 0.05 indicates statistical insignificance.

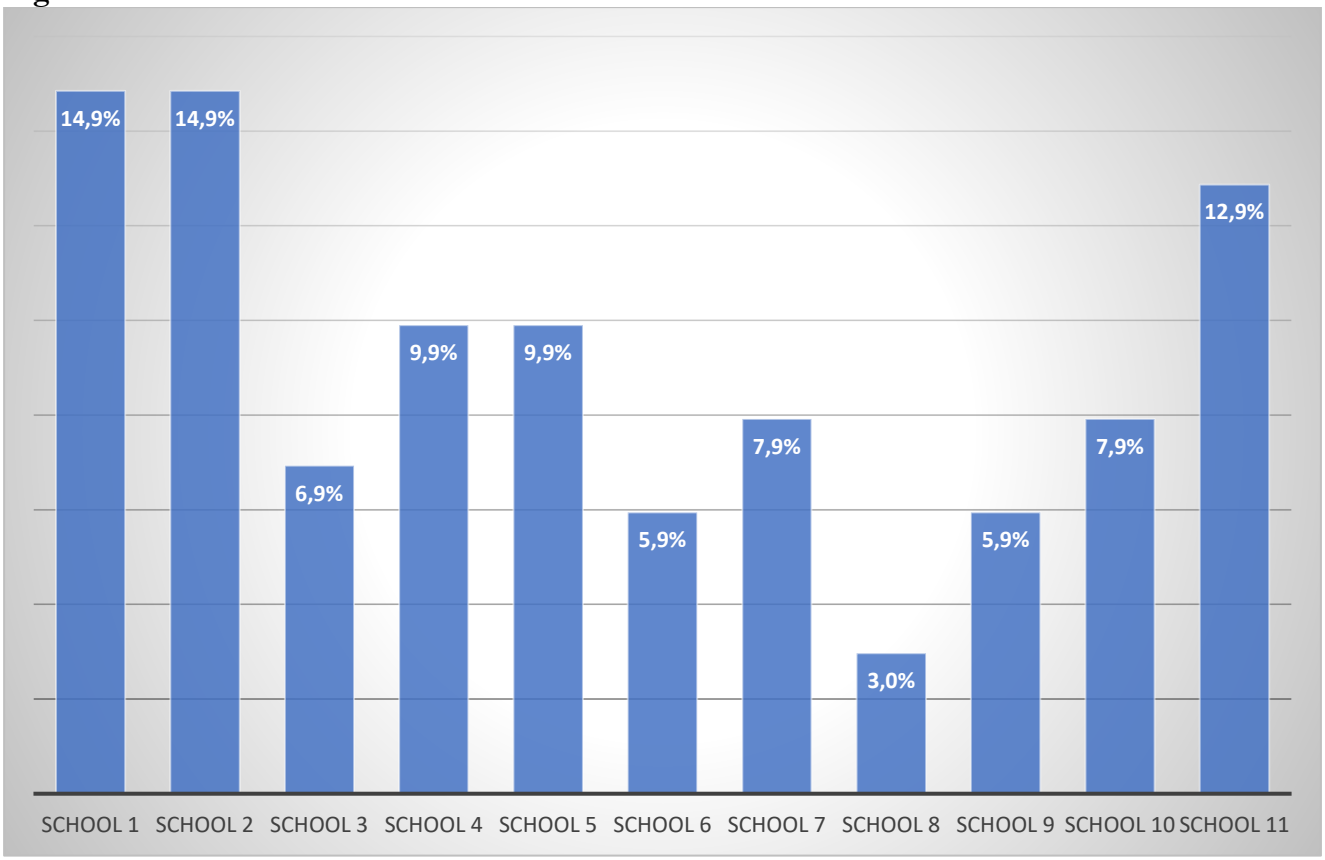
To determine if our procedure would enable us to answer the research questions, the study reviewed similar studies. For example, Mutungwa and Orodho (2015) conducted a study to analyse the relationship between resource management strategies and pupils' academic performance in national examinations in the study locale. Descriptive and inferential statistics were used to analyse data. Inferential statistics such as Pearson's Product-Moment Correlation (r) and Analysis of Variance (ANOVA using F- test) were used to test the hypotheses. These allow analysts to generalise findings to a larger population.

The fact that statistical measures employed by the authors (Mutungwa & Orodho, 2015; and Navidad, 2019) allowed them to obtain their data-related objectives guarantees the suitability of this procedure for this study. With the use of the same measures, the research questions were correctly answered, and hypotheses tests properly carried out in this study (Moila, 2016).

3.3.6 Description of the research respondents

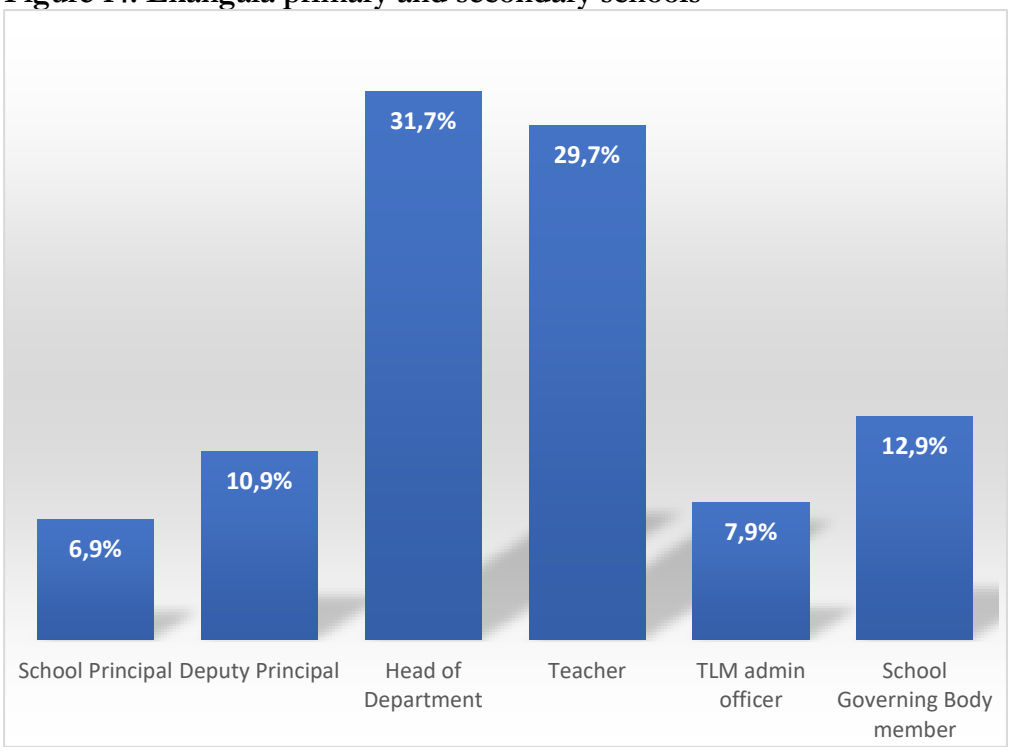
A total of 101 staff members that form part of the TLM committees at Ekangala no-fee schools responded to the questionnaire, with 61.4 percent based at primary schools and 38.6 percent at secondary schools (Figure 13). Of this, 31.7 per cent were HODs, 29.7 per cent were teachers, 12.9 per cent were SGB members and the rest were made up of deputy principals, school principals and TLM admin officers. Sixty-eight per cent of the respondents were 66.7 percent female and 33.3 per cent were male (Figure 14). Lastly, the participants were aged 26 years and above, with the majority aged above 50 years old (Figure 15).

Figure 13: 101 staff members from 11 schools



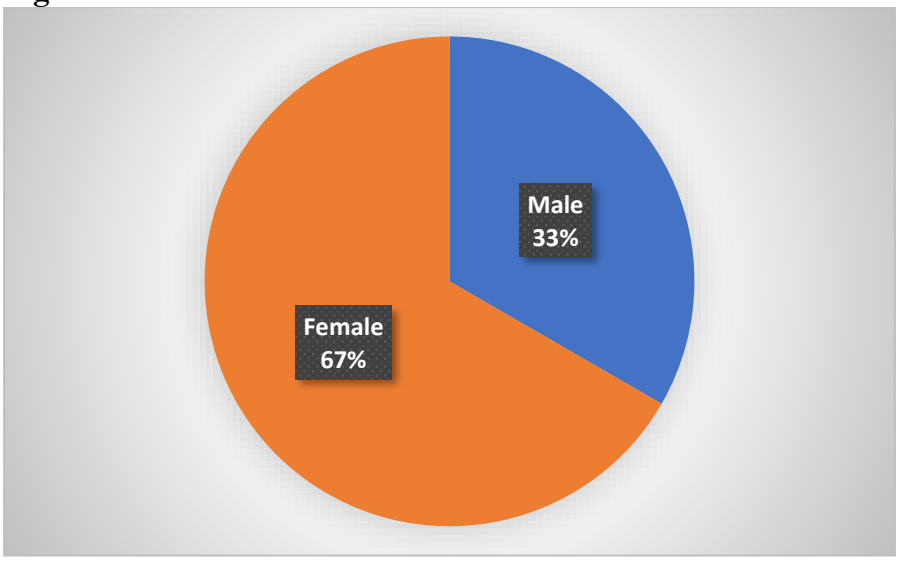
Source: Author

Figure 14: Ekangala primary and secondary schools



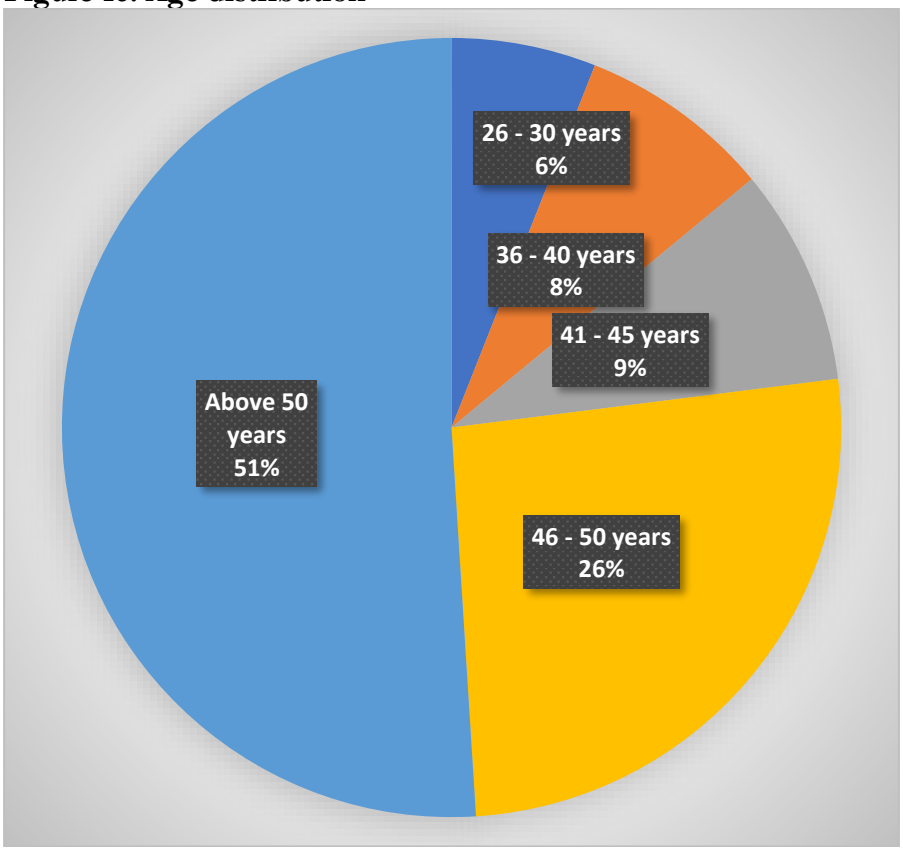
Source: Author

Figure 15: Gender distribution



Source: Author

Figure 16: Age distribution



Source: Author

3.4 Reliability and validity measures applied

Reliability and validity are fundamental concerns in all measurement; both connect measures to constructs and suggest how concepts are to be measured (Neuman, 2014). Both concepts are

philosophies that assist researchers to determine the truthfulness, credibility, or believability of research results and findings (Neuman, 2014 & Wagner et al., 2012). Ensuring the reliability and validity of the measure used for data collection helps to ensure the overall quality of the research process and product (Wagner et al., 2012, p.80).

Reliability denotes the quality of measurement methods, indicating whether or not the same conclusions can be reached using the same survey to measure the same phenomenon more than once (in repeated observations). Put simply, it refers to the dependability or consistency of the variable measure (Neuman, 2014; Kumar, 2015; Leedy & Ormrod, 2019; Babbie, 2016). Contrary to reliability would be an erratic, unstable, or inconsistent result occurring due to the measurement itself. Neuman (2014) presents three types of reliability as (1) stability reliability, which determines if the measure delivers a similar answer if applied in different time periods, (2) representative reliability, which seeks to discover if the indicator delivers the same answer when applied to different groups, and (3) equivalent reliability, which measures the yield of consistent results across different indicators. This section discusses how certainty of the correct measurement was established in order to ensure that the findings of the study are reliable and valid (Christensen et al., 2011; Wagner et al., 2012).

In this study, we could use neither test-retest reliability nor inter-rater reliability tests due to quantitative nature of the study. According to Wagner et al., (2012), the former requires the researcher to administer the same measuring instrument to the same sample at two different times when the latter needs observers to rate the phenomenon. Test-retest was therefore not in line with a cross-sectional survey study, where the quantitative nature of the study overruled inter-rater reliability.

Furthermore, Cronbach's coefficient alpha was used to measure internal consistency of the measurement scale, which was appropriate because most of the survey questions had multiple items to construct the required variables (Wagner et al., 2012). This was calculated for budget items, human resources items, procurement items, TLM items as well as management items.

In a similar study, Bodalina (2012) assessed perceptions of teachers regarding physical resource management. The study assessed the coefficient values (Cronbach's alpha and composite reliability value), the reason being to establish the instrument's reliability before analysing the data. The reliability coefficients of various factors were found to be sufficiently reliable to continue with statistical analysis. The results of these tests were as follows: effective management of

physical resources= 0.924; effective procurement of physical resources= 0.889; the provision of physical resources by the GDE= 0.660. This construct was shown to be reliable and could thus serve as basis for measuring and developing the management of physical resources in public schools.

Cronbach's coefficient Alpha benefited the incumbent study, as most questions have multiple items making up a composite scope of a measurement of a construct (Wagner et al., 2012). This study's questionnaire was adapted from the works of researchers such as Gumbi (2009) and Bodalina (2012). As such, the tool had been tested and used by the abovementioned authors and therefore, reliable. Given that the creation of this management variable involves grouping responses of a number of items, a Cronbach's alpha coefficient was calculated to determine whether or not the variable is reliable. A Cronbach's alpha coefficient is used to test whether or not the items used for a variables actually measure that particular construct. The results are presented in the table 6 below.

Table 6: Cronbach alpha

Variable	**Management**
Cronbach's Alpha	**0.784**
N of Items	**13**

Source: author

The table above shows that management has a Cronbach's alpha coefficient of above 0.7, which means that it is a reliable measure and can be used for further statistical analysis. Given that the creation of these variables (budget, human resources, and procurement) involves grouping responses of a number of items, a Cronbach's alpha coefficient was calculated to determine whether or not these variables are reliable. The results are presented in the table below.

Table 7: Cronbach alpha – number of items

Variables	**Cronbach's Alpha**	**N of Items**
Budget	0.766	7
Human Resources	0.794	10
Procurement	0.780	7

Source: author

These Cronbach's alpha values are greater than 0.7 which indicates reliability. Validity is concerned with the integrity of the conclusions that are generated from a piece of research (Bryman, 2012). It addresses the question of how well we measure social reality using our constructs about it (Neuman, 2014). It refers to the accuracy of the inferences, interpretations, or

actions made on the basis of test scores (Johnson & Christen, 2014). Similarly, it refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration, which means we are actually measuring what we say we are measuring. For example, "a measure of social class should measure social class, not political orientations ' (Babbie, 2016, p.19). Four main types of validating research exist, that is, "measurement validity, internal validity, external validity, and ecological validity for a quantitative research strategy" (Bryman, 2012, p).

This study used face validity, which is a form of content validity, to determine if the items represent what the research is attempting to measure (Christensen et al., 2011). In order to measure exactly what the researcher intended to measure, the following steps were taken: First, we crosschecked if indeed the research questions and hypotheses did flow from the theoretical and conceptual framework. Second, we consulted with professional experts in the area of research to determine if the items in the data collection instrument would ideally measure what the researcher intended to measure (Christensen at al., 2011). It was commented that the scales appeared to be measuring (i) budget, (ii) human resources, (iii) procurement, (iv) TLM and (v) TLM management.

3.5 Research limitations

Bryman (2016) describes technical limitations as the downside of the methodological choices in answering the research questions. One of the main limitations of quantitative research strategies is that they are not able to answer 'why' questions, or reveal in-depth insights (Bryman, 2016; McNabb, 2017; O'Sullivan et al., 2017).

The study's physical research context is no-fee schools in Gauteng North Education District (Gauteng Province). However, due to a lack of literature describing the historical background of the district office, the study's focus is Tshwane municipality, posing a geographical limitation. Some respondents misunderstood questions with the self-administered questionnaire method since there was no opportunity for face-to-face interaction to seek clarification from an interviewer. Likert scales were a limiting factor as many participants avoided selecting the extreme measures 'strongly agree' and preferred choosing middle measures such as 'agree' and 'disagree', which results in potential response bias. The researcher had to limit the scope of the study due to financial limitations.

Due to Covid 19 rules, which have strict measures regarding school visits, this study faced certain methodological limitations. First, the study lacks ecological validity because the questionnaire does not capture the daily lived experiences and conditions of participants. Second, the cross-sectional design was selected for collecting data for this case study. However, this design prohibits definitive statements regarding the direction of associations among study variables. Third, the study encountered data incompleteness as observed by missing data for some variables.

This chapter has focused on the research methodology employed in this study and the research methods the researcher used. The quantitative strategy was discussed, as well as the rationale behind its selection. The sampling technique and research subjects were also discussed, with specific reference made to stratified random sampling. The data collection techniques were explained. Pilot-testing was conducted to check for language use, validity, and reliability. The validity and reliability of the data was also described

4 PRESENTATION OF RESEARCH RESULTS

The main objective of this component is to present empirical research results. As discussed in Chapter 3, this study sought to address its research question by responding to three sub questions (1.2.3). The study was undertaken with the main research problem of investigating the absence/ineffective TLM management (1.2.1) as well as empirically establishing how no-fee schools in Ekangala Township manage their TLM (1.2.2.). This was guided by the following research questions (i) How are the budget, human resources, and procurement systems of TLM functioning in Ekangala Township no-fee schools? (ii) How effective is TLM management in Ekangala no-fee schools? (ii) To what extent do budget, human resources, and procurement processes affect the management of resources in schools?

The research results account for data that was collected through self-completion survey questionnaire with purposive sampling and a stratified random sample of TLM committee. TLM committees were key in TLM management. Data was analysed using both descriptive and inferential statistics (Salkind, 2017). This chapter has two objectives, i.e., to present the empirical results and compare the results of this study to those of similar studies. Section (4.1) discusses the first research question and hypothesis test. Section (4.2) discusses the second question and hypothesis test. Section (4.3) discusses the last question and its accompanying hypotheses. The study drew the comparison of the statistical results to those of similar studies reviewed in subcomponent (2.3) to portray a far comprehensive and critical view of the results (Wotela,2018).

4.1 Functioning of financial resource, human resource, and procurement processes of TLM in no-fee schools

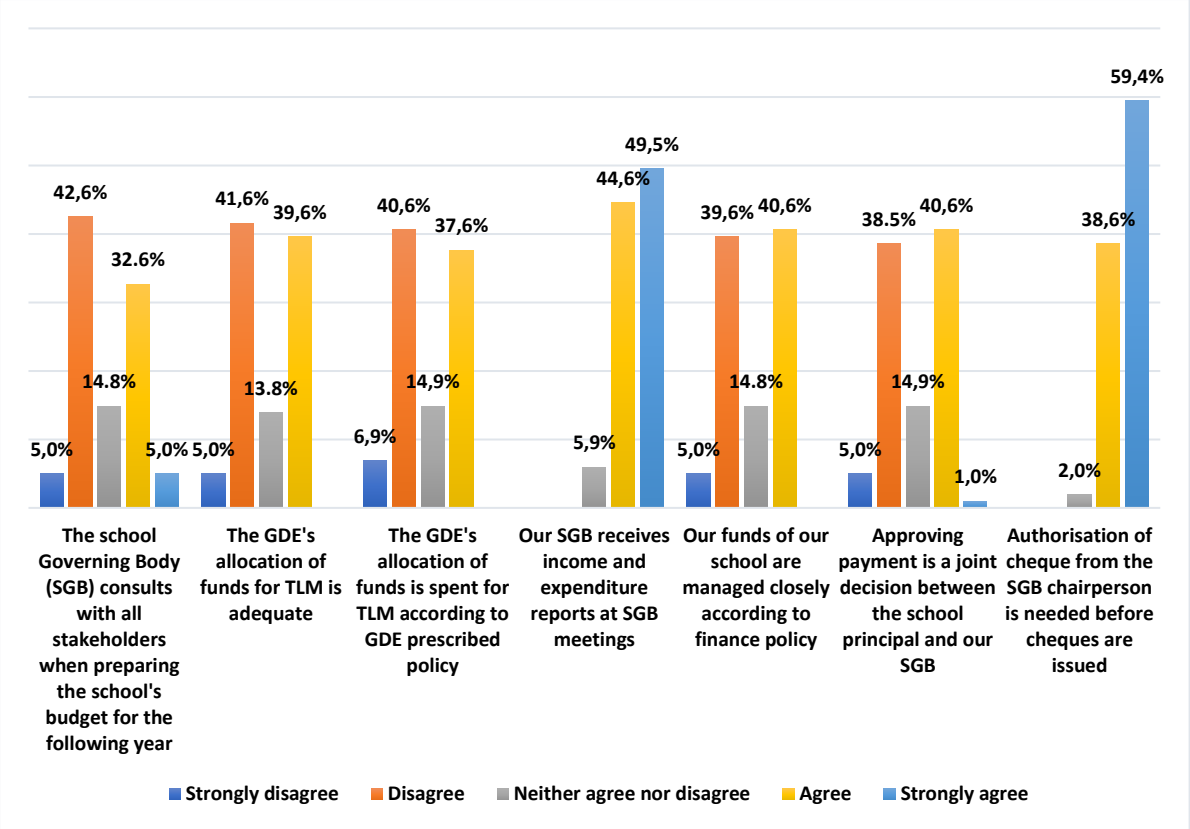
The study presents the research results of the first research question as indicated in (1.2.3.1) - How are the budget, human resources, and procurement processes of TLM functioning in Ekangala Township no-fee schools? This section first presents the descriptive statistical results (Section 4.1.1.1) as well as the statistical hypothesis tests (Section 4.1.1.2), and last, compares the results of this research study to other similar studies (Section 4.1.2).

4.1.1 Presentation of results

4.1.1.1 Descriptive statistics

One of the questions asked how functional the budget, human resources and procurement processes are in TLM management. The first set of results are for the budget processes, followed by the human resource processes and ends with the results for the procurement processes. Figure 17 represents the frequency distribution for the budget statements whereby the respondents had to indicate "strongly disagree", "disagree", "neither agree nor disagree", "agree", and "strongly agree".

Figure 17: Frequency distribution on statements relating to budget input variable



Source: Author

When asked if the SGB consults with all stakeholders when preparing the school's budget for the following year, 47.6 per cent are not in agreement, 37.7 per cent agree, and 14.8 per cent neither agree nor disagree. Majority of the respondents did not agree that the (GDE) allocated adequate funds to schools. This was confirmed when 41.6 per cent of the respondents selected disagree, 39.6 per cent agree, and 13.8 per cent neither agree nor disagree.

However, when asked about whether the GDE allocation of funds is spent for TLM according to the GDE prescribed policy, 40.6 per cent disagree, 37.6 per cent agree and 14.9 per cent neither agree nor disagree. Nevertheless, when asked if SGB receives income and expenditure reports at SGB meetings majority (49.5 per cent) strongly agree, 44,6 per cent agree and 5.9 per neither agree nor disagree. Moreover, on question regarding whether the funds are managed closely according to finance policy 40.6 percent agree, 44.6 per cent are not in agreement and 14,8 per cent neither agree nor disagree.

These responses are slightly lower than the disagreement frequencies. This could be an indication of mediocre functionality of the budget processes relating to items such as consulting with stakeholders, allocation of funds according to prescribed policy as well as managing funds according to finance policy. However, when asked if SGB receives income and expenditure reports at SGB meetings, 94.1 per cent of the respondents agree, and when asked if authorisation of cheques from the SGB chairperson is needed before cheques are issued, 98 per cent of the respondents agree.

In addition, Table 8 represents descriptive statistics for the budget statements in Section B (questionnaire). This table displays how respondents rated each item. For example, the responses on whether the SGB consults with all stakeholders when preparing the school's budget for the following year (B1) are centred on the disagreement side of the neutral response, with M=290 and SD =1.07. This implies that most of the respondents are in disagreement that SGB consults with all stakeholders in preparation of the school's budget for the following financial year. Moreover, in responses on whether the GDE's allocation of funds for TLM is adequate (B5) are centred on disagreement side of neutral response, with M=2.88 and SD=1.00.

Conversely, in responses to whether their SGB receives income and expenditure reports at SGB meetings (B7) are centred on the positive side of neutral response with M=4.44 and SD= 0.61. This implies that most of responses are centred on agreement side of positive response that their SGB receives income and expenditure reports at SGB meetings. Similarly, when responding on whether the authorisation of cheques is needed from the SGB chairperson before the cheques are issued (B10) is centred on positive side of neutral response with M=4.57 and SD=0.54. This implies that most respondents agree that their SGB receives income and expenditure reports at SGB meetings.

Table 8: Means and standard deviation analysis of opinion of respondents about budget variable

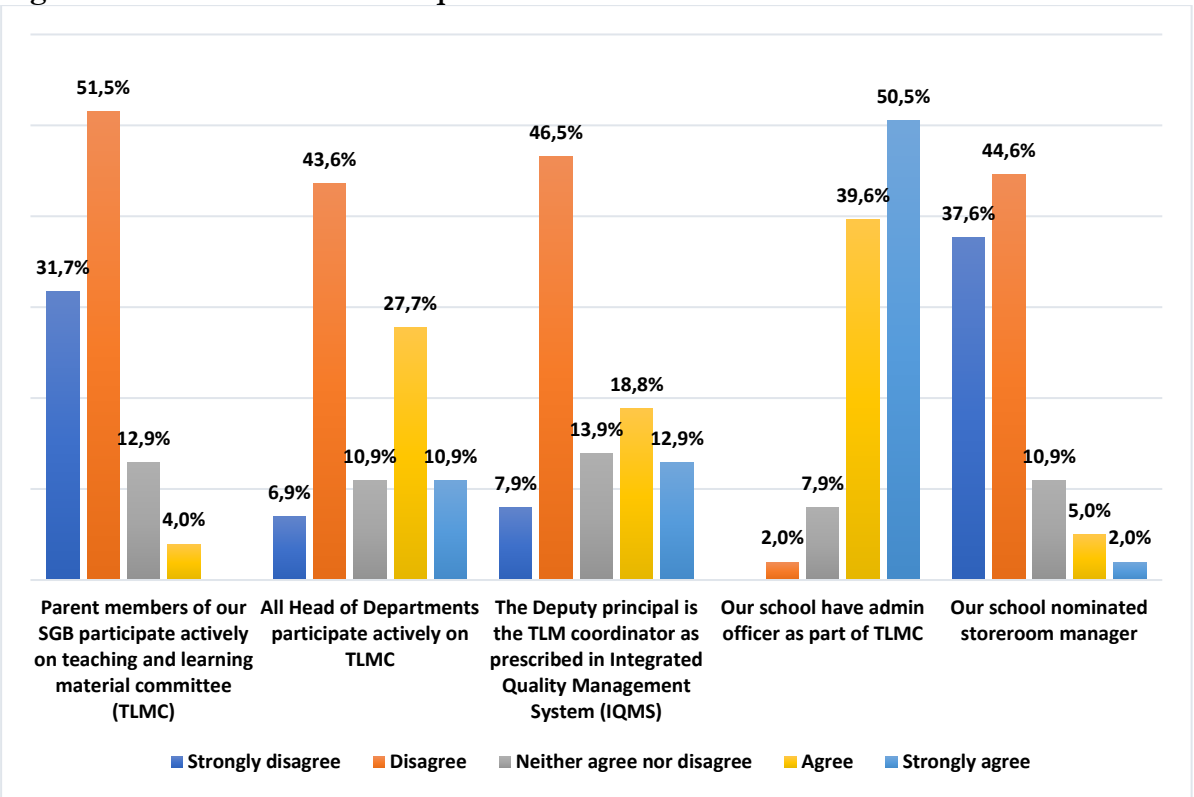
Item No	Description	Mean	Std. Deviation	Rank Order
B10	Authorisation of cheques from the SGB chairperson is needed before cheques are issued	4.57	0.54	1
B7	Our SGB receives income and expenditure reports at SGB meetings	4.44	0.61	2
B9	Approving payment is a joint decision between the school principal and our SGB	2.94	1.02	3
B8	Our funds of our school are managed closely according to finance policy	2.91	1.00	4
B4	The SGB consults with all stakeholders when preparing the school's budget for the following year	2.90	1.07	5
B5	The GDE's allocation of funds for TLM is adequate	2.88	1.00	6
B6	The GDE's allocation of funds is spent for TLM according to GDE prescribed policy	2.83	1.02	7

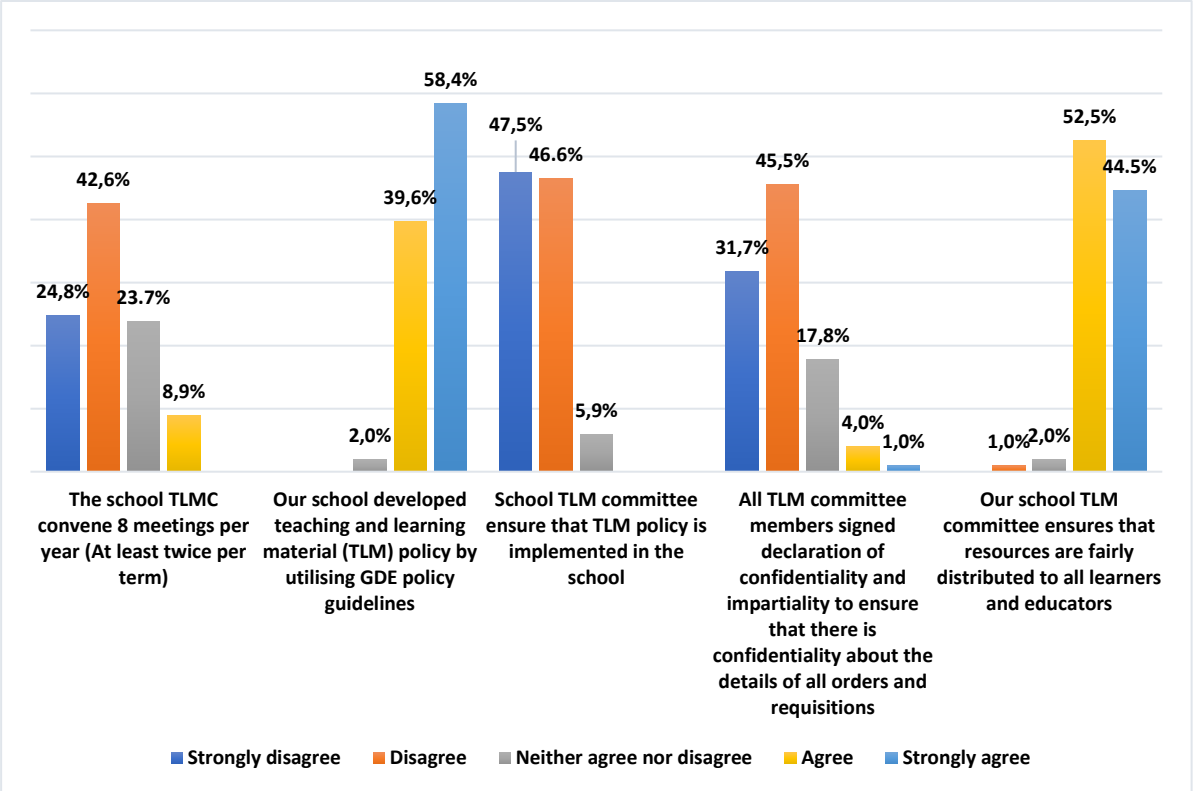
Source: Author

The means of the budget statements range from 1.51 to 4.59, and standard deviations range from 0.70 to 1.21. Five out of seven statements have a mean that is below the midpoint of 3 (Sometimes), while two of the statements have a mean that is above the midpoint of 3. Overall, this is an indication of poor functionality of the budget process.

In relation to human resources, Figure 18 shows the frequencies of the 10 human resources statements. For example, more than 50 per cent of the respondents disagree that parent members of their SGB participate actively in TLM committees (TLMC), 31,7 strongly disagree and 12.9 per cent neither agree nor disagree. When asked if all HODs participate actively on TLM committee, 43.6 per cent disagree, 27,7 per cent agree and 10.9 per cent strongly agree. When asked if the deputy principal is the TLM coordinator as prescribed in Integrated Quality Management System (IQMS), 46.5 per cent disagree 18.8 per cent agree, 13.9 per cent neither agree nor disagree. Moreover, when asked if the school nominates a storeroom manager, 82.2 per cent of the respondents disagree and strongly disagree, 10.9 neither agree nor disagree and 7 per cent agree and strongly agree.

Figure 18: Human resources frequencies





Source: Author

When asked if their school TLM committee convenes 8 meetings per year, 42.6 per cent disagree, 23.8 per cent neither agree nor disagree and 8.9 per cent agree. More than half of the respondents believe that the schools develop TLM policy using GDE policy guidelines. This was confirmed when 58.4 per cent of the respondents strongly agree, 39.6 per cent disagree and 2 per cent neither agree nor disagree. TLM committees do not ensure that TLM policy is implemented in the school: 47.5 per cent strongly disagree, 46.6 per cent disagree and 5.9 per cent neither agree nor disagree. Moreover, when asked if all TLM committee members signed a declaration of confidentiality and impartiality to ensure confidentiality regarding the details of all orders and requisitions, 45.5 per cent disagree, 31.7 per cent strongly disagree, and 17.8 per cent neither agree nor disagree. Overall, 7 out of 10 statements indicated a problem with the human resource processes of TLM.

Table 9 shows the mean scores, standard deviation scores and rank orders of items associated with the human resources statements in Section B (questionnaire). For example (B11), the responses on whether parent members of their SGB participate actively on TLM committees are centred on the disagreement/negative side of the neutral response, with M=1.89 and SD=0.77. The responses on whether all HODs participate actively in TLM committees (B12) are centred on the negative side of the neutral response with M=.2.92 and SD=1.20.

In contrast, responses on whether the schools have admin officers as part of TLM committee (B14) lie on the positive side of the neutral response M= 4.39 and SD=0.72. Further, responses on whether the school develops TLM policy utilising GDE policy guidelines (B20) lie on the neutral side of the positive response with M=4.56 and SD=0.54. It is established that school TLM committees ensure that resources are fairly distributed to all learners and educators as responses are centred on the neutral side of the positive response with M=4.41 and SD=0.59.

Table 9: Means and standard deviation analysis of opinion of respondents about human resource variable

Item No	Description	Mean	Std. Deviation	Rank Order
B17	Our school developed TLM policy by utilising GDE policy guidelines	4.56	0.54	1
B20	Our school TLM committee ensures that resources are fairly distributed to all learners and educators	4.41	0.59	2
B14	Our school have admin officer as part of TLMC	4.39	0.72	3
B12	All Head of Departments participate actively on TLMC	2.92	1.20	4
B13	The deputy principal is the TLM coordinator as prescribed in Integrated Quality Management System (IQMS)	2.82	1.21	5
B16	The school TLMC convene 8 meetings per year (At least twice per term)	2.17	0.91	6
B19	All TLM committee members signed declaration of confidentiality and impartiality to ensure that there is confidentiality about the details of all orders and requisitions	1.97	0.87	7
B15	Our school nominated storeroom manager	1.89	0.93	8
B11	Parent members of our SGB participate actively on teaching and learning material committee (TLMC)	1.89	0.77	9
B18	School TLM committee ensure that TLM policy is implemented in the school	1.58	0.60	10

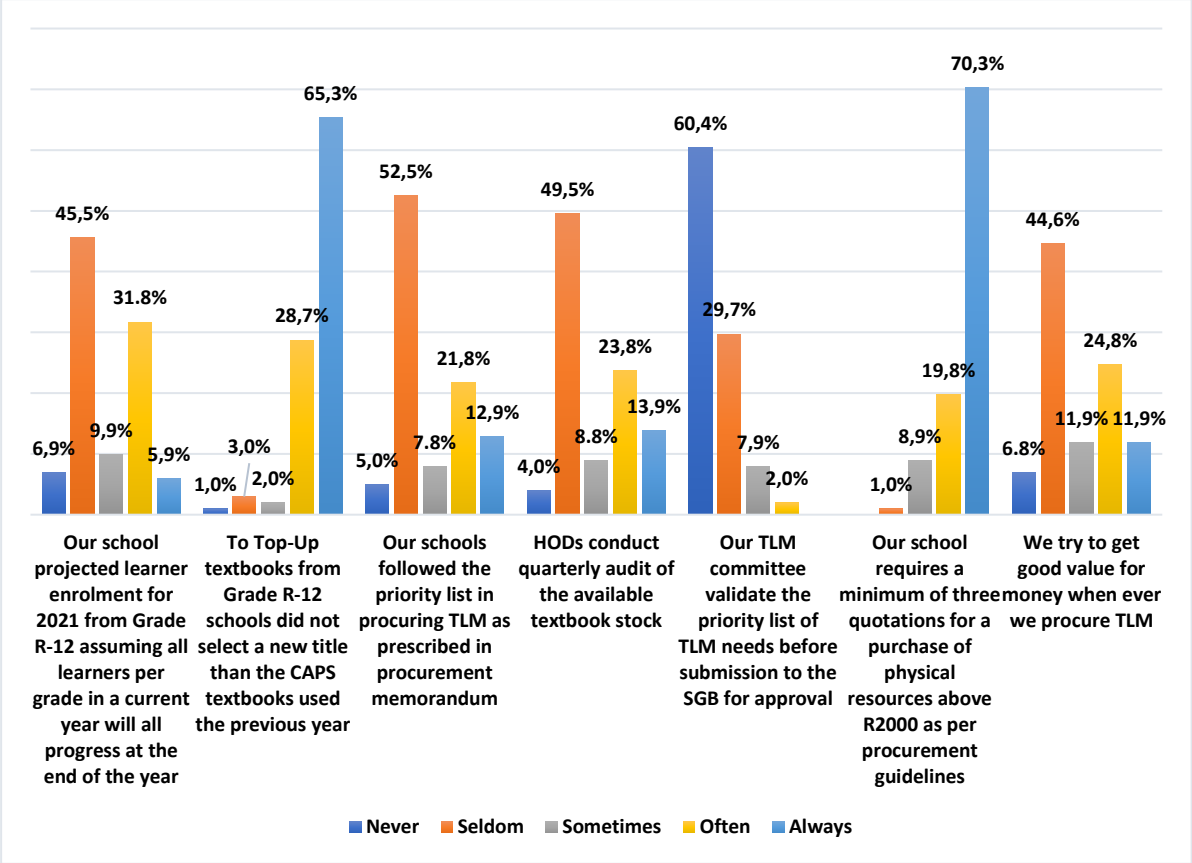
Source: Author

In sum, the mean of the human resources statements ranges from 1.58 to 4.56 while the standard deviations range between 0.54 and 1.21. Majority of the statements have a mean that is between 1.58 and 2.92 which is below 3 and is further evidence of a high disagreement rate. This is an indication of poor functionality of the human resource processes of TLM.

To assess how the procurement process of TLM functions, the frequencies and descriptive statistics are calculated and presented. Figure 19 shows the frequency percentages of the procurement statements. 45,5 per cent of the respondents said their school seldom projected learner enrolment for 2021 from Grade R-12, assuming all learners per grade in a current year will all progress at the end of the year, and 31.8 per cent said often and 9.99 per cent said sometimes. To top up textbooks from grade R to 12, schools did not select a new tittle than the CAPS textbooks used the previous year. This is evident when 65.3 per cent selected always, 28.7 per cent selected often and 3 per cent selected seldom. When asked if they followed the priority

list in procuring TLM as prescribed in procurement memorandum, 52.5 per cent chose seldom, 21.8 per cent chose often, and 12.9 per cent chose always. However, when ask if HODs conduct quarterly audits of the available textbook stock, 49.5 per cent said seldom, 23.8 per cent said often, and 13.9 per cent said always.

Figure 19: The frequency percentages of the procurement statements



Source: Author

However, 2 of the procurement statements portrayed a positive response with 94.1 per cent of the respondents indicating that often or always they did not select a new title than the CAPS textbooks used the previous year, and 90.1 per cent indicating that their school often or always requires a minimum of three quotations for a purchase of physical resources above R2000 as per procurement guidelines.

Table 10 shows the distribution responses pertaining to procurement activity variable in Section C (questionnaire). However, the main focus is on the mean score, rank order and the standard deviation of respondents' in determining if procurement system is functional. The statements were rated as: "never", "seldom", "sometimes", "often" and "always". For example, the responses on whether their school projected learner enrolment for 2021 from Grade R-12,

assuming all learners per grade in a current year will all progress at the end of the year (C21), are centred on the negative side of the neutral response with M=2.84 and SD=1.13. Similarly, the responses on whether their schools followed the priority list in procuring TLM as prescribed in the procurement memorandum (C23) are centred on the disagreement side of the of the neutral response with M=2.85 and SD=1.20. Equally, the responses on whether their schools followed the priority list in procuring TLM are centred on the disagreement side of the neutral response with M=2.85 and SD= 1.20.

However, responses on whether to Top-Up textbooks from Grade R-12 schools did not select a new title than the CAPS textbooks used the previous year (C22) is centred on the positive side of the neutral response with M=4.54 and SD=0.77. Also, responses on whether the school requires a minimum of three quotations for a purchase of physical resources above R2000 as per procurement guidelines is centred on the positive side of the neutral response with M=4.59 and SD=1.20.

Table 10: Means and standard deviation analysis of opinion of respondents about functionality of procurement processes

Item No	Description	Mean	Std. Deviation	Rank Order
C22	To Top-Up textbooks from Grade R-12 schools did not select a new title than the CAPS textbooks used the previous year	4.54	0.77	1
C26	Our school requires a minimum of three quotations for a purchase of physical resources above R2000 as per procurement guidelines	4.59	0.70	2
C21	Our school projected learner enrolment for 2021 from Grade R-12 assuming all learners per grade in a current year will all progress at the end of the year	2.84	1.13	3
C24	HODs conduct quarterly audit of the available textbook stock	2.94	1.21	4
C27	We try to get good value for money whenever we procure TLM	2.90	1.20	5
C23	Our schools followed the priority list in procuring TLM as prescribed in procurement memorandum	2.85	1.20	6
C25	Our TLM committee validate the priority list of TLM needs before submission to the SGB for approval	1.51	0.73	7

Source: Author

The means of the procurement statements range from 1.51 to 4.59 and standard deviations range from 0.70 to 1.21. Five out of seven statements have a mean that is below the midpoint of 3

(Sometimes), while two of the statements have a mean that is above the midpoint of 3. In overall, this is an indication of poor functionality of the procurement process.

4.1.1.2 Statistical hypotheses tests

The one-sample Wilcoxon signed rank test was used to test the following hypothesis:

H0: The budget, human resources, and procurement processes of TLM are not fully functional in Ekangala Township no-fee schools.

Ha: The budget, human resources, and procurement processes of TLM are fully functional in Ekangala Township no-fee schools.

The Wilcoxon test results for the functionality of the budget process are presented in table 11. The results show the hypothesis test summary on whether budget systems of TLM are fully functional in Ekangala Township no-fee schools. For example, when asked whether the SGB consults with all stakeholders when preparing the school's budget for the following year, the p-value is 0.363 > 0.05 level of significance. This means that the proportion of respondents who agree with the statement are the same as the proportion of respondents who do not agree. This implies that the results are inconclusive to be able to draw the conclusion about whether the budget processes/systems of TLM are not fully functional in Ekangala Township no-fee schools.

Table 11: Wilcoxon signed rank test for budget process

Budget	Wilcoxon Signed Rank Test			Research question	
	p-value	Decision	Difference	Decision	Conclusion
The school Governing Body (SGB) consults with all stakeholders when preparing the school's budget for the following year	0.363	Retain H0	-0.10	Midpoint	Average/ inconclusive
The GDE's allocation of funds for TLM is adequate	0.228	Retain H0 incl	-0.12	Midpoint	Average/ inconclusive
The GDE's allocation of funds is spent for TLM according to GDE prescribed policy	0.093	Retain H0	-0.17	Midpoint	Average/ inconclusive
Our SGB receives income and expenditure reports at SGB meetings	0.000	Reject H0	1.44	Reject H0	Functional
Our funds of our school are managed closely according to finance policy	0.360	Retain H0	-0.09	Midpoint	Average
Approving payment is a joint decision between the school principal and our SGB	0.543	Retain H0	-0.06	Midpoint	Average/inc onclusive

Budget	Wilcoxon Signed Rank Test			Research question	
	p-value	Decision	Difference	Decision	Conclusion
Authorisation of cheque from the SGB chairperson is needed before cheques are issued	0.000	Reject H0	1.57	Reject H0	Functional

Source: Author

Moreover, mediocre operations relating to the budget system of TLM are also evident from the following statements for example: the GDE's allocation of funds of TLM is adequate (p-value = 0.228 > 0.05). The GDE's allocation of funds is spent for TLM according to GDE prescribed policy (p-value = 0.093 > 0.05). Conversely, there is evidence of functional budget systems from the statement that the SGB receives income and expenditure reports at SGB meetings (p-value = 0.000 < 0.05) and that authorisation of cheques from the SGB chairperson is needed before cheques are issued (p-value = 0.000 < 0.05).

The results from the table above show that the null hypothesis is rejected, and the means are greater than 3. For the reason, the research null hypothesis is rejected. However, because most budget statements have a mean that is not statistically different from the midpoint of 3, there is an indication of mediocre/average functionality of TLM budget processes.

The Wilcoxon test results for the functionality of human resources process are presented in table 12. The results show that the null hypothesis of the Wilcoxon test, that the mean is equal to 3, is rejected for the following statements: parent members of our SGB participate actively on TLM committee (p-value = 0.000 < 0.05), our school nominated storeroom manager (p-value = 0.000 < 0.05), the school TLM convene 8 meetings per year (p-value = 0.000 < 0.05), school TLM committee ensure that TLM policy is implemented in the school (p-value = 0.000 < 0.05), and all TLM committee members signed declaration of confidentiality and impartiality to ensure that there is confidentiality about the details of all orders and requisitions (p-value = 0.000 < 0.05).

Table 12: The Wilcoxon test results for the functionality of the human resources process

Human resources	Wilcoxon Signed Rank Test			Research question	
	p-value	Decision	Difference	Decision	Conclusion
Parent members of our SGB participate actively on teaching and learning material committee (TLMC)	0.000	Reject H0	-1.11	Retain H0	Not functional
All HODs participate actively on TLMC	0.578	Retain H0	-0.08	Midpoint	Average
The deputy principal is the TLM coordinator as prescribed in Integrated Quality Management System (IQMS)	0.215	Retain H0	-0.18	Midpoint	Average
Our school has an admin officer as part of TLMC	0.000	Reject H0	1.39	Reject H0	Functional
Our school nominated storeroom manager	0.000	Reject H0	-1.11	Retain H0	Not functional
The school TLMC convene 8 meetings per year (At least twice per term)	0.000	Reject H0	-0.83	Retain H0	Not functional
Our school developed TLM policy by utilising GDE policy guidelines	0.000	Reject H0	1.56	Reject H0	Functional
School TLM committee ensure that TLM policy is implemented in the school	0.000	Reject H0	-1.42	Retain H0	Not functional
All TLM committee members signed declaration of confidentiality and impartiality to ensure that there is confidentiality about the details of all orders and requisitions	0.000	Reject H0	-1.03	Retain H0	Not functional
Our school TLM committee ensures that resources are fairly distributed to all learners and educators	0.000	Reject H0	1.41	Reject H0	Functional

Source: author

For all the above statements, the mean is significantly lower than 3 as shown by the differences and this is an indication that majority of the respondents disagree. Therefore, in terms of the research question and hypothesis that the human resources systems of TLM are fully functional in Ekangala Township no-fee schools, this hypothesis is rejected. Moreover, with regards to whether all HODs participate actively in TLMC (p-value = 0.578 > 0.05) and the deputy principal is the TLM coordinator as prescribed in Integrated Quality Management System (IQMS) (p-value = 0.215 > 0.05), the Wilcoxon null hypothesis is not rejected, which is an indication that the means of these are not statistically different from 3. Hence, there is mediocre/average functionality when it comes to whether all HODs participate actively in TLMC and the deputy principal is the TLM coordinator as prescribed in Integrated Quality Management System (IQMS).

Lastly, looking at the human resources processes pertaining to the school having an admin officer as part of TLMC (p-value = 0.000 < 0.05), the school developing TLM policy utilising GDE policy guidelines (p-value = 0.000< 0.05) as well as the school TLM committee ensuring that resources are fairly distributed to all learners and educators (p-value = 0.000 < 0.05), the Wilcoxon null hypothesis is rejected, which shows that the mean is significantly different from 3. Therefore, in terms of the research question and hypothesis that the human resources of TLM are fully functional in Ekangala Township no-fee schools, this hypothesis is accepted. In other words, the null hypothesis that the human resources processes/systems of TLM are not fully functional in Ekangala Township no-fee schools is rejected.

With regards to procurement systems, the hypothesis test results are presented in table 13. The procurement process regarding to the TLM committee validating the priority list of TLM needs before submission to the SGB for approval (p-value = 0.000 <0.05), the hypothesis test show that the mean is significantly lower than 3. According to the research question, this process of validating the priority list is not fully functional because the research hypothesis is not rejected. With reference to whether the school projects that the learner enrolment for 2021 from Grade R-12 assuming all learners per grade in a current year will all progress at the end of the year (p-value = 0.169 >0.05), the schools followed the priority list in procuring TLM as prescribed in procurement memorandum (p-value = 0.302 >0.05), HODs conduct quarterly audit of the available textbook stock (p-value = 0.770 >0.05) and that the schools try to get good value for money whenever they procure TLM (p-value = 0.499 >0.05), the null hypothesis is not rejected that means of these statements are significantly not different from 3.

Table 13: Wilcoxon signed rank test for procurement processes statements

Procurement	Wilcoxon Signed Rank Test			Research question	
	p-value	Decision	Difference	Decision	Conclusion
Our school projected learner enrolment for 2021 from Grade R-12 assuming all learners per grade in a current year will all progress at the end of the year	0.169	Retain H0	-0.16	Midpoint	Average/inconclusive
To Top-Up textbooks from Grade R-12 schools did not select a new title than the CAPS textbooks used the previous year	0.000	Reject H0	1.54	Reject H0	Functional
Our schools followed the priority list in procuring TLM as prescribed in procurement memorandum	0.302	Retain H0	-0.15	Midpoint	Average
HODs conduct quarterly audit of the available textbook stock	0.770	Retain H0	-0.06	Midpoint	Average
Our TLM committee validate the priority list of TLM needs before submission to the SGB for approval	0.000	Reject H0	-1.49	Retain H0	Not functional
Our school requires a minimum of three quotations for a purchase of physical resources above R2000 as per procurement guidelines	0.000	Reject H0		Reject H0	Functional
We try to get good value for money whenever we procure TLM	0.499	Retain H0	-0.10	Midpoint	Average

In terms of the research question, this is an indication of mediocre/average functionality of the procurement processes. Furthermore, there are two procurement processes where the Wilcoxon test shows that the means are statistically higher than 3, and these are to 'Top-Up textbooks from Grade R-12 schools did not select a new title than the CAPS textbooks used the previous year' (p-value = 0.000<0.05) and that the school requires a minimum of three quotations for a purchase of physical resources above R2000 as per procurement guidelines (p-value = 0.000 <0.05). Therefore, in terms of the research questions, the hypothesis that the procurement processes/systems of TLM (i.e., Top-up of textbooks and requiring minimum number of

quotations) are fully functional/operational in Ekangala Township no-fee schools, is accepted and the null hypothesis, rejected.

4.1.2 Comparison of the results to similar studies

The study conducted by Mutungwa and Orodho (2015), Mestry and Bodalina (2015), Osaat (2017) as well as Navidad (2019) analysed data using descriptive statistics where percentages and frequencies as well as inferential statistics were used to test the hypotheses. They found out that there is inadequate funding by the government which hinders effective teaching and learning. However, the results of the study undertaken discovered a mean score of 2.88 when ask if GDE allocated funds is adequate. The results of the study conducted by Bodalina (2012) reveal that the GDE's allocation of funds is spent for TLM according to GDE prescribed policy where M= 3.77 which contradicts the study results where M=2.83 and SD=1.02 showing average response.

The study findings reveal the school TLM committees do not ensure that TLM policy is implemented in the schools, with the results centred on the neutral side of negative response with M=1.58 and SD= 0.60. The results echo Mutungwa and Orodho (2015) who remark that there is no effective implementation of policies in schools. The findings are also in agreement with Navidaad (2019) who found that a policy or guidelines set forth for the learning resource materials are not utilised.

4.2 The effectiveness of TLM management in Ekangala Township no-fee schools

The section seeks to presents the empirical results of the second research question namely, how effective is TLM management in Ekangala Township no-fee schools? As well as its accompanying hypotheses.

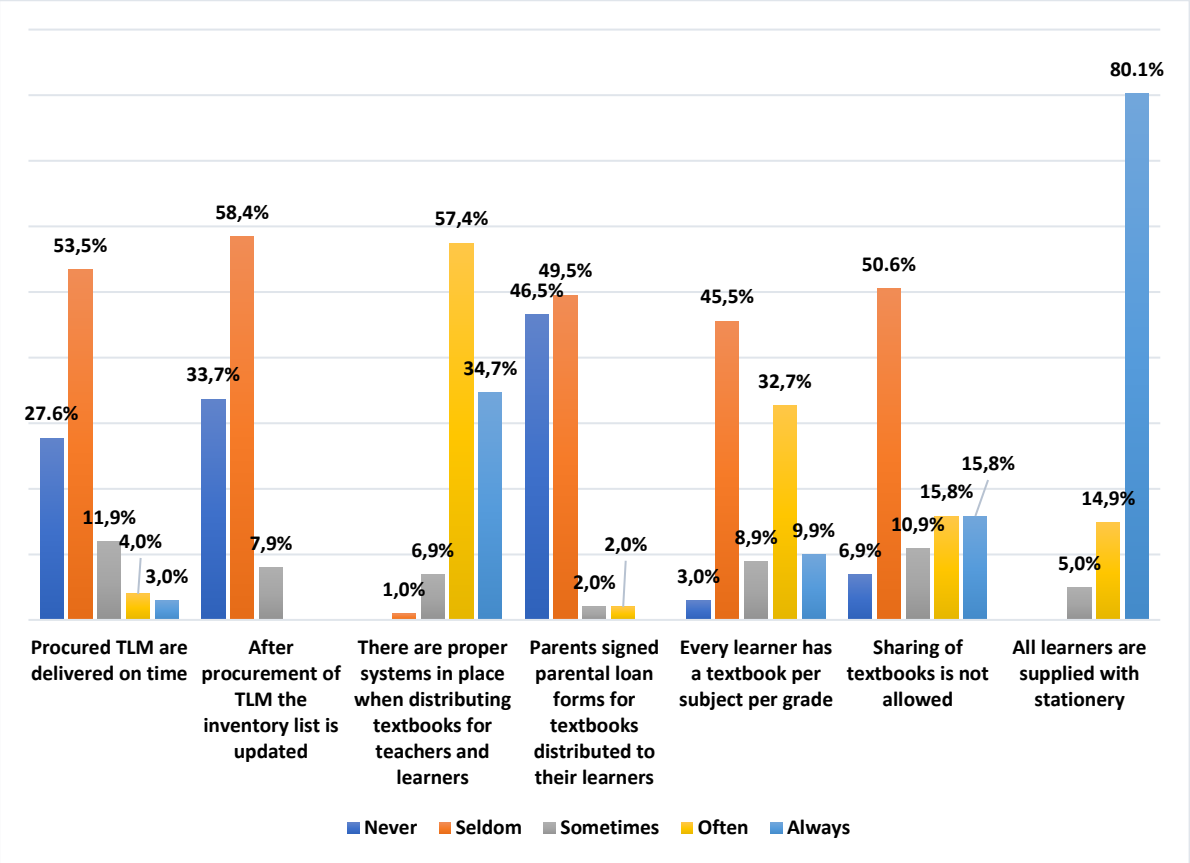
H0: There is no statistically significant evidence that TLM management is effective in Ekangala Township no-fee schools.
Ha: There is statistically significant evidence that TLM management is effective in Ekangala Township no-fee primary and secondary schools.

This section first presents the descriptive statistical results (Section 4.2.1.1) as well as the statistical hypothesis test (Section 4.2.1.2), and last, compares the results of this research study to other similar studies (Section 4.2.2).

4.2.1 Descriptive statistics

This study is aimed at establishing how TLM is managed in no-fee schools. In doing so, one of the questions asked was how functional the budget, human resources and procurement processes are, in the management of TLM. The first set of results are for the budget processes, followed by the human resource processes and ends with the results for the procurement processes. This section first presents the frequency distribution of questions relating to TLM management as illustrated in Figure 20. Figure 20 shows frequencies of the management statements where the respondents choose from the five categories of never, seldom, sometimes, often and always.

Figure 20: Frequency distribution of questions relating to TLM management

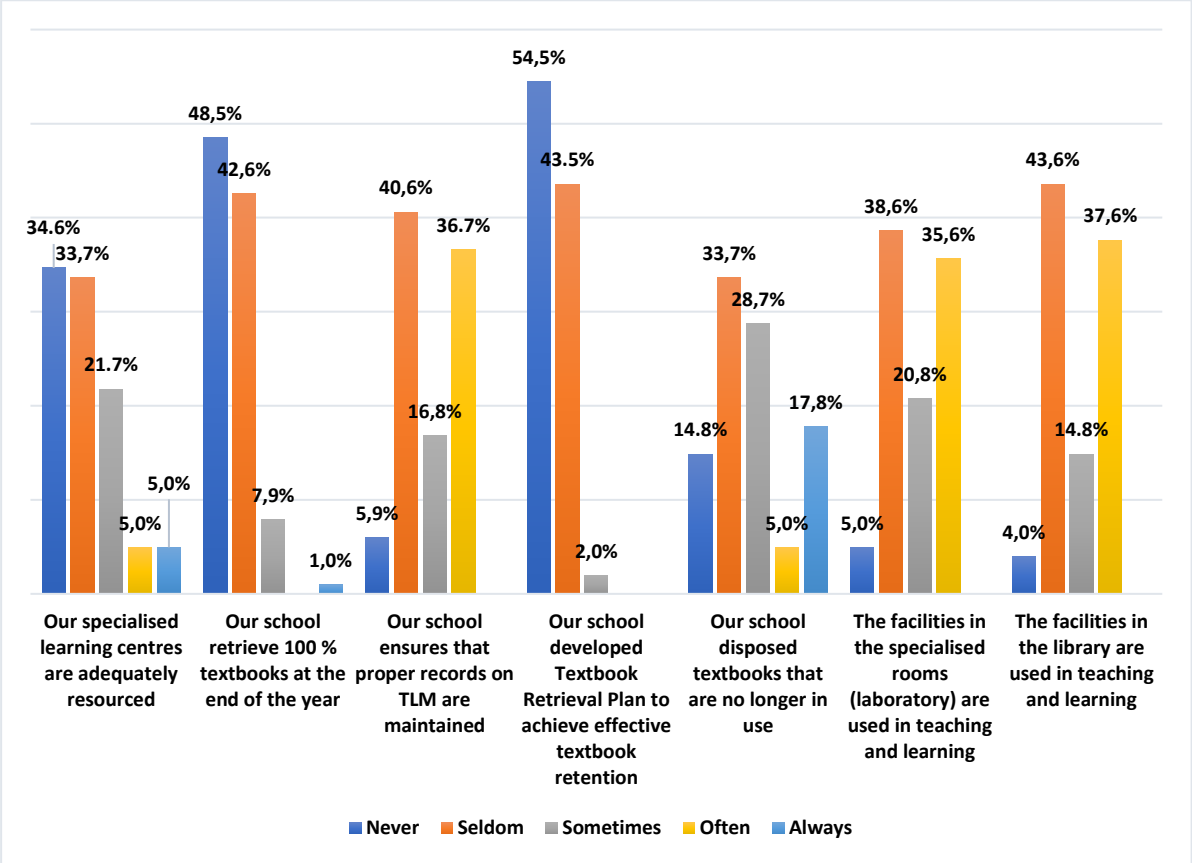


Source: Author

When asked if procured TLM are delivered on time, 53.5 per cent indicated seldom, 27.6 per cent never, and 4.0 per cent indicted sometimes. However, after the procurement of TLM the inventory list is updated. This is shown by 58.4 per cent of the participants indicating seldom, 33.7 per cent selecting never, and 7.9 per cent selecting sometimes. Moreover, when asked if there are proper systems in place when distributing textbooks for teachers and learners, 57.4 per cent of the participants indicated often, 34.7 per cent indicated always and 6.9 per cent indicted

seldom. When asked if the parents sign parental loan forms for textbooks distributed to their learners, 49. 5 per cent selected seldom, 4. 5 per cent selected never and 2.0 per cent selected sometimes. When asked if every learner has a textbook per subject per grade 45.5 per cent of the respondent selected seldom, 32.7 per cent selected often and 9.9 per cent selected always. Nevertheless, when ask if the sharing of textbooks is not allowed, 50.6 per cent of the respondents selected seldom, 15.8 per cent selected often and 10.9 per cent selected sometimes. Furthermore, when asked if all learners are supplied with stationery, 80.1 per cent of the participants chose always, 14.9 per cent chose often and 5.0 per cent chose sometimes.

Figure 21: Frequency distribution of questions relating to TLM management



In addition, when asked if their specialised learning centres are adequately resourced 34.6 per cent of the participants indicated never, 33.7 of the participants indicted seldom and 21.7 per cent indicated sometimes. However, when asked if their school retrieves 100 per cent textbooks at the end of the year, 48.5 per cent indicated never, .42.6 per cent indicted seldom and 7.9 per cent indicated sometimes. Moreover, in responding to whether their school ensures that proper records on TLM are maintained, 40.6 per cent of the participants chose seldom, 36.7 per cent chose often and 16.8 per cent sometimes. When asked if their school developed textbook retrieval

plans to achieve effective textbook retention, majority (54.5 per cent) selected never, 43.5 per cent selected seldom and 2.0 per cent selected sometimes. Further, when responding to whether our school disposes of textbooks that are no longer in use, 33.7 per cent of the participants indicated seldom, 28.7 per cent of the participants indicated sometimes and 17.8 per cent of the participants indicated always. In addition, these frequencies show that most of the management processes of TLM are not properly functioning and could, thus, be an indication of ineffective management.

Table 14 shows the distribution responses pertaining to management outcome variables as indicated in Section D (questionnaire). However, the focus is on the mean score, and the standard deviation rank orders of respondents' in determining the effectiveness of TLM management. The statements were rated as: 'never', 'seldom', 'sometimes', 'often' and 'always. These results provide further evidence of poor TLM management with most of the means being below the midpoint of 3. Only two statements have a mean that is above 3, which is an indication of good management principles for the respective processes; and these are that (D 34) all learners are supplied with stationery (Mean=4.75 and SD=0.537), there are proper systems in place when distributing textbooks for teachers and learners (D30) (Mean=4.26 and SD=0.627).

Responses on whether procured TLM are delivered on time are centred on the negative/disagreement side of neutral response with M=2.01 and SD=0.911. When asked if the inventory list is updated after procurement of TLM (D29) the responses are centred on the negative/disagreement side of neutral response with M=1.74 and SD=0.594. Whereas when responding to whether parents signed parental loan forms for textbooks distributed to their learners (D=31), responses are centred on the negative/disagreement side of neutral response with M=1.59 and SD=0.635.

It is noted that 6 responses are centred on the positive side but are closely equal to the neutral response. For example, every learner has a textbook per subject per grade (D32), M=3.20 and SD=0.721. The sharing of textbooks is not allowed (D33), M=2.83 and SD=1.250. This is some indication of effective management principles in relation to the 6 statements.

Table 14: Means and standard deviation analysis of opinion of respondents about TLM management variable

Item No	Description	Mean	Std. Deviation	Rank Order
D34	All learners are supplied with stationery	4.75	0.537	1
D30	There are proper systems in place when distributing textbooks for teachers and learners	4.26	0.627	2
D41	The facilities in the library are used in teaching and learning	3.15	0.817	3
D37	Our school ensures that proper records on TLM are maintained	3.08	0.880	4
D32	Every learner has a textbook per subject per grade	3.01	1.145	5
D40	The facilities in the specialised rooms (laboratory) are used in teaching and learning	3.05	0.876	6
D33	Sharing of textbooks is not allowed	2.83	1.250	7
D39	Our school disposed textbooks that are no longer in use	2.77	1.287	8
D35	Our specialised learning centres are adequately resourced	2.12	1.098	9
D28	Procured TLM are delivered on time	2.01	0.911	10
D29	After procurement of TLM the inventory list is updated	1.74	0.594	11
D36	Our school retrieve 100 % textbooks at the end of the year	1.62	0.719	12
D31	Parents signed parental loan forms for textbooks distributed to their learners	1.59	0.635	13
D38	Our school developed Textbook Retrieval Plan to achieve effective textbook retention	1.48	0.540	14

Source: Author

The above descriptive statistics indicate that there is ineffective TLM management because most of the responses range from never to sometimes, as indicated also by the means which the majority of them are below 3.

4.2.2 Statistical hypotheses tests

The one-sample Wilcoxon signed rank test is used to test the hypothesis of effectiveness of TLM management in Ekangala Township no-fee schools represented as follows:

H0: There is no statistically significant evidence that TLM management is effective in Ekangala Township no-fee primary and secondary schools.

Ha: There is statistically significant evidence that TLM management is effective in Ekangala Township no-fee primary and secondary schools.

The Wilcoxon hypothesis test was run on the 13 statements of TLM management. table 15 below depicts the calculated means and hypothesis test results.

Table 15: The calculated means and Wilcoxon test results

Management	Wilcoxon Signed Rank Test			Research question	
	p-value	Decision	Difference	Decision	Conclusion
Procured TLM are delivered on time	0.000	Reject H0	-0.99	Retain H0	Not functional
After procurement of TLM the inventory list is updated	0.000	Reject H0	-1.26	Retain H0	Not functional
There are proper systems in place when distributing textbooks for teachers and learners	0.000	Reject H0	1.26	Reject H0	Functional
Parents signed parental loan forms for textbooks distributed to their learners	0.000	Reject H0	-1.41	Retain H0	Not functional
Every learner has a textbook per subject per grade	0.862	Retain H0	0.01	Midpoint	Average
Sharing of textbooks is not allowed	0.308	Retain H0	-0.17	Midpoint	Average
All learners are supplied with stationery	0.000	Reject H0	1.75	Reject H0	Functional
Our specialised learning centres are adequately resourced	0.000	Reject H0	-0.88	Retain H0	Not functional
Our school retrieve 100 % textbooks at the end of the year	0.000	Reject H0	-1.38	Retain H0	Not functional
Our school ensures that proper records on TLM are maintained	0.107	Retain H0	-0.16	Midpoint	Average
Our school developed Textbook Retrieval Plan to achieve effective textbook retention	0.000	Reject H0	-1.52	Retain H0	Not functional
Our school disposed textbooks that are no longer in use	0.233	Retain H0	-0.23	Midpoint	Average
The facilities in the specialised rooms (laboratory) are used in teaching and learning	0.176	Retain H0	-0.13	Midpoint	Average
The facilities in the library are used in teaching and learning	0.154	Retain H0	-0.14	Midpoint	Average

Source: Author

To test that these means are statistically different from 3, a one-sample Wilcoxon signed rank test was used. Most of the statements of the management variable have a mean that is significantly different from 3 and lower than 3. With respondents being asked whether procured TLM are delivered on time (p-value = 0.00 <0.05), the null hypothesis is rejected as the mean is equal to 3. For example, when asked whether the inventory list is updated after procurement of TLM (p-value = 0.000 < 0.05), parents signed parental loan forms for textbooks distributed to their learners (p-value = 0.000 < 0.05), specialised learning centres are adequately resourced (p-value

= 0.000 <0.05), the Wilcoxon test results show that the null hypothesis of mean equal to 3 is rejected. Looking at the mean differences of the above statements, they are all negative which indicates that the means of these statements are lower than 3. Therefore, for the above statements about procurement delivered on time (D28), inventory list being updated (D29), textbook retrieval (D36), and learning centres being adequately resourced (D35), we do not reject the research null hypothesis.

Furthermore, a few management statements indicate mediocre effectiveness, meaning that the results are inconclusive where we do not reject the null hypothesis that the mean is equal to 3. These are, for example: every learner has a textbook per subject per grade (p-value = 0.862 > 0.05), sharing of textbooks is not allowed (p-value = 0.308>0.05), the school ensures that proper records on TLM are maintained (p-value = 0.107 > 0.05).

In addition, when asked whether there are proper systems in place when distributing textbooks for teachers and learners (p-value = 0.000 < 0.05) and all learners are supplied with stationery (p-value = 0.000 < 0.05), the Wilcoxon test results show that we reject the null hypothesis because the means are above 3. However, because majority of the management statements indicate a mean of significantly lower than 3, we do not reject the research hypothesis that there is no effective TLM management in Ekangala Township no-fee schools at a 5 per cent significance level.

4.2.3 Comparison of the results to similar studies

Investigating resource management using descriptive and inferential statistics echoed the findings by Mestry & Bodalina (2015) as well as Mengistu (2014) who found out that there are proper systems in place when distributing textbooks for teachers and learners, with a mean score of 3.88. The research results of this study reveals a mean score of 4.26 with majority of the respondents highlighting that often there are proper systems in place when distributing textbooks to teachers and learners. The study conducted by Mohono (2010) shows that the schools studied had functional resource management committees. However, the schools experienced a high shortage of resources and late deliveries of textbooks.

Similarly, the research results of the work of Kwinda (2014) indicated that there is a general shortage of textbooks in all 3 schools studied. This study discovered average responses (M=3.01) from respondents when asked if every learner has a textbook per subject per grade. Further, when asked if sharing of textbooks is not allowed, the results were average with M=2.83. The

study agrees with Mohono that ordered resources are not delivered on time, based on a mean score of 2.01.

Based on the data presented in 4.2, it shows that there was a high rate of learners who did not return textbooks at the end of the year. The results reveal that the schools never retrieve 100 per cent of textbooks at the end of the year. This is evident with a mean score of less than 3 (M=1.62). Empirical results of the study undertaken indicate that specialised learning centres are not adequately resourced, with a mean score of 2.12. This results are in agreement with Ayaga (2010), Bodalina (2012) and Demisse (2018) who sought to investigate the current status of school resources and discovered specialised learning centres such as laboratories to be inadequately resourced.

4.3 The effect of financial, human resource as well as procurement in management

In section 4.2, the research study presented the research results to the second question; namely- How effective is TLM management in Ekangala Township schools? This question is a predecessor to the third research question: to what extent are budget, human resources, and procurement processes affecting TLM management in no-fee schools? This section first presents the statistical hypothesis test (Section 4.3.1.1) and last, compares the results of this research study to similar studies (Section 4.3.2).

4.3.1 Presentation of results

4.3.1.1 Statistical hypotheses tests

To establish the extent of how budget procedures, human resources procedures, procurement process, are significantly related to effective TLM management, a correlation test was done for the following pairs of variables: (i) Budget procedures and management, (ii) Human resources procedures and management, (iii) Procurement procedures and management. The Pearson's correlation coefficient test was used, and the results given below.

Table 16: Correlation coefficients (Effective management versus budget, human resources, and procurement)

Variables	Effective management	
	Pearson Correlation	**P-value**
Budget	0.409	0.000
HR	0.340	0.001
Procurement	0.108	0.292

Source: author

Based on the correlation analysis, there is a statistically significant relationship between management and budget processes of TLM (r = 0.409; p-value = 0.000). The correlation coefficient between management and human resources also reports a statistically significant linear relationship between human resources processes and TLM management (r = 0.340; p-value = 0.000). However, the correlation coefficient between management and procurement process shows that there is no statistically significant linear relationship (r = 0.108; p-value = 0.292). Furthermore, a regression equation is then estimated with management as a dependent variable, and budget and human resources as independent variables. This regression is done to determine the impact that these systems of budget and human resource have on TLM management. The results are reported in the table below.

Table 17: Regression results

Dependent variable = Management	Unstandardized		Standardized	T-statistic	p-value
	B	**Std. Error**	**Beta**		
Constant	1.829	0.453		4.036	0.000
Budget	0.319	0.136	0.300	2.345	0.021
HR	0.215	0.135	0.204	1.589	0.115
Adjusted R Square	0.202				

Source: Author

The regression results shown that budget processes have a significant effect on TLM management (coefficient = 0.319; p-value = 0.021), as indicated by a p-value that is less than 0.05. However, human resources processes (coefficient = 0.215; p-value = 0.115) do not have a significant effect on management because the p-value is larger than 0.05. Based on the above analysis, the conclusion is that budget processes are effective in TLM management whereas human resources processes are not effective. Therefore, we reject the null hypothesis and accept the alternative research hypothesis that budget processes are effective in TLM management. However, we do not reject the null hypothesis that human resources and procurement processes are not effective in TLM management.

4.3.2 Comparison of the results to similar studies

Gumbi (2009) examined the relationship between independent variables and dependent measure using Pearson's correlation coefficient to show the relationship between the variables of the physical resources, the availability and handling of physical resources and the role played by principals in the management of physical resources. Similar to this study, statistical hypothesis results reveal that there was statistically and practically significant correlation between the independent and dependent measure (management of physical resources). Similarly, Benjamin and Orodho (2014) analysed data using the Pearson product-moment correlation coefficient statistical technique. The major finding was that there was a positive and significant correlation between most of the teaching and learning resources and level management and content delivery ($r = .711$ $p < .001$) at a $\propto = .05$ level of statistical significance.

The next component discusses these research results, applying the general system theory and programme theory as discussed is subcomponent 2.6.

5 . DISCUSSION OF RESEARCH FINDINGS

Wotela (2018) posits that empirical research results should be discussed and interpreted by the application of interpretative frameworks as well as other supporting literature. This component interprets and discusses the empirical research results that have been delineated in Chapter 4 based on extant literature, and specifically the general system theory and programme theory. The main aim of the study is to empirically establish how Ekangala Township no-fee schools manage their teaching and learning material. The study locates its interpretations and discussion of findings within the context of research conceptualisation, as well as the crucial aspects of the physical context (Sections 2.1), the problem analysis (Section 2.2), and the knowledge gap analysis (Section 2.3). The discussion of the research findings is divided into three sections according to the research questions as follows: (5.1) The functioning of the budget, human resources, and procurement processes of TLM in Ekangala Township no-fee schools; (5.2) The effectiveness of TLM management in Ekangala Township no-fee schools; and (5.3) The effect of budget, human resources, and procurement processes TLM management.

5.1 Functioning of financial resources, human resources and procurement processes of TLM in no-fee schools

This research sought to understand TLM management in Ekangala Township no-fee schools. This section presents the interpretation and discussions of the research results to understand if financial resource input (budget), human resource input (teaching and learning material committee) and activity (procurement processes) in no-fee schools are functional. The theoretical contexts, general system theory (Bertalanffy, 1968) and programme theory (Beckman, 1987) are briefly highlighted in each section to bring perspective to the interpretation and analysis of the findings.

As found in 4.1.1 (B7) the SGBs receive income and expenditure reports at SGB meetings; the rejected null hypotheses (H0) where the mean score = 4.44 means that the responses are centred on the agreement side of the neutral response. Further, the results reveal that the authorisation of cheques from the SGB chairperson is needed before cheques are issued, the statement (B10) rejected the (H0) where the mean score = 4.57, which also indicates that the responses are centred on the agreement side of the neutral response. Both results above indicate an element of transparency, as emphasised by Bertalanffy's general system theory in current debates about the nature of organisational transparency as an element of good governance (Valentinov, Verschraegen, & Van Assche, 2019).

However, on other statements, for example 'the school SGB consults with all stakeholders when preparing the schools' budget for the following year' (B4), 'the GDE 's allocation of funds for TLM is adequate' (B5), 'the GDE 's allocation of funds is spent for TLM according to GDE's prescribed policy' (B6), infer that the proportion of respondents who agree and strongly agree are the same as the proportion of respondents who disagree and strongly disagree. Therefore, the study was unable to measure the extent to which the respondents agree/strongly agree and disagree/strongly disagree with the questions as the results are inconclusive.

Regardless of the fact that the results are inconclusive, statements such as 'the school SGB consults with all stakeholders when preparing the schools' budget for the following year' (B4), are compatible with the programme theory which institute a consultative environment amongst stakeholders, and establishes consensus concerning the objectives of the intervention and processes in achieving the purposes (Funnel& Rogers, 2011; Rogers, 2008; & Chen, 1990). This means that for TLM development, for planning to be successful, it is imperative that frameworks be created through negotiation and consultation with all stakeholders. Intentions for proper resource management by the schools should be expressed in the school development plan using action plans, each team's aim, objectives, and planning. This may potentially lead to effective and efficient TLM management.

General system theory is useful as it supplies socioeconomic inputs that will attain organisational goals. The objectives are to produce outputs of maximum usefulness to its system (Chikere et al., 2015). This implies that the government should provide adequate financial resource inputs to schools with the objective of producing adequate outputs, being TLM. The results indicate mediocre operations when responding to the statement that GDE's allocation of funds for TLM is adequate (B5) (p-value=0.228>0.05). As such, the extent of the participants' agreement cannot be indicated.

The research results indicate that there is no variation in the opinion of the respondents on the statement that the GDE's allocation of funds is spent for TLM according to GDE's prescribed policy (B6) (p-value=0.093>0.05); we retain the research hypothesis. However, Mestry and Bodalina (2015) discovered that schools are managed closely according to finance policy. Literature reveals that the finance policy is one document that cannot be compromised, even by a small margin. Not only should the policy be made available to every SGB member, but system

theory also clearly stipulates that policy has to be adhered to in the strictest manner (Ehalaiye, Redmayne, & Laswad, 2021).

The study retained the research hypothesis for response that approving payment is a joint decision between the school's principal and the SGB (B9) (p-value=0.543). In line with the finding, systems theory confirms that joint decision-making empowers organisations, making them smarter and more flexible (Ehalaiye, Redmayne, & Laswad, 2021). In agreement with the theory, literature reveals that the joint approval of payments by both the principal and the SGB makes for good monitoring and control of budget items and ultimately sound financial practice (Mestry & Bodalina, 2015).

In conclusion, the financial input variable (budget) is fully functional in Ekangala Township no-fee schools. This is evidence based on the two presented questions posed to participants (B7) 'our SGB receives income and expenditure reports at SGB meetings' where p-value=0.000 and significance level of <0.05 and (B10), 'authorisation of cheque from the SGB chairperson is needed before cheques are issued' where p-value=0.000 with a significance level of <0.05). These practices impact positively on the functionality of financial resource (budget) processes. These results are compatible with Boateng (2012) who conducted a study of similar subject and found that, in terms of financial management, all the schools were found to be compliant. The results chain as discussed in Chapters 1 and 2 clarifies assumptions about how inputs should contribute towards achieving activities (procurement) and outputs (procured TLM).

The respondents, when asked if the SGB parent component actively participates on TLM committees, centred on the negative side of the neutral response. This is evident by the lower mean score (Mean = 1.89) in that, the null hypothesis is rejected. The GDE (2018, p.18) TLM policy clearly stipulates that TLM committees should consist of an SGB member who is a parent (chairperson of the committee). However, the findings suggest that SGB parent members are not actively participating in TLM. It is the responsibility of SGBs to ensure that school TLM committees are established, chaired by a parent member as indicated in Section 30 (b) of SASA, and functions properly as a subcommittee of the SGB (Bodalina, 2012; Phakathi, 2015).

The findings of the study are compatible with the work of Xaba (2011), who suggests that many SGBs and principals lack the relevant financial management and bookkeeping skills to manage resources effectively. Programme theory clarifies the research findings that participation in the

programme/projects contribute to achieving the desired outcome (Sharpe, 2011). This means that SGB parent members, by actively participating in TLM projects, can yield the achievement of intervention outcomes. Some of the skills required for effective participation by SGB members are those of debate, argument, compromise, decision making and accountably; but these are automatically acquired when parents are elected to serve on the SGB and offered relevant training to ensure excellency and effective governance (Ntsele,2014).

The study results (B14) that the school have admin officers as part of school TLM committee are centred on the positive side of the neutral response, with high mean score of 4.39. Scholars of programme theory, Kubisch, Schorr Weiss and Connell, (1995) confirm that in order to enhance the programme, training is necessary in schools and in education at large. This means that for schools to improve their TLM intervention, the TLM committee should undergo training. Admin officers execute a critical role in TLM committees by capturing requisition forms and receiving delivery of ordered materials, which entails verifying proofs of order (final quotations) with proof of delivery (invoices). This is possible through proper training, as highlighted by programme theory researchers. With this finding (M=4.39) it can be assumed that the admin officer performs their roles at their level best. Conversely, in the study conducted by Demisse (2018), responses of the respondents revealed that the involvement of non-teaching staff (admin officers) in the material resource management in schools was not high.

The responses on the statement that the school nominated storeroom manager (B15) with a mean score of 1.89, rejects the null as the mean is significantly different from 3. This means that majority of participants disagree and strongly disagree with the statement. This finding is supported by Phakathi (2015), who discovered that the lack of a storeroom manager made it difficult for schools to ascertain the availability of stock available at any given time. The principal and the storeroom manager must ensure strict control measures for safe keeping of all TLM throughout the year as stated in the TLM Provincial Policy (GDE, 2018).

When asked if the school TLM committee convenes 8 meetings per year (B16), responses were centred on the disagreement side of the neutral response with a mean score of 2.17. It is deducted that TLM committees are dysfunctional, as they fail to convene meetings and discuss matters pertaining to TLM processes. It is important for the committee to be functional as TLM is one of the government non-negotiables. Programme theory attest that the Department "shows the importance of the daily meetings to review and discuss the figures, as they worked iteratively on

ways to improve performance" (Rogers, 2008). This implies that is it of paramount significance for human resources to hold meetings regularly in order to improve the performance of the intervention. The diverse findings by Phakathi (2015) reveal that HODs convened and monitored the meetings for the planning regarding textbooks to be purchased.

With regards to whether the schools developed TLM policy by utilising GDE policy guidelines (B17), the responses are centred on the positive side of the neutral response based on the highest mean score (Mean = 4.56). This means that the schools successfully develop TLM policy by making use of the TLM provincial guidelines provided to them. System theory (Mwangeka, 2020) posits that to ensure the production function adequately addresses the demands of society, education policy makers and managers must determine clear and precise objectives.

The study discovered that the school TLM committee is not ensuring that TLM policy is implemented in the school (B18), this is evident with the mean score of 1.58. From this response it is possible to say policy is developed (B17), but the committee is not monitoring its implementation. In line with this finding, Mutungwa and Orodho (2015) believe that there is no effective implementation of TLM policy in schools. Programme theory clearly stipulates that "programme logic model allows for the intended structure of the policy to be clearly articulated and the components identified" (Fear, 2007, p.15). Further, it provides a powerful frame of reference for understanding the policy. This implies that TLM committees should explicitly identify TLM processes/activities in the policy, mediate and implement them effectively with regards to all stakeholders.

The study findings reveal that all TLM committees did not sign a declaration of confidentiality and impartiality to ensure privacy of order and requisition details (B19); with a mean score of 1.97 centred on the disagreement side of the neutral response. Members should not purposefully or unlawfully favour or prejudice anyone in the recommendation and evaluation processes. Members should disclose details of private or business interests which he/she or any close family member, partner or associate may have in procurement processes (GDE, 2018).

The results reveal that school TLM committees ensure that resources are fairly distributed to all learners (B20). This is evident with the mean score of 4.41 which is centred on the positive side of the neutral response. This is in line with programme theory which emphasises the fair distribution of resources and the effect of constraints.

Based on mean scores of below 3, the conclusion is that human resources of TLM are not fully functional in Ekangala Township no-fee schools. While on the mean scores that are above 3 the conclusion is that the human resources of TLM are fully functional in Ekangala Township no-fee primary and secondary schools.

The system theory suggests that "all organisations acquire resources from a larger environment of which they are part of and, in turn, provide the goods and services demanded by the larger environment" (Chikere et al., p.1). This means that schools procure TLM from various suppliers which are needed to promote teaching and learning. The results in Section 4.2.1 (C22) about procurement systems suggest that 'to top-up textbooks from Grade R-12 schools did not select a new title than the CAPS textbooks used the previous year' had a mean of 4.54. This means that the schools do not often select a new textbook title than Curriculum Assessment Policy Statement (CAPS) which is a good practice. All schools should be managing textbooks and other resources effectively to prolong their lifespan (4-5 years) and ensure optimal usage. In case they need new titles, only one or two titles should be bought as a teacher reference to avoid wasteful expenditure (Phakathi, 2015).

The results shows that there is no significant evidence that the school TLM committee validates the priority list of TLM needs before submission to the SGB for approval. This is based on the mean score of 1.51 and standard deviation of 0.73, centred on the disagreement side of the neutral response. This is a challenge, as lack of validation leads to inaccurate capturing of information leading to shortages of resources as indicated is Section (2.2.2). The finding is supported by Mnyeni (2017, p.57) who suggests that "administrators fail to provide accurate and reliable data on the number of staff, learners enrolled, and even materials available". Similarly, Demisse (2018) observed the challenge of schools not buying the right quality of materials. These hinder effective management and utilisation of teaching resources.

The finding of question C26 reveals that schools require a minimum of three quotations for a purchase of physical resources above R2000, as per procurement guidelines. The mean score of 4.59 is centred on the agreement side of the neutral response. Mestry and Bodalina (2015) are in agreement with the study finding, as their study reveals that a large portion of respondents with mean score of 4.17 seem to believe that their schools often or always required a written requisition for purchases of resources above R2000. It is important for schools to have written financial

procedures which set out the financial limits on purchasing decisions that can be made by the head of school without reference to the governors.

General system theory clearly stipulates that "systems dynamics provides a common foundation that can be applied when we want to understand and influence how things change through time" (Nicolescu & Petrescu, 2016, p.158). In this case it implies that schools should have a common understanding of how to run procurement processes. When schools receive the indicative budget where they plan what they will need for procurement, there should be proper budget planning and adherences to provincial management plans. However, with time they will be able to improve.

The results show that participants are neutral, for example, on the statements regarding the projection of learner enrolment following the priority list (C21 – M=2.84), and HODs conducting textbooks term audits of the available stock (M=2.94). This neutrality is confirmed by the mean of these statements which are closer to the midpoint. Due to the neutrality on most statements and the agreement on some statements, the null hypothesis is retained.

5.2 The effectiveness of TLM management in Ekangala Township no-fee schools

This section sets out the discussion of the research findings presented in component 4.2 using general system theory and programme theory as stipulated in Section 2.6. This study intended to establish the effectiveness of TLM management in Ekangala no-fee schools. Programme theory (Rogers, 2008) stipulates that for the programme to be effective/successfully implemented, the mechanisms through which the intended outcomes should be achieved need to be clearly stated prior to its implementation. The results show that the TLM committee which are the implementers of TLM policy at school level should ensure that TLM budget, procurement, distribution, and retrieval processes are well outlined prior to implementation.

The findings shows that there is no statistical significance that procured TLM are delivered on time (D19) as the null hypotheses is rejected (p-value=0.00<0.05). Non-delivery/late delivery of materials is problematic as it limits the time available to prepare for classes. This impacts negatively on learner assessment processes as it delays information transfer needed from textbooks. Similar to this study's results, Mohono (2010) found that resources are delivered late and, as a result, teachers have to improvise or use method that do not suit lessons, which translates into time wastage due to the dependence of practical work on other resources. Similarly, the study

conducted by Demisse (2018) revealed that there were delays in the purchasing of material and equipment for secondary schools.

The research results (D29) reveal that, after procurement of TLM, the inventory list is not updated. This is based on the mean score of 1.74; the statement is centred on the negative side of neutral response. This response is supported by the Department of Education's claim that there is a challenge to ensure that frameworks are used for proper registration and tracking of physical assets in schools (South Africa, 2002). In the same way, Demisse (2018) reveals that there is no regular inventory control in schools; the result shows a low rate of mean scores, which indicates gaps in the inventory system. From this, we can conclude that lack of skills in inventory systems and the lack of staff training in material management were significant problems (Navidaad, 2019).

Programme theory supports the management of interventions both directly and indirectly through monitoring and evaluation. It can help various stakeholders develop a common understanding of the programme or identify differences in what they value and what they believe happens (Bickman, 1987). In line with the finding (D29), this implies that TLM committees must monitor the capturing of all purchased TLM into an inventory list which should inform accurate procurement of resources. Updated inventory systems will further assist in determining what schools have in stock to determine what they need (GDE,2011).

Complementarily, systems theory suggests that the "knowledge system enhances the overall performance of a society by producing and distributing knowledge "resources," which then are being used by the other systems of a society for supporting their processes and performances" (Carayannis, Campbell & David, 2016). In line with the finding, it implies that distribution of TLM to learners and teachers improves school performance, thereby producing good learner results. As per the results in Section 4.1.2 (D30), there is statistically significant evidence that there are proper systems in place when distributing textbooks for teachers and learners. This is based on the high mean score of 4.26.

The study results show that there is no statistically significant evidence that parents sign parental loan forms for textbooks distributed to their learners (D31). This means that there is a gap in TLM management, as the school should ensure that loan forms are completed for all distributed

TLM. Each learner must have a booklist that must be signed by the learner and parent/guardian. A parent/guardian must sign an undertaking to replace lost or damaged books (GDE, 2018).

There is statistically significant evidence that all learners are supplied with stationery. This is made apparent by the mean score of 4.75 which lies on the agreement side of the neutral response. This is an indication of good management considering the physical context of the study, which is a previously disadvantaged community receiving high subsidy from the state to procure resources. It is a best practice that schools must prioritise the provision of consumable items, e.g., stationery for learners as stipulated in the Minimum Schoolbag Guidelines to ensure effective teaching and learning (GDE, 2018).

The research results (D35) reveal that the schools' specialised learning centres are not adequately resourced, hence the mean score of 2.12 which lies within the disagreement side of neutral response. It is important for the state to resource schools adequately in order to achieve the ultimate educational outcome, which is quality education for all South African learners. Township schools in particular have been under resourced in terms of physical specialised classrooms and, where this occurs, equipment for the optimal use for curriculum delivery purposes is lacking. The respondents could be concurring with the notion of the DoE that states should be providing more resources for specialised subjects.

This study discovered that the schools do not retrieve 100 per cent of their textbooks at the end of the year. This finding is based on the mean score of 1.62, which lies on the disagreement side of the neutral response. Based on the data presented in 4.2.1.2 there was a high rate of learners who did not return textbooks at the end of the year. Schools appeared to not have done enough to encourage learners to take good care of the textbooks and encouraged parents to ensure their children return textbooks as part of the retention and retrieval process (Mestry & Bodalina, 2012; Phakathi, 2015; Demisse, 2018).

The findings reveal that schools do not develop textbook retrieval plans to achieve effective textbook retention. This is made evident by the mean score of 1.48 which lies on the negative side of the neutral response. Therefore, there is a need for TLM committees to develop and effectively implement a textbook retrieval plan, thereby emphasising the significance of taking good care of the resources provided to learners and teachers. Retaining textbooks in the school system for the stipulated period of five years requires the effective annual retrieval and

maintenance of books. To achieve effective textbook retention, each school must develop and implement a textbook retention plan (GDE, 2018).

Evidence from this study indicates that in no- fee schools TLM were not effectively managed and sometimes not in line with the school's TLM policy. Kwinda (2014) and Phakathi (2015) are in agreement with the view that most schools have systems for TLM management, but the systems are not efficient and systematic. The SGB has the responsibility to advise other parents about the importance of their role in being accountable for textbooks issued to their children. Mestry and Bodalina (2015) further state, that through effective control, the SGBs are more likely to improve the retrieval rate of resources and minimise shortages.

Furthermore, out of 14 management statements, 6 indicate mediocre effectiveness, where we do not reject the null hypothesis that the mean is equal to 3. These are, for example: every learner has a textbook per subject per grade (D=32, M=3.01), and the sharing of textbooks is not allowed (D33, M=2.83). These infer that the proportions of respondents who agree and strongly agree are the same as the proportion of respondents who disagree and strongly disagree. Therefore, the study was unable to measure the extent to which the respondents agree, as the result was inconclusive.

Overall, because majority of the management statements indicate a mean significantly lower than 3, we do not reject the research hypothesis that there is no effective TLM management in Ekangala Township no-fee schools, at the 5 per cent significance level. The findings are compatible with Osaat (2017) who discovered that management of physical resources is found to be ineffective and inefficient in many schools, particularly historically disadvantaged schools. Dissimilarly, Mestry and Bodalina (2015) discovered that most of the public schools often ensured effective management of physical resources.

5.3 The effect of financial and human resources, and procurement in management

This study was guided by the system theory since schools are systems where the teaching/learning process is observed as a throughput (process) used to transform inputs (students) and resources (TLM) into outputs (skilled graduates). "In schools we also observe an interrelation between teachers, resources and students which constitute a sine quoi none condition for the effectiveness of the teaching/learning process" (Benjamin & Orodho, 2014, p.115). The underlying assumption as highlighted by general system theory and programme theory is that when the inputs are present

(budget allocation, human resource) achievement of activities (procurement) outputs (textbooks) and outcomes (effective management) are positively impacted (Bertalanffy, 1967; Bickman, 1988).

To establish whether or not financial resource procedures (budget), human resource procedures and procurement processes are significantly related to effective TLM management, a correlation test was done for the following pairs of variables: (i) Budget procedures and effective management (ii) Human resource procedures and effective management (iii) Procurement procedures and effective management (iv) TLM procedures and effective management. Pearson's correlation coefficient test was used and the empirical research findings in 4.3.1 show a causal link between management and budget processes of TLM ($r = 0.409$; p-value = 0.000), as well as a significant linear relationship between human resources processes and TLM management ($r = 0.340$; p-value = 0.000). Nevertheless, the correlation coefficient between management and procurement processes shows that there is no statistically significant linear relationship ($r = 0.108$; p-value = 0.292).

The conclusion is that budget processes have a significant effect on TLM management at the same there is a statistically significant relationship between management and budget processes of TLM even though it not strong enough. Human resource and procurement are insignificant, which means that what happens with human resource and procurement does not have a bearing on TLM management. The researcher thinks that is a problem and believes that human resource, and procurements are major inputs in TLM management. As such they need to be significant to affect TLM management. However, there is a room for improvement.

The research findings are supported by Munge, Kimani and Ngugi (2016) who discovered that budget allocation and annual budget planning were important aspects that improved management. This study submits that a set of inputs is used to produce outputs (Rogers, 2008). It refers to the capacity of line agencies to use allocated resources in a manner that ensures an efficient and effective delivery of public goods and services. An opponent, Boateng (2012), discovered that inputs had no relationship with education outcomes.

The results chain (inputs, activities, outputs, outcomes) as emphasised in both theories is used as an important tool to measure the performance of TLM management. When the results chain has missing elements or broken linkages, the prospect of reaching TLM desired outcomes is very fuzzy (Moiloa, 2016).

The underlying assumption of the model as presented in both frameworks is that when the inputs are adequate (budget allocation, SMT/SGB/teachers), achievement of activities (procurement), outputs (procured TLM) and outcomes (improved TLM management) are positively impacted.

5.4 Management of TLM in Ekangala Township no-fee schools

The main research question is presented by the study as: how are no-fee schools in Ekangala Township managing teaching and learning material? The main research question was answered by interrogating the secondary research questions as well as the empirical results and findings presented in Chapter 4 and Chapter 5.

The secondary research questions were: 1. How are financial resources, human resources, and procurement processes functioning in Ekangala Township no-fee schools? 2. How effective is TLM management in Ekangala township no-fee schools? 3. To what extent are budget, human resources, and procurement processes affecting TLM management material in no-fee primary and secondary schools? The study hypothesised that the way primary schools manage TLM is the same as in secondary schools. Therefore, the study hypothesised that there is ineffective TLM management at the 5 per cent significance level.

"The management of teaching and learning material is critical aspect of promoting learning and teaching in all the schools" (Bodalina, 2012, p. 160). The ineffective management of TLM and poor procurement practices in public schools continues to receive attention in reports of the education ministry as well as the media (Phakathi, 2015). In Chapter 2 Section (2.2.2) the study reviewed similar past and current studies and discovered the following problems: inadequate TLM budget, lack of financial skills in SGBs, dearth of resources, poor monitoring and control of procurement processes, lack of policy implementation, incorrect capturing of orders, and failure to update inventory lists after TLM procurement, which this study also confirmed. These are critical aspects to be resolved. The success of addressing TLM management challenges lies in the confrontation of the abovementioned root causes. This could subsequently lead to more effective management of the intervention and, consequently, TLM policy implementation.

The research results revealed that budget, human resources (TLM committee) and procurement processes of TLM are not fully functional in no-fee schools. However, budget, and human resources are important input variables that inform the activity variable (procurement of TLM) as well as output variable (procured TLM); their lack of functionality impacts negatively on the

outcome variable. The regressions results show that budget processes have a significant effect on TLM management. There is also a relationship between management and budget processes of TLM, albeit not a strong one. Further, regression results shown that there is no significant effect on TLM management; there is no statistical relationship between management and budget and, similarly, there is no statistical relationship between procurement processes and management.

We therefore conclude that Ekangala no-fee schools in Tshwane municipality manage their TLM ineffectively and inefficiently. Therefore, it is established that there is a room for improvement in managing the intervention. The articulation of the inputs, activities, intended outputs and outcomes will be achieved as required by the programme theory and system theory results and findings in that reverence have been positive (Sharpe, 2011).

It is acquiesced that for the intervention to work in Ekangala, as suggested by the programme theory, collaboration of stakeholders need to be instituted. including relationship and alignment of the planning, budgeting, reporting, monitoring, and evaluation of the intervention (Public Commission Service, 2012). Accordingly, there will be adequate management and accountability in the monitoring, evaluation, and verification of reported performance information regarding the intervention. If this is addressed, issues relating to inadequate resources, and failure to develop TLM policy as well as dysfunctional TLM committee will be resolved. We therefore submit that there is poor/ineffective TLM management, agreeing with Chapter 2 Section 2.2.2., as evidenced by how no-fee schools carry out their budget, human resource, and procurement processes.

In sum, Chapter 5 provided interpretations and discussions of empirical research results. It began by presenting results with the purpose of (5.1.1) of understanding the functionality of financial resource, human resources, and procurement processes of TLM in no-fee schools, (5.1.2) establishing the effectiveness of TLM management in Ekangala no-fee schools, (5.1.3) to determine the effects of budget, human resources and procurement processes in TLM management (Osaat, 2017).

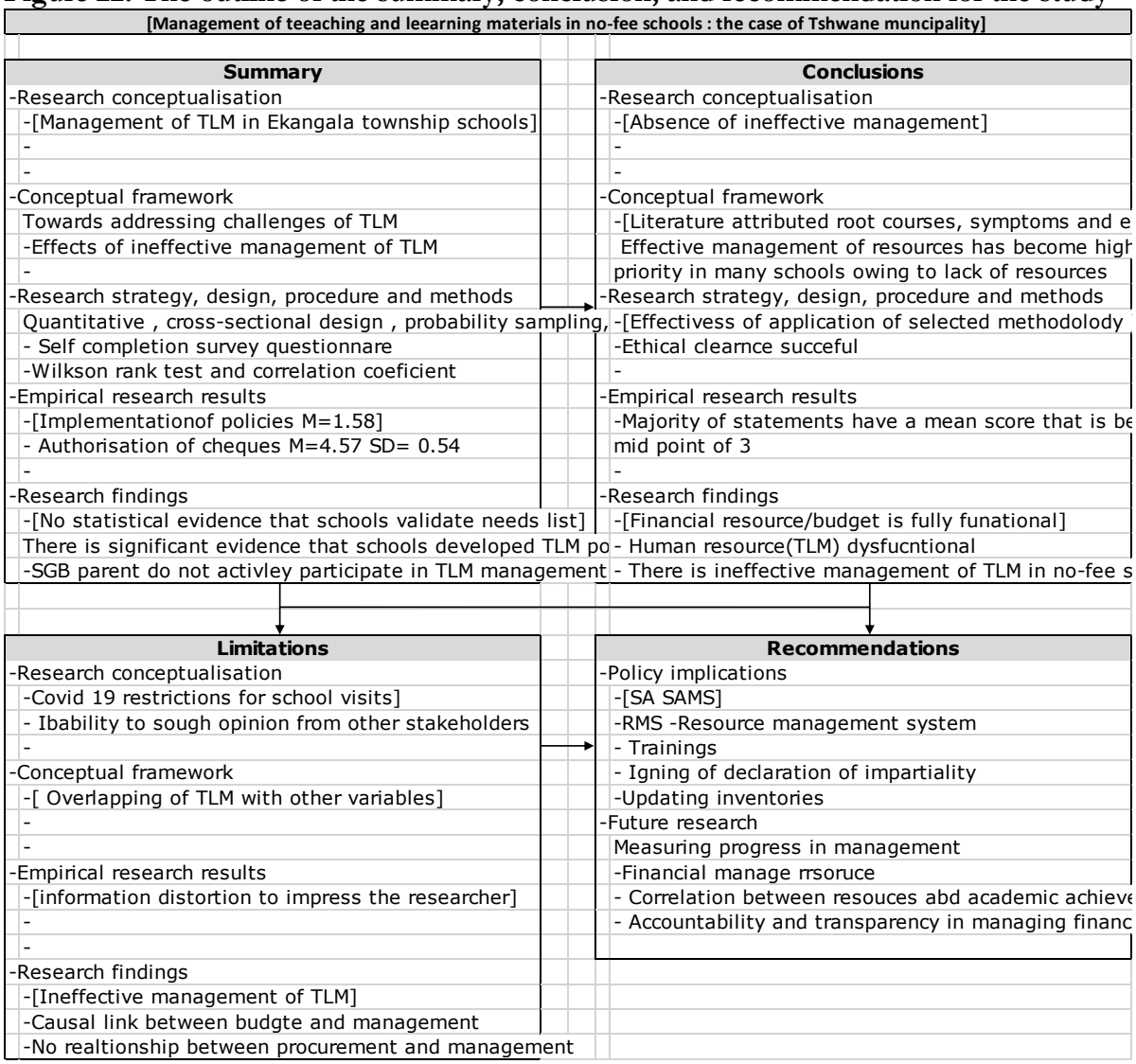
From the research conducted it can be concluded that there is ineffective TLM management in Ekangala Township no-fee schools. From the analysis it is clearly shown that system theory and programme theory are applicable to TLM management financial resource, human resource, procurement processes, and TLM form the basis for effective management. Whilst structures (human resource/TLM committee) and processes (budget, procurement) are established to

manage TLM, there is a need to constantly appraise and review their functionality (Mestry & Bodalina, 2015).

6 SUMMARY, CONCLUSIONS, LIMITATIONS, AND RECOMMENDATIONS

This chapter consists of four objectives, which are: (6.1) summarising the research report, (6.2) drawing the conclusion, (6.3) discussing the limitations of the research report, and (6.4) making recommendations for future research studies and policy essentials. Precisely, (6.1) summarises the key aspects from the research conceptualisation (Section 1.2), the conceptual framework (Section 2.7), the research methodologies (Section 3), presentation of research results (Section 4), as well as (Section 5) discussion of research finding. The prime purpose of this chapter is to cement the whole research report together and to afford an endorsement of how well the research purpose (Section 1.2.2), as well as the research questions and the accompanying hypotheses (Section 1.2.3) have been realised and answered as illustrated in figure 2.2.

Figure 22: The outline of the summary, conclusion, and recommendation for the study



Source: Author

6.1 Summary

This research study set out to investigate TLM management in no-fee schools: the case of Ekangala Township in Tshwane municipality. To accomplish this, the study seeks to empirically determine the functionality of financial resource, human resources, and procurement processes of TLM in no-fee schools. (ii) To establish the effectiveness of TLM management in Ekangala no-fee schools. (iii) To determine the effects of budget, human resources, and procurement processes in the TLM management. The research hypothesised that ineffective teaching and learning materials management in no-fee schools leads to dearth of resources. Moreover, the literature (Bodalina, 2012, Kwinda, 2013; Phakathi, 2015) show that root causes of poor management are governing bodies lack of financial expertise, procurement flaws and decrease to access of quality material.

To determine the effectiveness of TLM management, the study responded to the research questions and their accompanied hypotheses: The main research question is how are no-fee schools in Ekangala Township managing teaching and learning material? The study answered this question by interrogating the following questions and testing the hypothesis: How are the budget, human resources, and procurement processes of TLM functioning in Ekangala Township no-fee primary and secondary schools ?1.2.3.2 How effective is TLM management in Ekangala Township schools? 1.2.3.3 To what extent are budget, human resources, and procurement processes affecting TLM management in no-fee schools?

The study marshalled the literature to derive a conceptual framework (Section 2.7) for this study. It provided for the physical context underlying the study undertaken, subsequently, the research embarked on a research problem analysis detailing the challenges of the intervention, symptoms, root causes and consequences. Magnificently, the study reviewed the empirical past and current studies in (Section 2.3) that aim to understand how no- fee schools manage their teaching and learning material. This exercise exposed an existing knowledge gap in this field of study the variables, research methodologies, as well as theoretical frameworks that guided the remaining component (Section 3,4, and 5) of this study would unfold. Its major contribution to the management studies is the derivation of twofold explanatory frameworks namely – General system theory and programme theory which both presents logical model being the variables of the study (input, activities, outputs, and outcome).

Based on conceptual framework developed (Section 2.7), the study applied quantitative research strategy and cross-sectional design to investigate how no-fee schools in Ekangala Township manage TLM. As discussed in Chapter 3, self-completion questionnaire, Wits University as well GDE permission letter to conduct a study were emailed to stratified random sample to respond to the research questions. The collected data was cleaned, processed, and captured for easy analysis using Microsoft Excel. The data was transferred to SPSS for analysis purpose.

Frequency distributions were conducted including one-sample Wilcoxon Signed Rank As well as Pearson Correlation Coefficient tests to test the significance of hypothesis. The findings of this study backed by the results from similar past and current studies (Section 2.3) are presented according to the posed research questions and the hypothesis test respectively as follows (Chapter 4 and 5):

6.1.1 Functioning of financial resource, human resources, and procurement processes of TLM in no-fee schools

The results for determining the functionality of financial, human and procurement process (4.1.) reveals that there is no statistically significant evidence that for example parent members of our SGB participate actively on teaching and learning material committee (B11) (Mean = 1.89), School TLM committee ensure that TLM policy is implemented in the school (B18) (Mean = 1.58). Further, Schools TLM committee validate the priority lists of TLM needs before submission to SGB for approval (C23) with M=2.85 and SD=1.20 as well schools follow priority lists in procuring TLM as prescribed in procurement memorandum (C25) where M=1.51 and SD=0.73. However, there is statistically significant evidence that authorisation of cheques are needed before the cheques are issued (B10) where M=4.57 and SD=0.54 as well as our school committee ensures that the resources are fairly distributed to all learners and educators. On the other questions, the results were inconclusive to be able to draw the conclusion as the proportion of respondents who agreement are the same as the proportion of respondents who are in disagreement. For example, the GDE's allocation of funds for TLM is inadequate (B5) where M=2.88 and SD=1.00, as well as the active participation of HODs in TLM. The means of the financial resource (budget), human resource and as well as procurement processes range from 1.51 to 4.59 and standard deviations range from 0.70 to 1.21. Majority of the statements have a

mean score that is below the midpoint of 3. In overall, this is an indication of poor functionality of financial resource (budget) human resource and as well as procurement processes.

6.1.2 The effectiveness of TLM management in Ekangala Township no-fee schools

The results reveal that there is no statistical significant evidence that procured TLM are delivered on time (D28) (Mean = 2.01 and SD=0.911),after procurement of TLM the inventory list is updated (Mean = 1.74 and SD= D29), Parents signed parental loan forms for textbooks distributed to their learners (Mean 1.59 and SD= 0.635) Our specialised learning centres are adequately resourced (Mean =2.12), Our school retrieve 100 per cent textbooks at the end of the year (D36) (Mean = 1.62 and SD=0.719). However, there is statistical evidence that there are proper systems in place when distributing textbooks for teachers and learners (D30) (Mean = 4.26 and SD=0.627). On the other questions, mediocre effectiveness is indicated, where we do not reject the null hypothesis that the mean is equal 3. Meaning that the results were inconclusive to be able to draw the conclusion. We therefore reach conclusion that majority of the management variable have a mean that is significantly different from 3 and lower than 3 means are statistically different from 3, based on one-sample Wilcoxon signed rank.

6.1.3 The effect of financial, human resources as well as procurement on TLM management

The regressions results shown that budget processes have a significant effect on TLM management at the same there is a statistically significant relationship between management and budget processes of TLM even though it not strong enough. The conclusion is that budget processes are effective in TLM management whereas human resources processes and procurement process are not effective. Therefore, we reject the null hypothesis and accept the alternative research hypothesis that budget processes are effective in TLM management. However, we do not reject the null hypothesis that human resources and procurement processes are not effective in TLM management.

6.2 Conclusions

Applying, quantitative strategy, descriptive analysis, One-Sample Wilcoxon Signed Rank as well as correlation coefficient analysis, has shown to be most effective in empirically determining the

functionality of financial resource, human resources, and procurement processes of TLM in no-fee schools, established the effectiveness of TLM management in Ekangala no-fee schools as well determined the extent at which budget, human resources, and procurement affected TLM management.

The research hypothesised that ineffective teaching and learning materials management in no-fee schools leads to dearth of resources. Moreover, the literature (Bodalina, 2012, Kwinda, 2013; Phakathi, shown that root causes of poor TLM management are attributed to lack of participation by governing bodies in TLM committee as per the results of the study. These are attributed to lack of financial expertise, procurement flaws, lack of monitoring and evaluation of the intervention (TLM)/lack of updating inventory list that must be addressed to resolve the issue of ineffective and inefficiency of TLM management. The study interrogated past and previous studies that attempted the management of intervention (TLM). It was established that no study utilised the quantitative approach and was conducted in Ekangala Township no-fee schools. It was not clear whether the previous studies utilised the interpretive framework to convert their research results to findings.

Owing to limited funding and the lack of resources in many township and rural schools, the effective management of resources has become high priority for schools. The results of this study allow us to better understand the process of budgeting, human resources functionality, procurement processes, inventory, controlling, and monitoring of TLM and other educational resources in a South African context, considering the past disparities and current redress strategies (Mestry and Bodalina,2015). The management of TLM resources in all South African schools plays a significant role in furthering the progression of effective teaching and learning.

Based on the findings of the study it is possible to attain at the following conclusions that financial input variable (budget) is fully functional in Ekangala Township, no fee schools. Activity variable (procurement) process reveals that there is no statistically significant evidence that the school TLM committee (human resource input) validate the priority list of TLM needs before the submission to the SGB for approval. Furthermore, there is significant evidence that the schools developed the TLM in accordance with GDE policy guideline with mean score of 4.56 to determine the functionality of human resource. Explicitly, research findings and hypothesis results confirmed: the existing relationship between the financial resource variable (budget) and management.

The hypothesis test results in harmony with the research findings could not corroborate the assumed correlation between human resource variable and management as well as procurement variable and management which is in contrary with system and programme theory which confirmed causal relationships between inputs, activities, outputs and outcomes. The hypothesis test results (Pearson correlation) had p-value at 0.292; thereby dismissing our claims and the assumption in the logical model that there is a relationship between procurement and management in Section 4.3.2.

Regrettably, with the majority of the mean scores of the respondents at scale midpoint of 3 it is therefore apparent that the intervention is ineffective. Relatedly, it is probably the case of inputs and activities producing a set of outputs which in turn fail to produce a chain of effects that would influence the final outcome sought (Moiloa,2016). This study concludes by indicating that there is ineffective TLM management in Ekangala Township no-fee schools, however there is room for improvement.

6.3 Limitations

Due to the COVID-19 pandemic, school visits were not allowed unless under special circumstances; therefore, observation schedule was not possible. The study targeted only no-fee public schools, TLM committees. The opinion of other relevant stakeholders for example circuit managers, cluster leaders, TLM departmental officials were not sought in the study as reaching them required considerable finances, time, and other logistics which the researcher was not in position to control.

In Chapter 2 (Section 2.5) the study discussed teaching and learning materials (textbooks, learner stationery, resources of specialised rooms) as output variable. However, the study dropped TLM as a standalone variable because the statements of items for TLM were speaking to other variables in the study (budget, human resource / TLM committee and effective management). Since TLMs were overlapping with other variables it made the scale of TLM unreliable and those items were placed amongst the places where they were more relevant.

Some information might be distorted because participants are familiar with the researcher and the status that the researcher has in one of these schools as they are very close to each other, they may want to impress the researcher rather than give the reality. Therefore, the use of data collection method helped to validate data and to reduce the distortion as they complemented one

another. the Cronbach's coefficient alpha was used to measure internal consistency of the measurement scale and it was appropriate because most of our questions to measure the variables had multiple items to construct the required variables. The study did not survey TLM at District level involving circuit manager, IDSO/cluster leaders and TLM unit responsible for monitoring and evaluation of the intervention but only limited focus at school level due to time constrains.

6.4 Recommendations

Systems theory can help make meaningful predictions about what can be expected in the future. It has survived the test of time and remains a viable theory used by a cross section of academe. As such, the researcher will be able to make future recommendations for the study (Ramosaj & Berisha, 2014). This section concludes this study by recommending some important measures based on the findings of the study, which if implemented may assist to strengthen TLM management.

First, all members of school TLM committees must sign a Declaration of Confidentiality and Impartiality to ensure that there is confidentiality about the details of all TLM orders and requisitions. Each member should disclose details of private or business interest which he/she or any close family member, partner or associate may have in any proposed procurement or disposal process, or in any award or contract and that she will instantly pull out from partaking in any manner what's so ever should this situation arises. (GDE, 2018).

Second, all schools must nominate a storeroom manager to ensure and proper monitoring and control of TLM. The principal and storeroom manager must ensure strict control measures for safe keeping of all TLM throughout the year. Textbooks should be kept separately from the library books preferably in the storeroom and be properly organised according to grades and subjects for easy access. The storeroom must be lockable. Storeroom keys must always be kept safe in the strong room in the principal's office. Only authorised personnel must have access to the storeroom keys.

Third, the school management team (SMT) and SGB must ensure that the TLM budget allocation is used accordingly and procurement of TLM is used to strengthen and promote the school library as a resource and resources for specialised rooms. Ensure that a SLTSMC is established and chaired by a parent member of the SGB and functions properly, as a sub-committee of the SGB. Approve and sign-off the list of TLM needs of the school in line with the allocated budget. Allocated TLM funds must be aligned to the school improvement and developed plans.

Fourth, School TLM committee must ensure that TLM policy is implemented in the schools. Focus areas per term must be outlined. Periodic audits will be conducted when deemed necessary or as required from time to time, to ensure appropriate application and compliance with the policy. Committee must encourage the usage/ use of all resources provided to schools by all teachers and learners.

Fifth, before an order is placed with the suppliers, the department at district and circuit level should first go through enrolment verification at each school across the province. Where necessary head counting of learners should be done. Even the stock registers should be checked to determine the available books. Information from the stock registered and the enrolment of each school should them be compared to determine how many books are to be purchased. With this verification, the department will determine the number of textbooks to be purchased either for the new curriculum or for top up. Mistakes that are common in capturing the requisitions include capturing incorrect quantities of books per subject per grade. These mistakes contribute greatly towards service failure. One important way to eliminate these mistakes is to have the capturing personnel trained for the task. Training will empower the capturing officials with skills to undertake their tasks effectively

Sixth, the administrators in charge of receiving TLM purchased must be trained on the procedure to follow when receiving TLM. Instead of comparing the quantity delivered against the invoice only, the researcher recommends that the administrators also compare deliveries against copies of requisition that are kept at schools. This will enable the administrators to establish if the TLM supplied are of the right quantity and correct tittle according to the order.

Seventh, when TLM is delivered, they must be entered into the school's inventory list. The School TLM committee should ensure that TLM quarterly stock-taking is conducted on all distributed and retrieved TLM. STLMC must monitor the inventory records of all TLM available in the school.

Lastly, schools ensure that loan forms are completed for all the distributed TLM. There is thus a need for the TLM committee to develop and implement a textbook retrieval policy that will emphasise the importance of teachers and learners taking good care of TLM provided to them and returning them in good condition. Retaining textbooks in the school system for the stipulated

period of five years requires the effective annual retrieval and maintenance of books. While workbooks are renewed annually, complementary TLM such as reference works should have a lifespan of more than five years. To achieve effective textbook retention each school must develop and implement a Textbook Retention Plan.

In conclusion, the study recommends that schools use SA-SAMS – South African School Administration Management System – The SAMS provided by Government to all schools for free to register and manage all the resources belonging to a school. As well as The need to use Resource Management System (RMS) which is a web-based system designed to facilitate planning, on-line procurement, inventory updates and budget tracking of all TLM at schools, Districts and Provincial level There should be incentives to leaners who take care of their books and return all the books loaned to them.

The study further revealed areas that future research can pursue to widen knowledge on improving management of teaching and learning resources. First, there is a need to measure progress in the implementation of intervention goals in the City of Tshwane no-fee schools tracking the achievement of indicators and targets. Assess correlation between management of resources and learner academic achievement. Lastly, examine the extent of accountability and transparency practised by principals and SGBs in managing school finances in no-fee schools.

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Appendices

Appendix 1.1: Sampling

Sample size $n = \frac{z^2 p(1-p)N}{e^2(N-1)+Z^2P(1-P)}$

$$n = \frac{(1.96)^2(0.1)(0.9)(139)}{(0.05)^2(138)+(196)^2(0.1)(0.9)} = \frac{48.058416}{0.345+0.345744} = \frac{48.058416}{0.690744}$$

=69.57 round of to 7

where n: sample size,
N: target population,
e: accepted error
z: statisticas value, and
p: sample proportion

The target population is as follow:

N= 50 +15+11+24+28+11= 139

The proportion of the sample size as per the sub-groups will be as follows:

$$n = n_{1+}n_2 + n_3 + n_4 + n_5 + n_6 = 25 + 7 + 6 + 12 + 14 + 6$$

Sampling

From the sampling frame which is the list of all employees as per their sub-group(strata) the following as per the list position using the simple random sampling tables are the individual that will form part of the sample and participate into the study:

Sub-group 1: 01,05, 16, 15, 38, 24, 10, 26, 14, 29, 20, 34, 44, 07, 03, 20, 30, 04, 36, 23, 06, 08, 37, 17, and 28 = 25 HODs
Starting page is B3-Table 2, Starting column 14 and row 7, since population is 50 that means 2 digits numbers will be assigned and selecting them going down column wise and ignore duplicates.

Sub-group 2: 09, 15, 02, 13, 04, 12, 07 = 7 Deputy principals
Starting page is B3-Table 2, Starting column 36 and row 22, since population is 16 that mean 2 digits numbers will be assigned and selected going down column wise and ignore duplicates.

Sub-group 3: 06, 07, 10, 11, 02, 10 = 6 Principals
Starting page is B4-Table 3, Starting column 27 and row 20, since population is 11 that mean 2 digits numbers will be assigned and selected going down column wise and ignore duplicates.

Sub-group 4: 10, 08, 24, 19, 25, 09, 17, 14, 13, 10, 03, 01 – 12 SGBs
Starting page is B5-Table 4, Starting column 6 and row 6, since population is 25 that mean 2 digits numbers will be assigned and selected going down column wise and ignore duplicates.

Sub-group 5: 09, 01, 15, 22, 16, 18, 14, 17, 19, 20, 21, 03, 27, 25= 14 Educators
Starting page is B6-Table 5, Starting column 41 and row 46, since population is 23 that mean 2 digits numbers will be assigned and selected going down column wise and ignore duplicates.

Sub-group 6: 07, 10, 04, 05, 03, 08 = 6 Admin officers

Starting page is B7-Table 6, Starting column 5 and row 50, since population is 11 that mean 2 digits numbers will be assigned and selected going down column wise and ignore duplicates

Appendix 2.1: Data or Information Collection Instrument

Dear participant

My name is Joyce Maimela and I am a master's student in Management in the field of Monitoring and Evaluation at the University of the Witwatersrand in Johannesburg. As part of my studies, I must undertake a research project, and I am investigating how no-fee schools in Tshwane municipality manage their teaching and learning material. The study seeks to (i) emprically determine the extent of effective TLM management (ii) to establish if there are differences amongst no-fee schools in terms of budget, human resources, procurement and TLM. (iii) to investigate the effectiveness of budget, human resources, procurement and TLM in the management of resources in schools.As part of this project, I would like to invite you to participate in web based online survey This activity will involve that you complete the survey questionnaire and will take around 20 minutes.

You will not receive any direct benefits from participating in this research, and there are no disadvantages or penalties for not participating. The interview will be completely confidential and anonymous as I will not be asking for your name or any identifying information, the completed questionnaires would be safely kept in the locked cupboards and be demolished when the study is completed. The researcher also informed the participants that information collected will be captured in a password protected personal laptop as well as in drop box and not be made reachable to any individual.

I will be using a pseudonym (false name) to represent your participation in my final research report. There are no foreseeable risks involved however the interview has the possibility to inconvenience the subjects as it is going to take their precious time. If you need some support or counselling services following the interview these are available free of charge when using your cellphone: toll -free 0800611169 or SMS call back system at: 31581 at GDE Employee Health and Wellness Services.

If you have any queries or would like to be informed of aggregated research findings, please feel free to contact the researcher at the contact details below.

Yours sincerely,
JM Maimela

Researcher's contact details
Joyce Maimela,
Email: joycemaimela@gmail.com
Mobile :082 784 0118

Supervisor's contact details:
Dr Kambidima Wotela
Email: Kambidima.Wotela@WITS.ac.za
Mobile:071 260 3260

If you choose to participate in this survey, please complete the form. Submitting the completed questionnaire is taken to mean consent. The questionnaire will take less than 20 minutes of your time to complete. Thank you for your time.

Section A: Demographic Information

The demographic details requested are for analytical purposes only and will not be used to identify any participant. Your responses are anonymous. Please indicate the responses category that best describe you to the survey.

Please circle the applicable number to indicate your response

1. Please indicate your position at teaching and learning material (TLM)

Position	Answer
School Principal	1
Deputy Principal	2
Head of Department	3
Teacher	4
TLM admin officer	5
School Governing Body member	6

2. Please indicate your gender

Age	Answer
Male	1
Female	2

3. Please indicate your age category

Age	Answer
20-25 years	1
26-30 years	2
36-40 years	3
41-45 years	4
46-50 years	5
Above 50 years	6

Section B: INPUT VARIABLES (BUDGET/HUMAN RESOURCE) State your opinion by circling the appropriate number on the scale provided where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree.

Questions	Strongly disagree	Disagree	Neither agree nor	Agree	Strongly agree
4 The school Governing Body (SGB) consults with all stakeholders when preparing the school's budget for the following year	1	2	3	4	5
5 The GDE's allocation of funds for TLM is adequate	1	2	3	4	5
6 The GDE's allocation of funds is spent for TLM according to GDE prescribed policy	1	2	3	4	5
7. Our SGB receives income and expenditure reports at SGB meetings	1	2	3	4	5
8.Our funds of our school are managed closely according to finance policy	1	2	3	4	5
9.Approving payment is a joint decision between the school principal and our SGB	1	2	3	4	5
10. Authorisation of cheque from the SGB chairperson is needed before cheques are issued	1	2	3	4	5
11. Parent members of our SGB participate actively on teaching and learning material committee (TLMC)	1	2	3	4	5
12. All Head of Departments participate actively on TLMC	1	2	3	4	5
13. The Deputy principal is the TLM coordinator as prescribed in Integrated Quality Management System (IQMS)	1	2	3	4	5
14. Our school have admin officer as part of TLMC	1	2	3	4	5
15 .Our school nominated storeroom manager	1	2	3	4	5
16 .The school TLMC convene 8 meetings per year (At least twice per term)	1	2	3	4	5
17,Our school developed teaching and learning material TLM) policy by utilising GDE policy guidelines	1	2	3	4	5
18, School TLM committee ensure that TLM policy is implemented in the school	1	2	3	4	5
19. All TLM committee members signed declaration of confidentiality and impartiality to ensure that there is confidentiality about the details of all orders and requisitions	1	2	3	4	5
20. Our school TLM committee ensures that resources are fairly distributed to all learners and educators	1	2	3	4	5

Section C

The following questions relate to TLM Activity variables (PROCUREMENT) State your opinion by circling the appropriate option on the scale provided for each question where: 1= Never, 2= Seldom,3=Sometimes, 4= often,5=Always

Questions	Never	Seldom	Sometimes	Often	Always
21. Our school projected learner enrolment for 2021 from Grade R-12 assuming all learners per grade in a current year will all progress at the end of the year	1	2	3	4	5
22. To Top-Up textbooks from Grade R-12 schools did not select a new title than the CAPS textbooks used the previous year	1	2	3	4	5
23. Our schools followed the priority list in procuring TLM as prescribed in procurement memorandum	1	2	3	4	5
24 HODs conduct quarterly audit of the available textbook stock	1	2	3	4	5
25. Our TLM committee validate the priority list of TLM needs before submission to the SGB for approval	1	2	3	4	5
26. Our school requires a minimum of three quotations for a purchase of physical resources above R2000 as per procurement guidelines	1	2	3	4	5
27. We try to get good value for money whenever we procure TLM	1	2	3	4	5

Section D

This section sets out to outcome variable (Management). Please circle the appropriate response in each questions where: 1= Never, 2= Seldom,3=Sometimes, 4= often,5=Always

Questions	Never	Seldom	Sometimes	Often	Always
28. Procured TLM are delivered on time	1	2	3	4	5
29. After procurement of TLM the inventory list is updated	1	2	3	4	5
30. There are proper systems in place when distributing textbooks for teachers and learners	1	2	3	4	5
31 . Parents signed parental loan forms for textbooks distributed to their learners	1	2	3	4	5
32. Every learner has a textbook per subject per grade	1	2	3	4	5
33. Sharing of textbooks is not allowed	1	2	3	4	5
34. All learners are supplied with stationery	1	2	3	4	5
35. Our specialised learning centres are adequately resourced	1	2	3	4	5
36. Our school retrieve 100 % textbooks at the end of the year	1	2	3	4	5
37. Our school ensures that proper records on TLM are maintained	1	2	3	4	5
38.Our school developed Textbook Retrieval Plan to achieve effective textbook retention	1	2	3	4	5
39. Our school disposed textbooks that are no longer in use	1	2	3	4	5

Questions	Never	Seldom	Sometimes	Often	Always
40 .The facilities in the specialised rooms (laboratory) are used in teaching and learning	1	2	3	4	5
41 . The facilities in the library are used in teaching and learning	1	2	3	4	5

Thank you for your time and kind-cooperation

Appendix 3.1 Consistency Matrix

Title	**Management of teaching and learning materials in Tshwane municipality no-fee schools**
Problem statement	The pre-apartheid era adopted an exclusive education practice based on a favourably biased funding model designed specifically to stimulate certain groups above others (Mestry, 2018). Before the apartheid era was obliterated in 1994, former model C schools were favoured above the black schools situated in township and rural schools. Post-Apartheid, changes were made to address this inequality. The South African government introduced the National Norms and Standards for School Funding (NNSSF) policy (South Africa, 1998a). The NNSSF, as a social justice and equity mechanism, ensures that poorer schools receive the bulk of the education budget for resources (South Africa, 1998a). Since the implementation of the South African Schools Act (SASA) (Republic of South Africa,1996a), the management of resources has become a key function for school governance (Mestry & Bodalina, 2015).The Gauteng Department of Education (GDE, 2011) teaching and learning material policy ironically emphasises on the need to prioritise the provisioning of learning materials to all learners to achieve curriculum objectives of one textbook per learner per subject (100 per cent TLM universal coverage). However, no-fee schools experience shortages of resources regardless of efforts made by the state to provide budget (Kwinda, 2014; Phakathi, 2015). The effective management of resources impacts on the quality of learning that takes place in the classroom. It is submitted that ineffective management of TLM results in amongst others, death of resources of resources. Consequently, acute deficiencies of resources leads to high failure rate that will trigger learner dropouts. This will then lead to unemployment, spearheading to poverty with an ultimate long-term result of negatively affecting the socio-economic status of the country. Past and current studies confirm that dearth of resources are rooted by for example, governing body's lack of financial expertise, procurement flaws and untimely delivery of resources (Bodalina, 2012; Phakathi, 2015), with symptoms being for example, low rate of textbook retrieval and decrease access to quality material. Textbook Retention and Retrieval Records (TRR) for three years reveals a decline in retrieval target achievement (2016- 69 per cent, 2017- 63 per cent and 2018- 66 per cent) (GDE, 2018). This development has a negative consequence whereby government wastes millions of Rands of taxpayers' money. It is argued that in the absence of effective budget and procurement planning, organising and monitoring of TLM by human resource management, schools may not be able to carry out effective teaching and learning. It is undeniably true that poor performance of leaners is rooted in the scarcity of resources that emanates from poor management (Nyundu; 2016). Demisse (2018) affirms that the good performance by schools is advocated by availability of resources. However, Hanushek (1997) have divergent view that higher levels of school resources are not related to learner performance. No study of the same subject has been conducted in the physical context. This study does not aim to assess academic performance but rather investigate the process, which leads to good academic

	achievement, which is effective management of teaching and learning material (TLM) in Ekangala Township. The study therefore investigates the research problem by applying self-completion survey questionnaire to gather cross sectional data to quantitatively measuring variables as well as utilisation of descriptive and inferential statistics to uncover if the relation does exist. The study is housed within management discipline and adopts general system theory (Butterlanfy, 1968) and programme theory (Bickman, 1987) to interpret the results and converting them to research findings as indicated in the developed conceptual framework

Purpose statement	The purpose of this research is to empirically establish how no-fee schools in Ekangala Township, manage their teaching and learning material. To accomplish this, the study seeks to empirically determine the functionality of financial resource, human resources and procurement processes of TLM in the no-fee schools. (ii) To establish the effectiveness of teaching and learning material management in no-fee schools. (iii) To determine the effects of budget, human resources, and procurement processes in the management of teaching and learning material in no-fee schools Ekanagala Township. The study was premised on The study reviewed literature to understand the physical research context by detailing its history and description (Section 2.2.2). The study analysed management challenges and identified the trend of the symptoms, underlying root causes and consequences of the intervention (Section 2.2.2). Further, the study constructed and presented results chain and its complementary results framework underlying the proposed theory to determine the anticipated causal linkages from inputs way up to the desired goals of the intervention to guide the study (Corlazzoli and White, 2013). The results chain and results framework (Section 2.2.5) for teaching and learning material will give precision to the monitoring and evaluation measures to manage the intervention and to answer the research questions. Similar past and current studies were reviewed by pointing out their research approaches, findings and conclusions (Section 2.3). The study uncovered amongst others that (i) reviewed studies discussed theories but did not use them to interpret research results (ii)There is no study about the research problem conducted in Ekangala, no-fee schools. (iii) No programme theory was applied to interpret the research findings. The study therefore employed quantitative research strategy and cross-sectional design to determine how Ekangala no-fee schools manage their TLM. The stratified random sampling procedure and self-completion fully structured questionnaire are applied to reach participants within their roles in the management of the intervention. A Statistical tool such as Version 25 Statistical Package for Social Science (SPSS) as well as Microsoft Excel are used to capture and export data for processing, analysis, and presentation of empirical results. The one-sample Wilcoxon Signed Rank tests and Pearson correlation coefficient are utilised to test the significance of the hypothesis (Bryman, 2016; Creswell & Creswell, 2018). Subsequently, interrogation on key variables provided for determining frameworks utilised as, General System Theory (Bertalanffy, 1968) and Programme Theory (Bickman, 1987) for interpreting the empirical results. Complementary, both theories present results chain (inputs, activities, outputs, outcomes) as an important tool to measure the performance of management of TLM. In conclusion, the study contributes by making recommendations on how no-fee schools should manage TLM effectively based on the findings of the study. Furthermore, it contributes to the theoretical and empirical knowledge gap on the management of teaching and learning material studies The study hopes to contribute to the body of knowledge about how no fee schools should implement effective management systems in line with TLM policy to close amongst others, financial resource, human resource , procurement, distribution , retention and retrieval as well as inadequate TLM gaps (Kunene, 2004; Phakathi, 2015).Further, the local schools will

	use intervention strategies recommended by the study to be able to revise their monitoring and evaluation systems to ensure that resources are effectively and efficiently managed (Bodalina, 2012; Phakathi, 2015; Gamakulu & Wotela, 2016).

Question/ Hypothesis/ Proposition	1.2.3.1 How are budget, human resource and procurement systems of teaching and learning materials functioning in the Ekanagala Township no-fee schools? H0: The budget, human resources and procurement systems of teaching and learning material are not fully functional in the Ekangala Township no-fee schools Ha: The budget, human resources and procurement processes of teaching and learning material are not fully functional in the Ekangala Township no-fee schools

Question/ Hypothesis/ Proposition	1.2.3.2 How effective is the management of teaching and learning material management in Ekangala Township no-fee schools? H0: There is no statistically significant evidence that teaching and learning material management is effective in the Ekangala Township no-fee schools. Ha: There is statistically significant evidence that teaching and learning material management is effective in the Ekangala Township no-fee schools.
Question/ Hypothesis/ Proposition	1.2.3.3 To what an extent are budget, human resource and procurement systems affecting the management of teaching and learning material in no-fee schools? H0: Budget, human resources, and procurement system are not significantly related to effective management of teaching and learning in no-fee schools Ha: Budget, human resources, and procurement system are significantly related to effective the management of teaching and learning material in no-fee schools

Questions/Hypotheses/Proposition	**Attributes/variables**	**Data/information collection instrument (self competion survey questionnare)**	**Data/information collection processing and analysis**
1 1.2.3.1 How are budget, human resource and procurement systems of teaching and learning materials functioning in the Ekanagala Township no-fee schools? H0: The budget, human resources and procurement systems of teaching and learning material are not fully functional in the Ekangala Township no-fee schools Ha: The budget, human resources and procurement processes of teaching and learning material are not fully functional in the Ekangala Township no-fee schools	**1,1** 1, Budget 2. Human resource 3. Procurement 4. TLM	**1.1.1** 1 Every learner has a textbook per subject per grade. B 10. Authorisation of cheque from the SGB chairperson is needed before cheques are issued B.7 Our SGB receives income and expenditure reports at SGB meetings B9. Approving payment is a joint decision between the school principal and our SGB B8. Our funds of our school are managed closely according to finance policy C 22. To Top-Up textbooks from Grade R-12 schools did not select a new title than the CAPS textbooks used the previous year C 26. Our school requires a minimum of three quotations for a purchase of physical resources above R2000 as per procurement guidelines	Data coding , Frequencies ,Descriptive analysis ,inferential statistics (Wilcoxon hypothesis test)

Questions/Hypotheses/Proposition		Attributes/variables	Data/information collection instrument	Data/information collection processing and analysis
2	1.2.3.2 How effective is the management of teaching and learning material management in Ekangala Township no-fee schools? H0: There is no statistically significant evidence that teaching and learning material management is effective in the Ekangala Township no-fee schools. Ha: There is statistically significant evidence that teaching and learning material management is effective in the Ekangala Township no-fee schools.	**1,1** Effective management	**1.1.1** D34 All learners are supplied with stationery D30 There are proper systems in place when distributing textbooks for teachers and learners D41 The facilities in the library are used in teaching and learning D37 Our school ensures that proper records on TLM are maintained D32 Every learner has a textbook per subject per grade D40 The facilities in the specialised rooms (laboratory) are used in teaching and learning D33 Sharing of textbooks is not allowed D39 Our school disposed textbooks that are no longer in use	Data coding, Frequencies ,Descriptive analysis ,inferential statistics (Wilcoxon hypothesis test)

Questions/Hypotheses/Proposition	Attributes/variables	Data/information collection instrument	Data/information collection processing and analysis

3	1.2.3.3 To what an extent are budget, human resource and procurement systems affecting the management of teaching and learning material in no-fee schools? H0: Budget, human resources, and procurement system are not significantly related to effective management of teaching and learning in no-fee schools Ha: Budget, human resources, and procurement system are significantly related to effective the management of teaching and learning material in no-fee schools	**1,1** 1. Budget 2. Human resource 3. Procurement 4. TLM	**1.1.1** D35 Our specialised learning centres are adequately resourced D28 Procured TLM are delivered on time D29 After procurement of TLM the inventory list is updated D36 Our school retrieve 100 % textbooks at the end of the year D31 Parents signed parental loan forms for textbooks distributed to their learners D38 Our school developed Textbook Retrieval Plan to achieve effective textbook retention	Data coding, Pearson correlation and regression analysis

Appendix 4.1: Short bio of the researcher

I am Joyce Maimela currently pursing master's Degree in Management in the field of Public Development Sector Monitoring & Evaluation under Faculty of Commerce, Law, and Management at University of Witwatersrand. I am employed by Gauteng Department of Education as Senior Education Specialist stationed in Gauteng North District. My summarised focus area are as follows: Provide professional guidance through the implementation of system and structures that allow for effective management. These will include: Ensuring that all the public schools in Gauteng North have functional TLM systems. Facilitate correct interpretation and ensure effective planning, implementation, monitoring and evaluation of policies. I am conducting a study as part of the requirement to complete my degree. This study is self-funded. My interest in the study is to gain skills to contribute to the improvement of Monitoring and Evaluation practice in Department of Education.

Appendix 5.1: Permission Letter – GDE Approved

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	31 August 2020
Validity of Research Approval:	04 February 2020 – 30 September 2020 2019/590
Name of Researcher:	Maimela JM
Address of Researcher:	01 Walter Street
	The Orchards
Telephone Number:	082 7840118
Email address:	joycemaimela@gmail.com
Research Topic:	Management of teaching and learning material in Tshwane Municipality no-fee schools
Type of qualification	Masters
Number and type of schools:	4 Secondary Schools and 7 Primary Schools
District/s/HO	Gauteng North

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

15/10/2020

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

1. *Letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

Appendix 6.1: Ethical Clearance Certificate

Research Office:
Sithembile Xaba
Tel: 011 717 3133
Email: Sithembile.Xaba@wits.ac.za

Research Director:
Prof Pundy Pillay
Tel: 011 717 3501
Email: pundy.pillay@wits.ac.za

02 February 2021

Dear Mrs Joyce Matome Maimela

Title: Management of teaching and learning material in Tshwane municipality no-fee schools
Student Number: 1893847
Degree: Master of Management in the field of Governance
Ethics Clearance Number: *WSG-2021-06*

All candidates must satisfy the University's ethical standards for research. Your ethics application has been received and reviewed by the Wits School of Governance Human Research Ethics Committee.

Your ethical clearance has been approved subject to you getting permission to conduct research from all sites where research is conducted. The letter(s) of permission to undertake research must be submitted to the WSG Research Office and kept on file with your final proposal and other ethics documents.

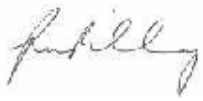
You may commence your data collection under the guidance of your supervisor. In the event that the scope, methodology or nature of the research changes, you are required to submit another ethics application reflecting the changes.

The onus is on you as the candidate, with support from your supervisor, to ensure that your research complies with university human research ethics policies and protocols at all stages of the research process.

It is recommended that you keep this letter in a safe place as you are responsible for ensuring that you have proof of ethics clearance and have lodged the ethics clearance / protocol number with Faculty before final submission of your research report. If you do not have an ethics clearance number, you are not permitted to graduate.

Please do not hesitate to contact me if you have any queries.

Yours sincerely



Professor Pundy Pillay
Research Director