FACULTY OF SCIENCE AND TECHNOLOGY

Department of Surveying and Geomatics

******* PROJECT TITLE*******

A GROUNDED THEORY APPROACH TO THE INVESTIGATION OF CADASTRAL ACTIVITIES AND PROCESSES OF GWERU MUNICIPALITY

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This dissertation was submitted in partial fulfilment of the requirements of the Bachelor of Science Honours Degree in Surveying and Geomatics at the Midlands State University

APPROVAL FORM

The undersigned certify that they have supervised the student Benevolence Mudare in a dissertation entitled, "*A GROUNDED THEORY APPROACH TO THE INVESTIGATION OF CADASTRAL ACTIVITIES AND PROCESSES OF GWERU MUNICIPALITY*", submitted in partial fulfillment of the requirements of the Bachelor of Science Honours Degree in Surveying and Geomatics at the Midlands State University.

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Dedications

1 want to dedicate this thesis to my aunt and uncle who gave me parental support throughout the degree

Abstract

This paper explores the power of Constructivist grounded theory methodology to discover the theory of the Gweru Cadastral processes and activities. The researcher used the tools and techniques of constructivist grounded theory to mine rich data at Gweru council which he then performed data analysis to yield analytic categories. The researcher then used these analytic categories to write the Gweru cadastral processes theory which he then compared with the theory within the domain of land governance.

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1. Introduction

1.1 introduction and background

According to Chimhamhiwa (2002), there are four key cadastral processes which support the cadastral system of Zimbabwe namely subdivisions, consolidations, sectional title surveys and whole parcel transfers. In all these cadastral processes, Municipalities or the Local Planning Authorities (LPA) play a key role for their efficient execution.

Municipalities in Zimbabwe including Gweru municipality are failing to gain rewards from the subdivision processes as depicted in the Cost and Benefit analysis performed by Chimhamhiwa in his 2015 research shown below.

Organisation	Ratio of Cost to Benefit
Planner	0.93
Municipality	180.71
Land Surveyor	0.75
Department of the Surveyor General	122.00
Notary	0.94
Registry of Deeds	50.46

Table 1Cost/benefit analysis of subdivision processes (Adapted from Chimhamhiwa (2015))

Chimhamhiwa (2002) mentioned that three core dimensions of time, cost and quality have been identified and are already being measured and monitored frequently in various formats in almost all organizations. In addition to the above core dimensions, Chimhamhiwa (2010) introduced technological innovation, society and customer satisfaction as other performance measurement dimensions.

Against this background, the nature of the cadastral processes together with their forms of adaptation posed by both the internal and external environment, remain unknown despite Chimhamhiwa's analysis. Chimhamhiwa concentrates on the linear issues of the cadastral subdivision process, but the present research considers the context in which the cadastral processes commence under the influence of interacting processes, emerging decisions and different disciplines like the engineering department, accountant department and town planning department. It therefore considers the non-linearity approach by invoking a grounded theory

perspective. McCann & Clark (2003a) and Payne (2007) argued that grounded theory is an effective

research strategy for topics which have been subject to relatively little research and about which there is a paucity of knowledge(Dunne, 2015). Thus there is paucity of knowledge pertaining the cadastral operations of municipalities in Zimbabwe specifically Gweru municipality which requires a tool like grounded theory strategy to fully mine all the information.

1.2 Problem statement

The administration of municipalities in Zimbabwe is steered by the Urban Council Act (chapter 29:15), however the detailed ways of operation within each municipality are still vague and unknown. Meanwhile the planning systems and the coordination systems of Gweru City Council remain questionable, as the municipality area is infested by typhoid. Within the window period of July to August 2018, WHO notes down 1460 cases of Typhoid in Gweru urban. It is not known how the cadastral processes influence the balance between the population and its variation with the resources installed in the land parcels. One way of gaining access to information about the cadastral processes of Gweru city council is to deploy a tool that is intelligent enough to extract clandestinely the operations of the cadastral process.

Although it is assumed that the cadastral activities and processes are measured against the preset standards in the acts, the starting point of this research is that processes and activities are executed differently from the set standards, depending on the budget scheme and its adequacy.

To this extend the researcher applies the Grounded Theory Methodology to discover new information pertaining the cadastral operations of Gweru Municipality. Grounded theory methodology was suited for this study as it allows the emerging of theory from the systematic examination of the Gweru cadastral processes.

1.3 Objectives

1.3.1 Main Research Objective

1. To investigate the contribution of cadastral activities and processes to the efficiency and effectiveness of Gweru Municipal planning activities

1.3.2 Sub Objectives

1. To identify the most suitable knowledge construction methodology

2. To develop grounded theory for cadastral processes of Gweru Municipality

3. To compare the grounded theory of Gweru City Council with the findings gazette about other City Council in the domain of land governance.

1.4 Research questions

Interview 1
what are the cadastral processes which you undertake?

Interview 2
- can you ascertain quality of your cadastral processes?
- Are you able to meet the deadlines to deliver the subdivision or the consolidation?
- Do you have a stipulated budget for the cadastral processes?
- do you end up incurring reduced cost or increased cost?
- are the customers satisfied with the time taken to get the deliverable and the cost charged?

Interview 3
- have you ever encountered situations where a request was returned back for correction?
- have you ever encountered situations where there was disapproval of the subdivision plan lodged?
- can we say most of the subdivision plans were passed free of errors?
- how do you measure the quality of beacon relocation?
- are the customers satisfied with your services
- can you outline what exactly you would be doing in carrying out other cadastral processes other than beacon relocation?
- what are other thoughts which you have that might add value to the Gweru council cadastral processes?
- what would be the benefits of the digit al cadastre which you are developing?
- what might be the stumbling blocks that you are facing in the creation of digital cadastre?
- what quality checks are you employing to ensure quality in the creation of the digital cadstre?

Interview 5
- what is the criteria for budgeting and implementing the budget?
- what are the frequently prioritized issues with regard to funding?
- does the department depend on crowd pool?
- who determines that the department needs the finances?
- at what level are the finances released?
- who administers the budget for the department?

interview 4
- what were the major reasons that kept the city council from possessing their own equipment?
- did the survey department cease to function at some point?
- how did the survey department operate with inadequate infrastructure?
- is the infrastructure in place adequate enough for the operation of the survey department?
- how many staff are with the survey department?
- How do these staff engage with the staff from the entire organization?
- What are the uses of the equipment that was bought three weeks ago?
- what is the nature of the equipment that was bought three weeks ago?
- what equipment did they have before?
- is the acquisition of new equipment an indication of change of technology within the city council?
- Why do they need the external land surveyor to do their surveys?

Interview 6
What are the estimation criteria used by the city council to come up with the survey fees?
- which expertise or department are involved in screening the subcontractors?
- what are the key factors that constrain the choice of the subcontractors?
- How is the chosen subcontractor paid after the survey is completed?
- Which methods are used to pay the subcontractors?
- what are the basic qualifications required for survey post in the city council?
- does the council have a registered surveyor?
- Which of the activities are done by the city council without the registered land surveyor?
- are there any alternatives that are levelled against the usual delay of the surveyor general's processes by the city council?
- when is the general plan ready for use in the city council?
- what possible challenges do you face in the verification process of the external surveyor's work?

interview7
- what are the major challenges encountered with the stakeholders who are involved in raising concerns against the subdivision plan?
- are there any legal tools to monitor the process?
- how are the concerns or objections addressed by the city council of Gweru?
- are there scenarios in which the subdivision plans are rejected?
- What are the main objections that lead to the rejection of the subdivision plans?
- what kind of land data does each subdivision show?
- how are the objections examined or checked by the city council?
- are there any formal physical workshops or models of interaction existing between the expertise of the surveyor general, deeds registry, registered land surveyors with the city council of Gweru?
- if these models exist, what do they usually involve?
- if not, how does the workforce of the city council interact with its key stakeholders?
- are there some form of learning models to transmit knowledge about cadastral activities from one organization to another apart from act?
- are there legal interpreters and advisors of the acts within the city council of Gweru
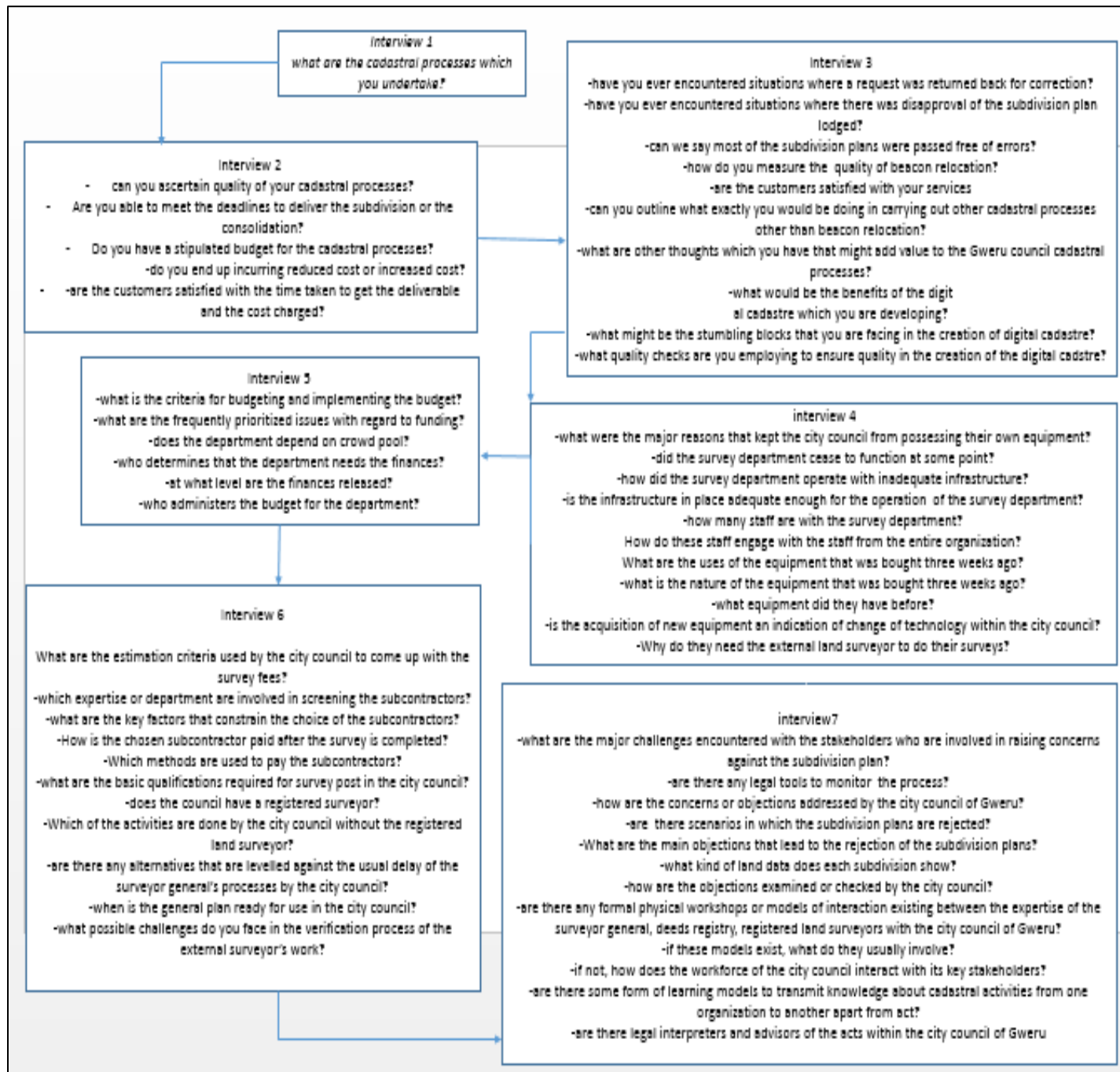
Figure 1 A Consecutively Generative Research Questions

A consecutively generative approach of research questions used to answer objectives 1 to 4 are outlined as above

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The researcher started with the initial research question as indicated on diagram above. Then the questions to do the next interview were generated from the coding of the preceding interview.

1.5 Justification

The general assumption that cadastral processes being carried out in Gweru municipality follows a linear model remains questionable given that acts like the Regional town and country planning act (chapter 29:12) and the Urban council act (Chapter 29.15) just lay out what should be done but does not consider what might truly happen considering the state of the organization for example financially. There is a need to find out what is causing the deviation of the processes from the linear model. Truly knowing what the Gweru municipality is doing to accomplish its cadastral processes would enable it to find ways of enhancing its processes to achieve better performance. Thus the relevance of this study to adopt an intelligent tool to extract clandestinely the information of the performance of Cadastral processes of the Gweru municipality.

1.6 Overview of thesis

1.6.1 Chapter 1: General introduction

In this chapter an entire overview of the research work is presented by describing the research background and defining the problem statement. Outlining of the aims and objectives followed by the research question is also done in this chapter.

1.6.2 Chapter 2: Review of Grounded theory Methodology

Introduction on grounded theory, Different versions of grounded theory, summarized similarities and differences of the three versions of grounded theory, discussion and the research design

1.6.3 Chapter 3: Results

Introduction, results from the analyses of the seven interviews and observations made at Gweru municipality, emerging of the core category from the overall categories from the coding process.

1.6.4 Coalescence of the findings by the researcher about Gweru council cadastral processes and the findings of other contexts

A discussion about the findings by the researcher of the Gweru council cadastral processes and findings from other contexts

1.6.5 Conclusions and Recommendations

This chapter outlines how the research questions were answered in the research. This chapter concludes the research findings and outlines a set of recommendations for each objective of the research. This chapter also draws recommendations for the use of this research in future research work.

Chapter 2 A Review of Grounded Theory Methodology

2.1 Introduction

In this research, there was a needy of a methodology which foster creative thinking, allows exploration and the emergence of theory from discovery. Grounded theory was found to be most suitable methodology. The researcher found out that little is also known about the area under study, Gweru municipality, hence the needy of a methodology which discovers theory and grounded theory was best suited for this. Generally, grounded theory emphasizes on the emergence, constant comparison, memoing, and also starting the research with no preconceived concepts.

2.2 How can grounded theory methodology solve the research problem?

The grounded theory works best where there is paucity of information and in this research there is paucity of information as far as the cadastral processes and activities of Gweru council are concerned. The researcher took advantage of one of the tools of grounded theory which is used to collect data that is intensive interviews. Intensive interviews gave the researcher the platform to listen and observe with sensitivity as the Gweru council participant who knew the Gweru cadastral processes was shading light on them. This enabled the researcher to collect rich and sufficient data which was made more meaningful by doing data analysis which then leads to the emergence of categories which subsequently leads to the writing of Gweru grounded theory. Basically grounded theory allows systematic examination of the Gweru cadastral processes and activities.

2.3 What are the technical elements and procedures does the grounded theory possess?

Firstly, it is important to know that there are three major classes of grounded theory as discussed in detail below namely Classic grounded theory, Straussian grounded theory and the constructivist grounded theory. Thus there are technical elements and procedures which all these classes have in common and also which they are different as clearly articulated on figure2 below.

2.4 Which techniques amongst the grounded theory applied in this research?

The researcher chose the techniques articulated by the constructivist grounded theory. The researcher used most of the tools as witnessed by his research design on figure 3. The researcher also gave a rationale in his discussion of the reason he chose the techniques of the constructivist grounded theory methodology.

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2.5 Versions of grounded theory

2.5.1 Glaser grounded theory methodology

It is critical in GT methodology to avoid unduly influencing the preconceptualization of the research through extensive reading in the substantive area and the forcing of extant theoretical overlays on the collection and analysis of data(Glaser and Holton, 2004). Instead, GT methodology treats the literature as another source of data to be integrated into the constant comparative analysis process once the core category, its properties and related categories have emerged and the basic conceptual development is well underway(Glaser and Holton, 2004).

According to Glaser and Holton (2004), theoretical sampling is the process of data collection for generating theory whereby the analyst jointly collects, codes and analyses the data and decides what data to collect next and where to find them, in order to develop the theory as it emerges.

Glaser and Holton (2004) said that "the researcher can only saturate his or her discovered codes by theoretical sampling. The need for further data collection by the analyst could only be ascertained by gaps in data which he or she may have found(Glaser and Holton, 2004). Glaser and Holton (2004) pointed out that the basic question in theoretical sampling is to what groups or subgroups does one turn to next in data collection—and for what theoretical purpose? The possibilities of multiple comparisons are infinite and so groups must be chosen according to theoretical criteria".

Glaser and Holton (2004) said that "Memos are theoretical notes about the data and the conceptual connections between categories. The writing of theoretical memos is the core stage in the process of generating theory(Glaser and Holton, 2004). It is essential that the analyst interrupts coding to memo ideas as they occur if he or she is to reap the subtle reward of the constant input from reading the data carefully, asking the above questions and coding accordingly(Glaser and Holton, 2004). Memos help the analyst to raise the data to a conceptual level and develop the properties of each category that begin to define them operationally(Glaser and Holton, 2004). Although typically based on description, memos raise that description to the theoretical level through the conceptual rendering of the material(Glaser and Holton, 2004). Earlier on memos arise from constant comparison of indicators to indicators, then indicators to

concepts(Glaser and Holton, 2004). Glaser and Holton (2004) pointed out that later on memos generate new memos, reading literature generates memos, sorting and writing also generate memos—memoing is never done! Memos slow the analyst's pace, forcing him/her to reason through and verify categories and their integration and fit, relevance and work for the theory"(Glaser and Holton, 2004)

Data analysis

Initial coding

Glaser and Holton (2004), gave an insight to the advantages which initial coding can give the analyst during the early stages of coding. These are

1. The analyst would be enabled to see the direction in which to take the study by theoretical sampling before he or she has become selective and focused on a particular problem
2. The researcher would begin to see the kind of categories that can handle the data theoretically, so that he or she knows how to code all data, ensuring the emergent theory fits and works.
3. Allows the analyst the full range of theoretical sensitivity as it allows him to take chances on trying to generate codes that may fit and work.

Open coding begins with line-by-line open coding of the data to identify substantive codes emergent within the data(Glaser and Holton, 2004). Substantive codes conceptualize the empirical substance of the area of research. At this point according to Glaser and Holton (2004) the analyst begins by coding the data in every way possible—"running the data open." From the start, the analyst asks a set of questions—"What is this data a study of?" "What category does this incident indicate?" "What is actually happening in the data?" "What is the main concern being faced by the participants?" and "What accounts for the continual resolving of this concern?" (p.13).They stressed out that these questions "enhance the theoretical sensitivity of the analyst thus having the ability to generate concepts from data and to relate them according to normal models of theory in general"(Glaser and Holton, 2004).

As the researcher proceeds to compare incident to incident in the data, then incidents to categories, a core category begins to emerge(Glaser and Holton, 2004). This core category would

become the basis of further selective data collection which is the next and final stage(Glaser and Holton, 2004). Glaser and Holton (2004) said that "as the analyst develops several workable coded categories, he or she should begin early to saturate as much as possible those that seem to have explanatory power". The core variable can be any kind of theoretical code—a process, a condition, two dimensions, a consequence, a range and so forth and its primary function is to integrate the theory and render it dense and saturated(Glaser and Holton, 2004).

Line by line coding forces the analyst to verify and saturate categories, minimizes missing an important category and ensures the grounding of categories the data beyond impressionism(Glaser and Holton, 2004). The saturation of categories means that researchers reach a point in their analysis of data that sampling more data will not lead to more information related to their research questions(Glaser and Holton, 2004). No additional data can be found to develop new properties of categories(Glaser and Holton, 2004). Thus the analyst would proceed to selective coding.

Selective coding

Selective coding means to cease open coding and to delimit coding to only those variables that relate to the core variable in sufficiently significant ways as to produce a parsimonious theory(Glaser and Holton, 2004). Selective coding commences only after the analyst is sure that he or she has found the core variable. The reason is clearly articulated by Glaser and Holton (2004) in following

> "The criteria for establishing the core variable within a GT are that it is central, relating to as many other categories and their properties as possible and accounting for a large portion of the variation in a pattern of behaviour. The core variable reoccurs frequently in the data and comes to be seen as a stable pattern that is more and more related to other variables. It relates meaningfully and easily with other categories. It has clear and grabbing implications for formal theory. It is completely variable and has conceptual carry through in the emerging theory, enabling the analyst to get through the analyses of the

processes that he/she is working on by its relevance and explanatory power".

Subsequent data collection and coding is thereby delimited to that which is relevant to the emergent conceptual framework(Glaser and Holton, 2004). This selective data collection and analysis continues until the researcher has sufficiently elaborated and integrated the core variable, its properties and its theoretical connections to other relevant categories(Glaser and Holton, 2004).

Theoretical coding

Incidents articulated in the data are analysed and coded, using the constant comparative method, to generate initially substantive, and later theoretical, categories(Glaser and Holton, 2004). Glaser and Holton (2004) mentioned that essential relationship between data and theory is a conceptual code.

Theoretical codes conceptualize how the substantive codes may relate to each other as hypotheses to be integrated into the theory(Glaser and Holton, 2004). Glaser and Holton (2004) highlighted that theoretical codes give integrative scope, broad pictures and a new perspective and help the analyst maintain the conceptual level in writing about concepts and their interrelations

2.5.2 Strauss and Corbin grounded theory methodology

The carrying out of procedures of data collection and analysis systematically and sequentially enables the research process to capture all potentially relevant aspects of the topic as soon as they are perceived(Corbin and Strauss, 1990). In commencing data collection they advocated that "the investigator enter the field with some questions or areas of observation or will soon generate them". This would be carried out the entire project(Corbin and Strauss, 1990). They also discussed about theoretical sampling as key process in both data collection and analysis since it deals with identification of gas and do further data collection pertaining that areas and then code the data(Corbin and Strauss, 1990). They also advocated that the researcher should visit literature from onset as this would help him or her during the entire study(Corbin and Strauss, 1990).

Strauss and Corbin (1990) said that "Since the analyst cannot readily keep track of all the categories, properties, hypotheses, and generative questions that evolve from the analytical

process, there must be a system for doing so. The use of memos constitutes such a system(Corbin and Strauss, 1990). They are involved in the formulation and revision of theory during the research process(Corbin and Strauss, 1990). Writing memos should begin with the first coding sessions and continues to the end of the research(Corbin and Strauss, 1990). Sorted and resorted during the writing process, theoretical memos provide a firm base for reporting on the research and its implications(Corbin and Strauss, 1990). If a researcher omits the memoing and moves directly from coding to writing, a great deal of conceptual detail is lost or left undeveloped(Corbin and Strauss, 1990). A less well elaborated and satisfying integration of the analysis will result"(Corbin and Strauss, 1990).

Data analysis

Open coding: According to Strauss and Corbin (1990), open coding is the initial step into the coding process and it is first stage of his three phases of coding. According to Strauss and Corbin (1990), concepts are the basic units of analysis.   Strauss and Corbin (1990) mentioned that "The incidents, events, and happenings are taken as, or analyzed as, potential indicators of phenomena, which are thereby given conceptual labels" (p.5). By continually studying the events, actions, or interactions which are potential indicators of the phenomena, and comparing them to the ones first made, the analyst would discover that the other events are portraying the same meaning(Corbin and Strauss, 1990). These events would then be grouped as having the same concept(Corbin and Strauss, 1990). Eventually, this concepts, would be many and more abstract as the analysis continues(Corbin and Strauss, 1990). Corbin and Strauss (1990) pointed out that the analyst would be

1. Asking specific questions and consistent questions to the data
2. Coding precisely
3. Writing reflections or memos
4. Minimizing assumptions

Axial coding

 According to Strauss and Corbin (1990), axial coding is the second stage of the three stages of coding. Strauss and Corbin stressed out that not all of the concepts developed initial coding would become categories(Corbin and Strauss, 1990). Categories are higher in level and more

abstract than the concepts(Corbin and Strauss, 1990). Similarly, as was done in initial coding the analyst would continue to make comparisons in an effort to highlight similarities and differences which are useful in the creation of lower level concepts(Corbin and Strauss, 1990). Strauss and Corbin (1990) label categories as the cornerstones of a developing theory since they provide means by which a theory can be integrated. Corbin and Strauss (1990) pointed out that in order to develop an abstract category, does not only need the analyst to just group concepts under a more abstract heading but require the analyst to thoroughly look at those abstract concepts which would the lead to abstract category and develop them based on the following four properties

1. Conditions
2. Context
3. Consequences
4. Strategies (action and interaction)

This would lead to a category which is more defined and which has been given an explanatory power(Corbin and Strauss, 1990).

Selective coding

Strauss and Corbin (1998) defined selective coding as the process of integrating and refining the theory (p.143). In this phase the analyst selects a core category and then relates all other categories to the core as well as to other categories(Corbin and Strauss, 1990). Selective coding is similar to axial coding, in which the categories are developed in terms of their properties, dimensions, and relationships, except that the integration occurs at more abstract level of analysis (Strauss and Corbin, 1990).

2.5.3 Charmaz grounded theory methodology

According to Charmaz (2006), grounded theory methods are a set of principles and practices, not prescriptions or packages. This means that the researcher is not forced to do them but is just given a guideline to appreciate the principles of grounded theory (Charmaz, 2006).

Charmaz (2006) echoed Strauss and Corbin's endorsement of literature but developed it a step further. Charmaz (2006) suggested that the literature should be compiled in a specific literature review chapter as well as interspersed throughout the entire thesis (p.166). To guard against this

danger of becoming immersed in literature to the extent of losing one's creativity, Charmaz (2006) advised delaying writing a specific literature review chapter until after data analysis. Charmaz (2006) proposed that this resolution would facilitate a comprehensive literature review without compromising the researcher's openness and creativity.

Data analysis

According to Charmaz (2006), Coding is the pivotal link between collecting data and developing an emergent theory to explain these data. Charmaz (2006) highlighted that coding allows one to define what is happening in the data and also begin to understand what it means. Charmaz (2006) pointed out that Grounded theory coding consists of the initial phase which deals with naming each word, line, or segment of data and focused, selective phase that uses the most significant or frequent initial codes to sort, synthesize, integrate, and organize large amounts of data.

Initial coding

Charmaz (2006) pointed out during this phase the objective is to remain open to all possible theoretical directions from the data. Charmaz (2006) suggests asking the following questions

- What is this data a study of?' (Glaser, 1978: 57; Glaser & Strauss, 1967)
- What does the data suggest? Pronounce?
- From whose point of view?
- What theoretical category does this specific datum indicate? (Glaser, 1978)

Charmaz (2006) summarized the following when doing coding which she says a code for coding

- Remain open
- Stay close to the data
- Keep your codes simple and precise
- Construct short codes
- Preserve actions
- Compare data with data
- Move quickly through the data.

Charmaz (2006) pointed out that in doing coding the researcher might do word by word coding, line by line coding and incident by incident coding.

Word by word coding

Charmaz (2006) highlighted that Word-by-word analysis forces you to attend to images and meanings. According to Charmaz (2006), word by word coding helps the researcher to attend to the structure and the flow of words.

Line by line coding

In doing line by line coding Charmaz (2006) suggested we do the following

- Breaking the data up into their component parts or properties
- Defining the actions on which they rest
- Looking for tacit assumptions
- Explicating implicit actions and meanings
- Crystallizing the significance of the points
- Comparing data with data
- Identifying gaps in the data.

According to Charmaz (2006) by the flexible use of these strategies coding leads to the development of theoretical categories some of them one might have defined them in his or her initial codes.

According Charmaz (2006), coding every line may seem like an arbitrary exercise because not every line contains a complete sentence and not every sentence may appear to be important. According to Charmaz (2006), line by line coding works particularly well with detailed data about fundamental empirical problems or processes whether these data consist of interviews, observations, documents or ethnographies and autobiographies.

Charmaz (2006) mentioned that, fresh data and line by line coding prompt the researcher to remain open to data and to see nuances. According to Charmaz (2006), when you code early in depth interview data, you gain a close look at what participants say. Charmaz (2006) mentioned that line by line coding helps the researcher to refocus later interviews and enabled him to look at the data anew. According Charmaz (2006), thorough coding each line of data the researcher gain insights about what kinds of data to collect next and also gives you leads to pursue.

Incident to incident coding

Charmaz (2006) mentioned that this way one can identify properties of the emerging concept and also that making comparisons between incidents likely works better than word-by-word or line-by-line coding, in part because the field notes already consist of your own words.

Focused coding

Focused coding is the second and final stage in coding according Charmaz (2006). She referenced Glaser (1978) that these codes are more directed, selective, and conceptual than word-by-word, line-by-line, and incident-by-incident coding. Focused coding requires decisions about which initial codes make the most analytic sense to categorize your data incisively and completely (Charmaz, 2006).

Chamaz (2006) said that "You act upon your data rather than passively read them. Through your actions, new threads for analysis become apparent Events, interactions, and perspectives come into analytic purview that you had not thought of before. Focused coding checks your preconceptions about the topic".

2.6 Summarized similarities and differences of the three versions of grounded theory
The following figure gives a clear picture where the classic grounded theory, Strauss and Corbin and Charmaz converge and diverge in their view in the grounded theory methodology.
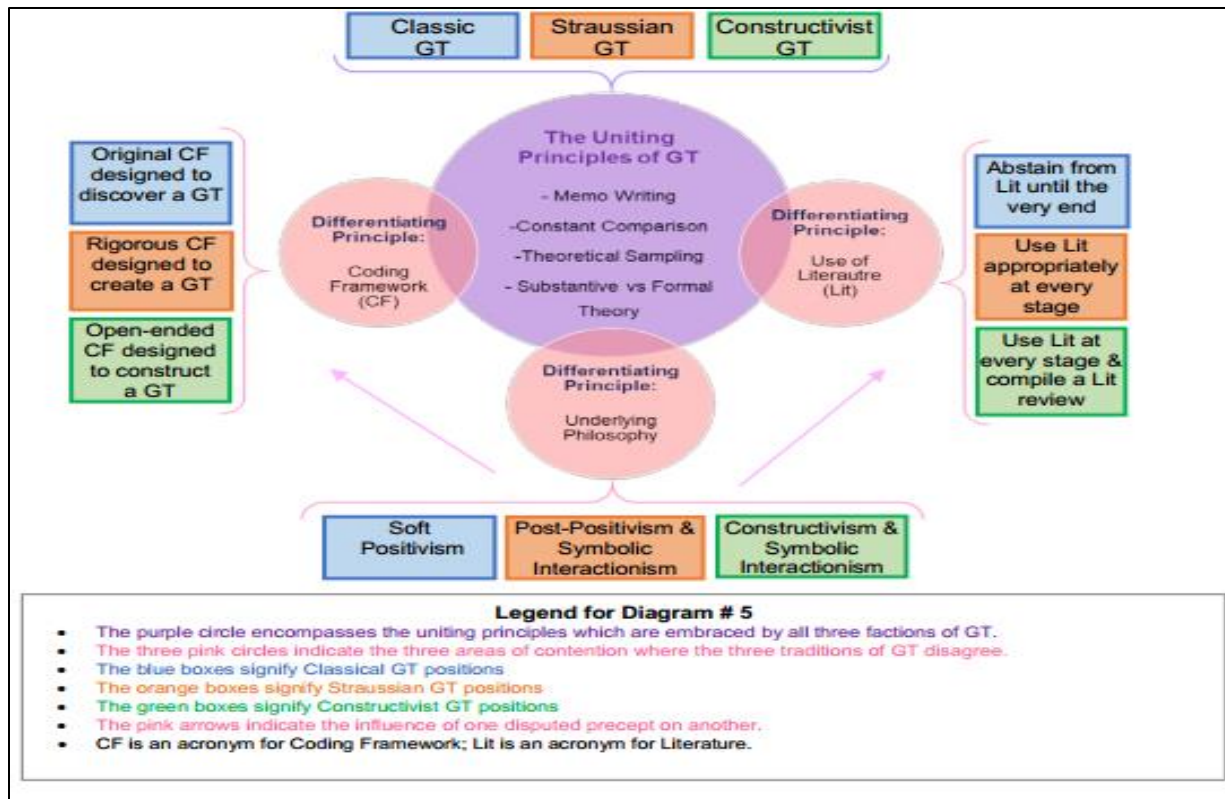
The diagram shows three GT factions (Classic GT, Straussian GT, Constructivist GT) at top, a central purple circle labelled "The Uniting Principles of GT" with Memo Writing, Constant Comparison, Theoretical Sampling, and Substantive vs Formal Theory. Three pink circles indicate differentiating principles: Coding Framework (CF), Use of Literature (Lit), and Underlying Philosophy.

Left boxes (Coding Framework): Original CF designed to discover a GT; Rigorous CF designed to create a GT; Open-ended CF designed to construct a GT.

Right boxes (Use of Literature): Abstain from Lit until the very end; Use Lit appropriately at every stage; Use Lit at every stage & compile a Lit review.

Bottom boxes (Underlying Philosophy): Soft Positivism; Post-Positivism & Symbolic Interactionism; Constructivism & Symbolic Interactionism.

Legend for Diagram # 5

- The purple circle encompasses the uniting principles which are embraced by all three factions of GT.
- The three pink circles indicate the three areas of contention where the three traditions of GT disagree.
- The blue boxes signify Classical GT positions
- The orange boxes signify Straussian GT positions
- The green boxes signify Constructivist GT positions
- The pink arrows indicate the influence of one disputed precept on another.
- CF is an acronym for Coding Framework; Lit is an acronym for Literature.

Figure 2 the uniting and differentiating principles of GT (Adapted from Kenny and Fourie, 2015).

2.7 Discussion

As clearly depicted on the figure1 above, that although the three peculiar methodologies namely the Classic, Straussian and Constructivist grounded theory methodology shared the same point of view as far as memo writing, constant comparison, theoretical sampling and substantive versus formal theory is concerned, there are other points of disagreements which has led to the researcher opting to the constructivist theory methodology. This was as a result that the researcher's work best suited the Charmaz version of grounded theory as he had also the same line of reasoning with her.

Charmaz (2008) labelled the coding procedure of the Straussian grounded theory methodology as concrete, rule bound, prescriptive approach to coding rather she suggested a more "fluid framework" of coding with just two stages which is characterized by generic grounded theory techniques namely memo writing, constant comparisons, theoretical sampling and saturation.

The fluidity of Charmaz methodology catches the attention of the researcher who preferred a straightforward and simple way of coding.

The researcher liked the way Charmaz (2006) laid out her initial coding types. She mentioned that initial coding comprises of word by word, line by line and incident to incident coding. The researcher found line by line and incident to incident coding most useful in his study. The researcher chose to use a combination of the two as they natured his study in the positive direction. Data collection and data analysis are two crucial steps to the researcher, so the researcher used line by line coding as a tool which allowed him to refocus later interviews and to see data as new thereby enhancing discovery of data on cadastral system at municipality level. Line by line coding enabled the researcher to have a glimpse of what data to collect next thus continuing data collection and analysis. In cases where it seemed meaningless to code line by line when there is an incomplete sentence and when sentence did not give a concrete meaning, the researcher employed incident to incident coding

The researcher did not agree with Glaser's approach on the use of literature review. It's true that the researcher undertaking grounded theory should not mine too much data before research as this would stumble the emergence of theory from the data. Rather it would be a reflection of the theories from the literature. The researcher upholds Charmaz approach of not engaging in literature review not until the categories have been developed. This would allow the researcher to stay close to data and extract the true meaning of data free of interventions of literature. Then literature would play significant role to check if something has been done relative to the study area once categories has been done though the research would not deeply root himself into it.

The researcher also upholds Charmaz view of the methodology that the researcher and the interviewee both are key participants in constructing the reality from the data rather than Glaser's point of view that the researcher should not be core active when interviewing. Charmaz (2006-8) advocates that the researcher should not just force data from the interviewee but should work hand in hand. She also advocates for extensive interviews. The main reason is that it is through interviewing, when the researcher would be able to write memos which are of great importance in theory writing and conceptualizing the codes from data. After continued interviews, that is where the researcher would be able to truly figure the true actions or meanings from the interviewee and also figure gaps for further carrying out interviews until saturation. In this study,

the researcher deemed the above useful and having a special connection to his area of study where he would be carrying out extensive interviews until ready for final writing.

2.8 The link between data and quality of the research study

Charmaz (2006) mentioned that the quality and credibility of your study starts with data. The depth and scope of the data make a difference. According to Charmaz (2006), a study based upon rich, substantial, and relevant data stands out. According to Charmaz (2006), whatever methods you choose, plan to gather sufficient data to fit your task and to give you as full a picture of the topic as possible within the parameters of this task (p.33)

Charmaz (2006) pointed out that if the researcher wants to be sure if he or she has collected rich and sufficient data, the researcher should ask himself or herself the following questions (p.33)

- Have l collected enough background data about persons, processes and settings to have ready recall and to understand and portray the full range of contexts of the study?
- Have l gained detailed descriptions of a range of participants' views and actions?
- Do the data reveal what lies beneath the surface?
- Are the data sufficient to reveal changes over time?
- Have l gained multiple views of the participants' range of actions?
- Have l gathered data that enable me to develop analytic categories?
- What kinds of comparisons can l make between data? How do these comparisons generate and inform my ideas?

Grounded theory tool used by the researcher to gather data

According to Charmaz (2006), Intensive qualitative interviewing fits grounded theory methods particularly well. Charmaz (2006) pointed out that both grounded theory methods and intensive interviewing are open ended yet directed, shaped yet emergent, and paced yet unrestricted. The researcher used intensive interviewing together with observations to gather data at the Gweru municipality. The researcher carried out seven interviews and made observations at the Gweru council.

According to Charmaz (2006), Intensive interviews allow an interviewer to:

- Go beneath the surface of the described experience

- Stop to explore a statement or topic

- Request more detail or explanation

- Ask about participant's thoughts, feelings, and actions

- Keep the participant on the subject

- Come back to an earlier point

- Restate the participant 's point to check for accuracy

- Slow or quicken the pace

- Shift the immediate topic

- Validate the participant's humanity, perspective, or action

- Use observational and social skills to further the discussion

- Respect the participant and express appreciation for participating.

Charmaz (2006) pointed out that Intensive interviews allow research participants to:

- Break silences and express their views

- Tell their stories and to give them a coherent frame

- Reflect on earlier events

- Be experts

- Choose what to tell and how to tell it

- Share significant experiences and teach the interviewer how to interpret them

- Express thoughts and feelings disallowed in other relationships and settings

- Receive affirmation and understanding

2.9 Research design

The diagram below contains the tools which if used successfully produce a sound theory. The researcher started to compare the available types of grounded theory and noticed that the Charmaz grounded theory methodology is the most suitable knowledge construction methodology. By doing data gathering using intensive interviews, rich and sufficient data pertaining the area of interest is obtained hence it would be available and this would subsequently leads to the writing of the grounded theory of the Gweru cadastral processes. Data

collection is done simultaneously with data analysis as this would pave way for the next interview after the researcher deduced questions from the first interview. This leads to bulk of connected data to be collected making it easier to write the grounded theory. The writing of memos, detailed comparisons allows the researcher to develop meaningful categories which truly represents the gathered data which would then later be analysed to give a sound theory which is a true reflection of the data. Theoretical sampling allowed the researcher to continue the interviews until there is no more to ask that is until saturation. After this the researcher was now capable of writing the grounded theory of the Gweru cadastral processes. Also by analysing the developed categories the researcher was able to see the extent the Gweru cadastral activities influence the Gweru planning operations. Detailed comparisons of Gweru grounded theory and the theory within the domain of land governance was only paved way by the emerging of the Gweru grounded theory by systematically following the below steps and tools.
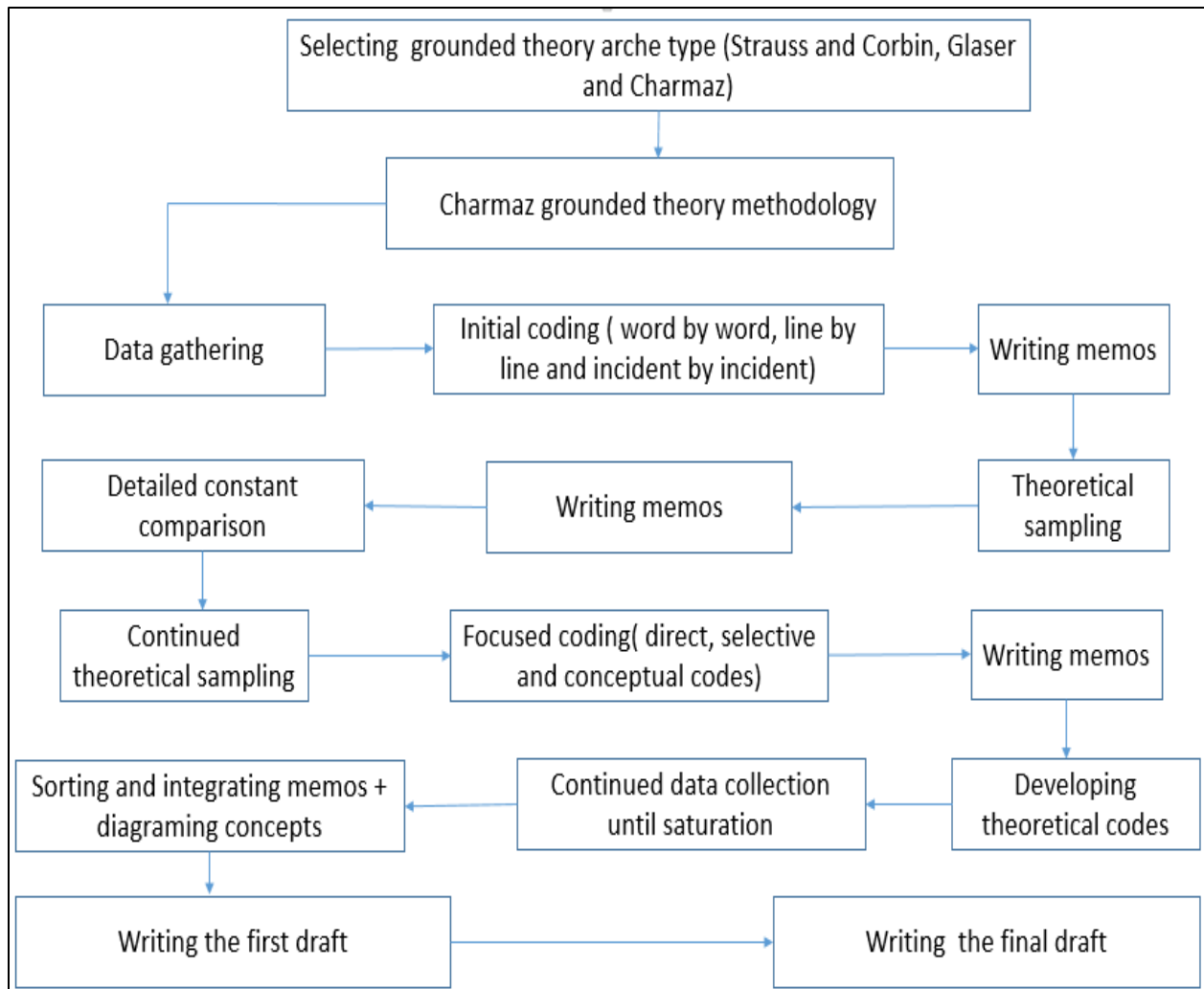
Figure 3 Steps of carrying out the Research process

Chapter 3: Synthesis of Results

3.1: Introduction

Data gathered and observations made by the researcher was coded and obtained the following results. Initial and focused coding was done. In doing initial coding the researcher did a combination of both incident and line by line coding. The researcher practically showed how initial coding from the data is done and then most important initial codes were then raised to focused codes. Memoing, diagraming and clustering helped in the continued data analysis and formation of categories and the final emerging of the core category.

3.2 Results from analysis of data from the first interview

3.2.1 Initial coding of data from the first interview

Text from transcript	Initial coding
Interviewer: What are the cadastral processes which you undertake?	Cadastral processes undertaken by cadastral section
Participant: In terms of the cadastral processes we undertake, we facilitate the development of subdivision plans, beacon relocations, verification of survey and pegging of kiosks. Cadastral processes does not start on the actual peg or the actual subdivision consolidation of a peg. It starts with the engineering department. The engineering department carries out topographical survey. This is the input to the cadastral section for it to lodge with the department of the Surveyor General. Topographical map acts as the base map. Then the cadastral section takes the base map to the planners. The planners look at how best they can design the stands in case of the subdivision. Then the planners brings it back to the cadastral section. Then the cadastral section issue out a survey instruction in case of public land to the registered land	Cadastral section undertakes beacon relocation, verification of survey and pegging of kiosks
Cadastral section facilitate development of subdivision plans The linkage of the engineering department, cadastral section, the planner, registered land surveyor in the carrying out of cadastral processes.
The origin of cadastral processes is not on the actual peg or the actual subdivision or consolidation of a peg but the engineering department
Engineering department carries topographical survey and produce the topographical map which act as a

surveyor we deem responsible for the survey. Thus we end up subcontracting a land surveyor to do the survey. We then supervise the registered land surveyor. The registered land surveyor should then bring the deliverables to the cadastral section. The deliverables include General plans, dispensation certificates and diagrams. We then take these deliverables to the estate office for conveyancing.	*control for the next cadastral process*
	Engineering department gives topo map to cadastral section which in turn pass it to planners.
	Planners design using topo map and brings it back to cadastral section which subcontract and supervises the registered land surveyor.
	Registered land surveyor gives the cadastral section deliverables which they in turn give to the estate office

Table 2 results from initial coding of first interview

3.2.2 Focused coding

The above line-line codes were raised to focused codes which helped to have sections of code which are easy to manage. The above lines of text were synthesized into two focused codes: 'Cadastral processes undertaken', 'Interaction between engineering department, cadastral section, planner and registered land surveyor to facilitate cadastral processes.'

3.2.3 Categories from the coding process of the first interview

1. Cadastral section
2. Cadastral processes undertaken by cadastral section
3. Interaction of professionals to undertake cadastral processes

3.2.4 Memoing

From these lines of texts, two initial memos with headings dependence of quality of cadastral processes on different stakeholders and determination of performance of cadastral processes were written

> Determination of Performance of Cadastral Processes
>
> In order for one to conclude that the cadastral processes are on track he or she has to have some indicators or dimensions he or she has to measure. That is the only way to determine how the cadastral processes are performing. The dimensions might include cost, time, quality, customer satisfaction and technological advancement

3.2.5 Clustering and diagramming

In order to have a visual and flexible understanding of the material under study, the researcher used clustering. Clustering allows the researcher to chronologically map his work. Allows development of categories and subcategories. It shows the relationship within the data. The following cluster is chowing the category cadastral section and its responsibility and its relationship with the planner, engineering department and registered land surveyor.
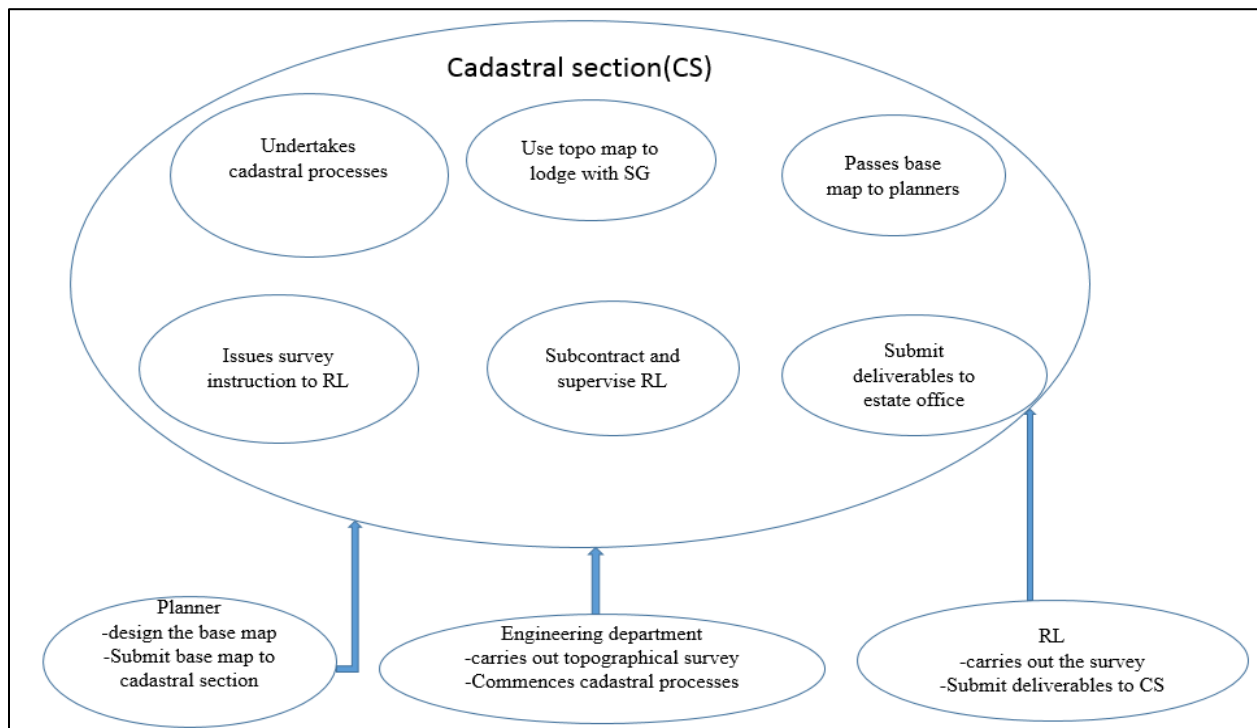

Figure 4 Cadastral section functions and its interaction with other Professionals

The researcher was able to deduce other questions after transcribing and coding the above data and this enable continuation of data gathering.

3.3 Results from the analysis of data from second interview

3.3.1 Initial coding of data from the second interview

Text from transcript	Initial coding
Interviewer: it can be deduced that your performance is depended on different stakeholders like you said the engineering department, the planners and the registered land surveyor Can you ascertain quality of your cadastral processes? Are you able to meet the deadlines to deliver the subdivision or the consolidation plan? Do you have a stipulated budget for the cadastral processes? Do you end up incurring reduced cost or increased cost?	Dependence of performance of cadastral processes on engineering department, cadastral section, planners and registered land surveyor. Performance has got several dimensions which can be measured or insured. The dimensions include quality, cost, and customer satisfaction. Technological advancement etc. Ascertaining quality of cadastral processes involves finding ways to ensure quality of cadastral process Quality processes, short delivery time, technological advancement, effective budgeting etc. enhances performance of cadastral processes.
Participant response Our profession is such that we already know what accuracy is to be expected.	Professionals are aware of the required accuracy That is professionals knows the expected result before carrying the cadastral processes
Quality checks are already governed.	Quality checks are bounded. Thus quality checks are already predefined and should be properly followed to ensure quality

That why there is always an examination.	Examination of cadastral processes There is always a needy to crosscheck if cadastral processes are done following the acts. If it's in line with the acts, the cadastral processes are passed free of errors, if not they are returned back for correction.
In terms of Registered Land surveyor the quality is checked by Surveyor General and if it is below the required quality the job is sent back to the registered Land surveyor as return to the survey.	Registered Land Surveyor's quality is governed by the Surveyor General The surveyor general controls the quality of the registered land surveyor. Surveyor general department is the one which examines the registered land surveyor's work.
The planner is governed by the acts of parliament. The measure of quality of the planner that is their output or deliverables is governed by regulations which governs their profession.	The quality of the planner is governed by acts of parliament. Thus the acts is the basis of cadastral processes in the profession. Planners deliverables are governed by their profession's regulation. Deliverables mean the outcomes or the product made by the planners like designed stands in case of a subdivision.
Our professions in terms of quality we are governed by the act of parliament.	Professions are governed by the act of parliament The act of parliament contains a set of procedures which must be done by professionals to ensure quality within cadastral processes. Thus the acts determine what quality the professionals must meet. acts determines
In terms of quality even if we subcontract it to another person , like a surveyor, after survey the supervisor from the cadastral section	Cadastral section supervises the registered Land surveyor after sub contraction Thus the cadastral section has to monitor the

should be able to testify that what is surveyed is what is on the ground.	registered land surveyor to see if the task is done properly and timely
The quality of cadastral processes goes back to the acts.	Quality of cadastral processes goes back to acts means after a cadastral process has been done, processes done to produce product and the final product are crosschecked using the acts to see if they have done exactly what is in the acts. Acts governs the quality of cadastral processes This means that the acts are the bases for cadastral processes. The acts outlines a set of procedures for an cadastral process and also specifies the required degree of precision.
We actually have timeframes, but usually depends on the amount of work available. Like here the equipment was acquired like two weeks ago, so we are trying to cover the work which we thought would not be done. Like now we have a difficult topographical survey, when we tried to use a total station it was difficult but now that we have a GPS, we are now doing it. So in terms of timeframes, we do not have stipulated timeframes , we only trust that as professionals when given tasks we try by all means to deliver in the shortest possible time.	Timeframes depends on the workload Late acquiring of equipment Working hard to cover workload of the past Capability of GPS in doing difficult tasks which are hard by total station No stipulated timeframes, trust professionals to deliver in shortest possible time
Carrying out the tasks depends on the priority which the director has the major influence on.	The carrying out of tasks depends on priority This means that the carrying out of tasks is in order of importance and also the time required

	to deliver the product by the client.
	Director has a major say in the priority
	This means the director controls the carrying out of tasks. He controls what should be done first and then last.
We definitely have to put some budget but we do them annually but not per task. We do for the whole cadastral section	The definite needy of a budget. This means that budget is a necessity. Budget is only done annually and for the whole section
The function of the council is to offer services to the society, so if we have to have a profit we have to advertise but that's not how we do things. The charges that we do we try to be minimum as possible to assist the people.	The council is not a profit oriented its priority is to offer service to the society at minimum cost. Not profit oriented means it's not after profit. Its main concern is to serve citizens. Priority means the most important thing above everything.
We start from the purchase price, we say how much this is going to cost us, to put roads, create subdivision plans or to actually do the title survey. We put a certain markup price as a profit. Are you saying if we say it is going to cost so much if we are able to reach the intended goal. We guide ourselves let's say with quotations say for title survey thus we look at potential subcontractors from there we can roughly estimate what the survey fee is going to cost. We also put a small contingency.	Determination of budget and survey fees. To come up with the budget we consider the purchase price. We put a markup price as profit. Bottom up estimating. Here the cadastral section would be combining all the costs which can be accrued in coming up with a certain service or product. Cadastral section adds certain money on the charged fee to cater for any shortcoming which might occur.
That money is going to be recovered from sales.	The money is recovered from sales. If the clients wants something from council, he or she has to pay for the service and the

	product. This money covers all the cost incurred in producing the product.
For private land, we do not prepare subdivision plans for them. For a customer they have to prepare themselves. We only make them fill a certain form and tell them what we expect in their proposed subdivision plan. The customers have a say in terms of they want to carry out their beacon relocation. They can go to private land surveyors. But they prefer us because we are cheaper.	For private land, customers prepare their own subdivision plans The council gives guidelines of the expectations of the subdivision plan. Customers have a choice Prefers the council than private land surveyors for task like beacon relocation. Council is cheaper

Table 3 Results from the initial coding of the second interview

3.3.2 Focused coding

The above line by line codes were raised to focused codes. The above lines of text were synthesized into several focused codes: 'Professionals are aware of the required accuracy', 'Professionals are governed by acts', 'Acts governs the quality of cadastral processes', 'Timeframes depends on the workload', 'Timeframes depends on the workload', 'Late acquisition of equipment increased workload', 'Capability of GPS over Total Station', 'No stipulated timeframes', 'Trust professionals to deliver in the shortest possible time', 'Prioritization of tasks', 'Annual budgeting', 'Budgeting criterion', 'The council gives guidelines of expectations of subdivision to customers in case of private land', 'customers have a choice of who they want to do their beacon relocation'.

3.3.3 Categories from the coding of the 2nd interview

1. Awareness of required accuracy by professionals
2. Existence of predefined quality checks
3. Examination of cadastral processes
4. Acts governs the quality of cadastral process
5. Supervision of registered land surveyor by cadastral section
6. Time as dimension of performance measurement
7. Cost as dimension of performance measurement

8. Customer satisfaction as dimension of performance measurement

3.3.4 Memoing

From this lines of text, two memos were written namely hindrances to quality cadastral processes and improvement on quality of cadastral services.

Hindrances to performance cadastral processes

It is fruitless for a survey to say that cadastral processes he or she does abides by the survey and surveyor's act whilst he or she is using defective instruments. In order to achieve quality processes, there is a needy to invest in quality instruments. Poor performance of the organization, the land surveyor and his team greatly affects the quality of cadastral processes. Poor budgeting can lead to unleashment of more funds to a certain project and depriving another project hence the project would not perform well. Poor scheduling techniques greatly affects performance.

Improvement on the performance of cadastral processes

Land survey institutions need to embrace technological advancement to enhance quality of their cadastral processes. This includes acquiring new instruments and calibrating the existing instruments, to ensure that true measurements are done. It is true that a true value is not known and is not going to be known in Surveying but at least we have to try to achieve it by all means possible for instance avoiding use of defective instruments. There is also a need to be initiative in coming up with projects that would be a long time improvement on the cadastral processes. Proper scheduling and budgeting would enable timely delivery of deliverables after a cadastral process. Professionals need to minimize errors to avoid backlog of requests.

3.3.5 Clustering and diagramming

The following cluster visually shows the category performance measurement and the subcategories. It shows that the subcategories quality, time ,cusstomer satisfaction, cost and technology enhance performance which is the category.
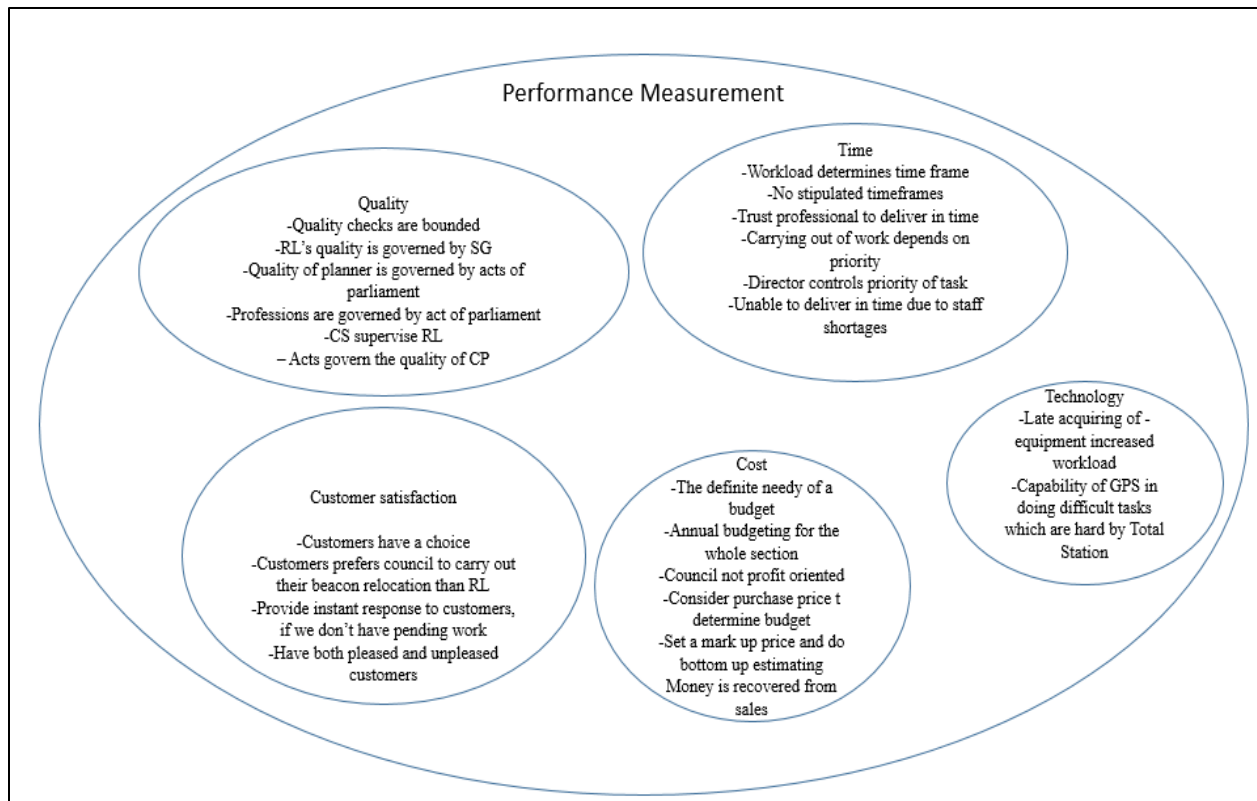
Figure 5 Performance improvement of cadastral processes

From data analyses of the above codes, other questions emerged and allowed continuation of research.

3.4 results from the analysis of the data from the 3th interview

3.4.1 Initial coding of 3th interview

Text from transcription	Initial coding
Interviewer:	
Have you ever encountered situations where a request was returned back for correction?	Request can be returned because of errors. If corrected for errors, it would
Have you ever encountered situations where there was disapproval of the subdivision plan lodged?	be passed.
	Has the cadastral section encountered
Can we say most of the subdivision plans were passed free of errors?	any disapproval of the lodged subdivision plan
How do you measure the quality of beacon relocation?	If subdivision plans are passed free of errors quality of subdivision plan is

Are the customers satisfied with your services?	*enhanced. This also decreases time taken to create subdivision plan. This would also make customers happy*
Can you outline what exactly you would be doing in carrying out other cadastral processes other than beacon relocation? *What are other thoughts which you have that might add value to the Gweru municipality cadastral processes?*	*Can the cadastral section outline other cadastral processes which it undertakes other than beacon relocation.* *Ideas which can add value to the cadastral processes at Gweru council would not mean a different process altogether but would also mean reengineering the existing process in ways which better the process and gives a better outcome in comparison to previous processes. It can also be other process which can be superimposed on the already existing process. These superimposed process would at least bring noticeable change*
What would be the benefits of the digital cadastre which you are developing? *What might be the stumbling blocks that you are facing in the creation of the digital cadastre?* *What quality checks are you employing to ensure quality in the creation of the digital cadastre?*	*Benefits of creating digital cadastre would mean what change we can expect with its development. Advantages which can be expected. Stumbling blocks in the creation of digital cadastre would mean problems which can prevent its creation or which can cause delays.*

Participant response	*Cadastral section has no backlog of requests*
There is no request which has been sent back for correction. In case of subdivision plans, they are lodged here and they are not submitted anywhere else but to the physical planner. The only that the physical planner would do is to tell us if there are errors like when picking a manhole and realize that you forget to open it to see the connection or the direction of the underground pipe. Then we would rectify it. Most of the subdivision plans were passed free of errors.	*Most activities pertaining creation of subdivision plans of public lands is done here at Gweru council.*
	Lodging of the subdivision plan to the physical planner located at the council
	Physical planner notifies the cadastral section if there are errors. Typical example of an error; forgetting to open the manhole to determine the direction of flow
	Most subdivision plans passed error free
There is a joint effort preparing that subdivision plan we have to make it pass through the physical planner, do the actual planning. We then forward it to the surveyor.	*Joint effort in the creation of subdivision plan mean that without coordination of different professionals, subdivision process would not materialize. Physical planner, cadastral section and the registered land surveyor are involved in the creation of subdivision plan*
When doing beacon relocation, in the case where we do not find a monument, there is a process that we use to replace that monument. We make data searches, we make sure that that all the pegs are on condition. We do a consistency check, do a comparison sketch.	*In doing beacon relocation there are cases missing monument. The acts bears a solution to this predicament to ensure quality in the beacon relocation process. Data searching, checking condition of pegs, consistency check and comparison sketch processes ensure quality in the absence of a*

	monument.
I don't know about measuring but what we do is to insure quality by the processes we do.	*Not peculiar with how to measure quality, but ensure quality with the processes we do*
In terms of pegging of kiosks, we do not use equipment like GPS we only use a tape measure because we only need a square 4m x 4m. This is because kiosks are not permanent structures, if development comes we take them down.	*Use of tape measure in pegging a kiosk Kiosks are temporary structures prone to destruction in the event of development*
In terms of verification of survey, basically someone wants a client to prevent and prove that their stand has been surveyed and the extent which the survey has been done. If an institution or an organization wants to loan one of our clients some money or a personal loan and the client want to use the property as a collateral. That institution approaches us for verification of survey, to find out if that survey has been done, not done or is in the process of being being done by council. What they want basically is the standard letter from us confirming the state of survey. We have some requirements that we want before a transfer is to be done of ownership. Most of the people who are sitting on council land do not have a tittle deed for transfer the people should first develop maybe a cottage or built up to slab level then the transfer is done. The council can actually say we want to have a non-title survey, so the person who then want to use that piece of land as collateral they end up saying can council really confirm	*Verification of survey serves to prove that a stand has been surveyed and the extent of survey. An institution can confirm with city council to find out if their client who is also a client of city council has had his or her property surveyed, not surveyed or if it is in the process of being surveyed if it is used as a collateral* *The institution would want a standard letter by council confirming the state of survey.* *Council has requirements before transfer of property.* *Council require people to build up to slab level or a cottage for transfer to happen.* *The council can actually provide*

whether this piece of land has been surveyed. Then we can say we have given him to build, but that land is not surveyed we have properties like that.	*honest confirmation of the state of survey of their properties.*
Some of the customers you can find that some are happy in terms if they come in this office like a today we do not have any fieldwork or any pending fieldwork, so if someone comes we definitely tell him lets go and do the fieldwork, that will make them happy. We make sure we serve clients like that but like l alluded the last time being a one man show, it's difficult for me to address every issue. If there were more manpower it means that if any request would come, it's just a matter of pointing people in right direction, then they would do the job there and there.	*We provide instant response to Customers who requests for us to perform their tasks if we have no field work or no pending work.* *Clients like that are served.* *Unable to address all requests timely due to staff shortages* *If manpower is available, all tasks would be attended to by mere scheduling*
For starters, if you can look at the cadastre that we are creating, l would actually say that it is wise for the council after the cadastre has been completed to start commissioning every survey on top of the cadastre we have created. Up to now there is no cadastre which shows the actual occupation of each cadastral property by any building, in terms of how much land we say is there. The law of land does not regulate that, even the whole of southern Africa there is no one who is saying after building lets have s-built survey to update their cadastre. S-built survey can be in cooperated in the municipalities. This would work in terms of land evaluation. Why would the land evaluators or the real estate agents make a visit on the site, they are trying to establish	*Advising the council to commission every survey on top of the cadastre after it has been developed completed* *Up to now, in whole southern Africa no one has a cadastre which is showing the actual occupation of each cadastral property by any building.* *No one is carrying out s-built surveys to update their cadastre* *s-built surveys can be incorporated in our municipalities* *would assist land evaluation* *finding no apparent reason for property evaluators to visit the site* *the evaluators estimate figures of*

that but sometimes they don't have the actual square meters hence they estimate. Hence we would be able to actually present accurate measurement of whatever has been built. The council can now regulate and say you now want to build this but you already have this on your property. We can regulate from our office. We can quickly pinpoint where an illegal structure has been erected. If it's on the s-built survey, then its legal if it's not then it's illegal. There are two options to deal with illegal structure that is they can be regularized or destroyed. Cadastral processes we are looking at accuracies of picking data but let's broaden this data we are picking. Why are we restricting to property beacon, what else can we add to the cadastre which can increase the value of cadastre.	*square meters* *Instead council would be able to then provide accurate measurement of Square meters.* *One stop shop by council without physically visit the ground* *Illegal structure can be regularized or destroyed* *Cadastral processes should not be limited to property beacon but rather find ways of adding value to the cadastre*
There are lot of stumbling blocks. Other organizations are reluctant, we would want a coordination of various institutions. We would like a joint effort but we could see that people have other commitments that's the same for us that's why we employ students. The city of Gweru has embraced the project, with them maybe it's a matter of trust and also convincing them. Recently we wanted to send students to Surveyor General Office but they said they are not getting anyone in for the next six months and the next thing are they going to agree anyway. The next step is for me to buy whatever l need from them. So creating the cadastre would be costly, time consuming due to lack of coordination. We are very fired up and we are not stopping.	*Lots of hindrances. Reluctance of organizations* *Like other coordination of other institutions but have commitments.* *We employed students just for that* *The council has embraced the project* *They trust us, we convinced them* *Surveyor general won't allow students in for the next six months. Unsure if they would be allowed* *Plan to buy from them* *Creation of the cadastre would be costly, timely* *We are fired up, stop at nothing*

What we do is to assign students and manage them. You can find that other students have only read theories of polar, join but are not sure what it was. First of all we have trained them. l started working with four students and made sure before l let them go. We do constant supervision of their work. Mere constant check so that they minimize their errors. Considering their level, we do not expect them to be perfect. Their accuracy is self-checked.	*Assigning of students* *Grasping of theories by students but lack of enough practicals. Training of students* *Constant supervision of students* *Mere constant check to minimize errors* *Students are unexperienced hence not perfect. Teaching them to be.*

Table 4 Results from the initial coding of third interview

3.4.2 Focused coding results

The above line by line codes were raised to focused codes. The above lines of text were synthesized into several focused codes: 'no backlog of request', 'cadastral section lodges subdivision plan with the council physical planner', 'physical planner notifies cadastral section any errors', 'stakeholders involved in subdivision plan creation', 'quality checks in absence of a monument', ' unfamiliar with measuring quality but we ensure quality', 'use tape measure to peg kiosks', 'kiosks are temporary structures', 'verification of survey proves the extent of survey', 'institution can clarify extent of survey with council', 'council issues out a standard letter confirming the state of survey', ' council expect the property to be developed before transfer', 'instant service to customers if they is no pending work', 'untimely addressing of tasks due to staff shortages', 'commissioning of work on the cadastre after completion', 's-built surveys are not done in the whole Southern Africa', 'if council would be pioneers if they start s-built surveys', 'need to orient direction to other ways that add value to the cadastre other than property beacon', 'merits of digital cadastre', 'cadastral processes are on the right track', ' unwavering support by the council with the project', 'denied entrance into Surveyor General department for next six months', 'creation of the cadastre would be costly and timely', 'train and assign tasks to students', 'constant supervision of students', 'mere constant check to minimize errors', 'teaching students to be perfect.'

3.4.3 Categories from the coding of the third interview

    1. Cadastral section has no backlog or requests

2. Processes for creation of subdivision plan for public land is localized at council

3. Interaction of professionals in facilitating a subdivision process

4. Quality checks for beacon relocation

5.   Ensuring of quality by cadastral section by processes they do

6. Detailed types of cadastral processes carried by cadastral section

7. Quality improvement of cadastral processes

8. Hindrances in quality improvement of cadastral processes

3.4.4 Clustering and diagramming

The following cluster is showing the relationship between the category cadastral processes and type of cadastral process as the subcategories. Thus developing the subcategories would be automatically developing the main category cadastral processes.
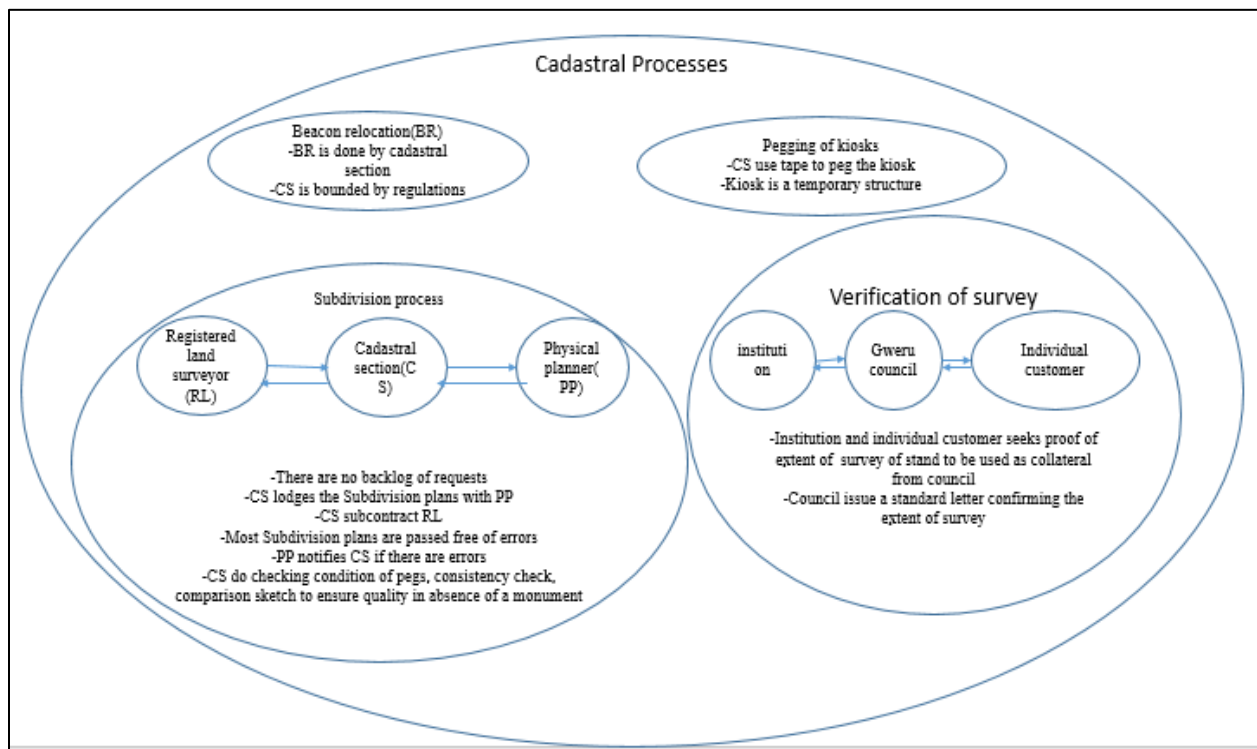
Figure 6 Cadastral Processes

From data analyses of the above codes, other questions emerged and allowed continuation of research.

3.5.1 Results from analysis of data from 4th interview

3.5.2 Initial coding results

Fourth interview	Initial coding
Interviewer *What were the major reasons that kept the city council from possessing their own equipment?*	*Reasons that prevented city council to possess their own equipment would be lack of funds or unwilling ness of the organization to invest in equipment*
Did the survey department cease to function at some point?	*This is just asking if the survey department stopped to function at some point in time.*
How did the survey department operate with inadequate infrastructure?	*This is asking what methods did the survey section used for it to operate regardless of lack of infrastructure*
Is the infrastructure in place adequate enough for the operation of the survey department?	*This is asking if there is now adequate infrastructure. If yes that is they managed to secure funds or the organization was now willing to invest in equipment.*
How many staff are with the survey department? *How do these staff engage with the staff from the entire organization?*	*This just asking if there is enough personnel to carryout cadastral processes within the cadastral processes and also hoe these staff would coordinate or engage themselves with other staff from other departments like planning department to facilitate cadastral processes*

What are the uses of the equipment that was bought three weeks ago? *What is the nature of the equipment that was bought three weeks ago?* *What equipment did they have before?* *Is the acquisition of new equipment an indication of the change of technology within the city council?*	*This is asking the possible uses of equipment that was recently bought and the kind or type of the equipment it is.* *It's also asking the nature of equipment which was in existence and what it signify to have actually acquired new equipment.*
Why do they need the external land surveyor to do their surveys?	*Asking why the council require the assistance of the external land surveyor whilst they have their own land surveyor.*
Participant response *That far, l am not sure, I don't know why but l guess that is because there was no land surveyor for quite some time. The last person who was in the office was a survey technician who was acting as the land surveyor. Eventually, the good side is that the equipment was bought.*	*Not really sure* *Long unavailabity of a land surveyor* *Technician acted as a land surveyor* *the goodness of the equipment being bought*
It did not cease though, actually, lm not really sure to what extent was the survey technician functioning, that would require some institutional memory, which l do not have.	*continued operation but not sure the extent of functioning* *institution might know*
As far l can see because there was no equipment, l noticed that there was a tendency of choosing, selecting the kind of survey they can do. You could find that some areas could not be surveyed because there was no equipment. If you go into areas like riverside where you would found someone saying how l could survey maybe reference to the trigs	*unavailability of equipment* *noticing the bias of choosing the work to do* *not surveyed areas due to lack of equipment* *in capabilities of Leica t2* *absence of equipment disallows other*

using Leica t2 theodolite. In light of that, there was some surveys which were not done because there was no equipment. Because the equipment was not there, it's easier for someone to go and do beacon relocation in old townships or in high density areas but would be difficult to go and carry out the survey in low density areas, so they were avoided. They chose work which was doable, at one point, l actually caught my assistant telling a client that because you are coming from this area, we cannot do the survey. Then l asked him why, but they did not have the answer. They just said we just do not do them, but the reason was not there. l had the privilege to ask the last land surveyor who worked here. When l spoke to him l asked him because l thought that there was some rule or something which prevented to do that. He said that nothing prevents us from doing them but it's easier to go into the high density and do the survey. Do you know that you can carry out a beacon relocation with only a tape measure?	*surveys to be done* *because of lack of equipment, one opted dong beacon relocation in areas which are easier than difficult ones* *preferred doable work* *found his assistant saying to the client that we cannot do your survey because of client's area* *lack of support to the answer* *had the privilege to talk with last land surveyor* *thoughts of being disallowed by a certain rule* *Land surveyor said nothing prevents carrying out of tasks. land surveyor emphasizes about the easiness of other survey over others*
Now it's more than adequate, we have the software, total station, GPS. So the expertise plus the equipment will definitely give us the correct result.	*Satisfied with the available infrastructure. Combination of equipment and expertise gives accurate results*
Currently we are three, me the land surveyor, and two field assistants. *As per request sometimes we interact with people from roads. We have to complement each other*	*There are three staffs* *Interact with people from roads as per request* *Need to complement each other*

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considering that we actually consult either on the town planning side or the engineering side. So our interaction we assist clients from outside or public clients, whatever they need.	*Town planning , engineering side and survey section interact to provide service to clients*
.We use equipment we have for almost everything we do be it beacon relocation, tachy survey. *Last one we bought is the Trimble GPS set, in February, we acquired a Trimble total station.* *They had Leica t2 theodolite of which they were malfunctioning. Currently they are actually not calibrated. Firstly, they are malfunctioning and damaged. Secondly they are outdated. If they were working they could just have continued using them. The EDM, I think is broken.* *Because lm not a registered land surveyor, so we only use the external land surveyor when we need a signature. Don't forget that only a registered land surveyor is able to sign in the case we want diagrams and general plans.* *Yes, it actually indicates that leadership is actually liberal and is accepting the change that technology can bring. l can actually affirm that.*	*Equipment is used for all jobs we do* *Instruments acquired are Trimble GPS and Trimble total station.* *They had uncalibrated, malfunctioning, outdated Leica t2* *Would still be used if they were in condition* *EDM is broken too* *We use external land surveyor because l am not a registered land surveyor* *Only a registered land surveyor is able to sign the contents of a survey record* *Leadership is liberal and are ready to accept change which technology can bring*

We use equipment we have for almost everything we do be it beacon relocation, tachy survey.	*Equipment is used for all jobs we do*
Last one we bought is the Trimble GPS set, in February, we acquired a Trimble total station.	*Instruments acquired are Trimble GPS and Trimble total station.*
They had Leica t2 theodolite of which they were malfunctioning. Currently they are actually not calibrated. Firstly, they are malfunctioning and damaged. Secondly they are outdated. If they were working they could just have continued using them. The EDM, I think is broken.	*They had uncalibrated, malfunctioning, outdated Leica t2* *Would still be used if they were in condition* *EDM is broken too*
Yes, it actually indicates that leadership is actually liberal and is accepting the change that technology can bring. l can actually affirm that.	*Leadership is liberal and are ready to accept change which technology can bring*
Because lm not a registered land surveyor, so we only use the external land surveyor when we need a signature. Don't forget that only a registered land surveyor is able to sign in the case we want diagrams and general plans.	*We use external land surveyor because l am not a registered land surveyor* *Only a registered land surveyor is able to sign the contents of a survey record*

Table 5 Results from the initial coding of the fourth interview

3.5.2 Focused coding results

The above line by line codes are raised to focused codes. The above lines of text were synthesized into several focused codes: 'unsure why the council took too long to acquire instruments', 'maybe the long unavailability of a land surveyor', 'technician continued operation but unsure the extent of operation', 'bias in work selection due to lack of equipment', 'preferred doable work', 'interaction between town planning, cadastral section and engineering department to serve customers', 'acquired instruments', 'instruments which were available', 'reasons for acquiring external land surveyor', 'leadership is liberal.'

3.5.3 Categories form the coding of the 4th interview

1. Reasons for late acquisition of equipment

2. Continued operations of survey section in absence of land surveyor

3. Effects of shortages of equipment

4. Technological advancement of equipment

5. Experienced survey section personnel available

6. Association of survey section personnel with personnel from other department

7. Leadership supports technological advancement

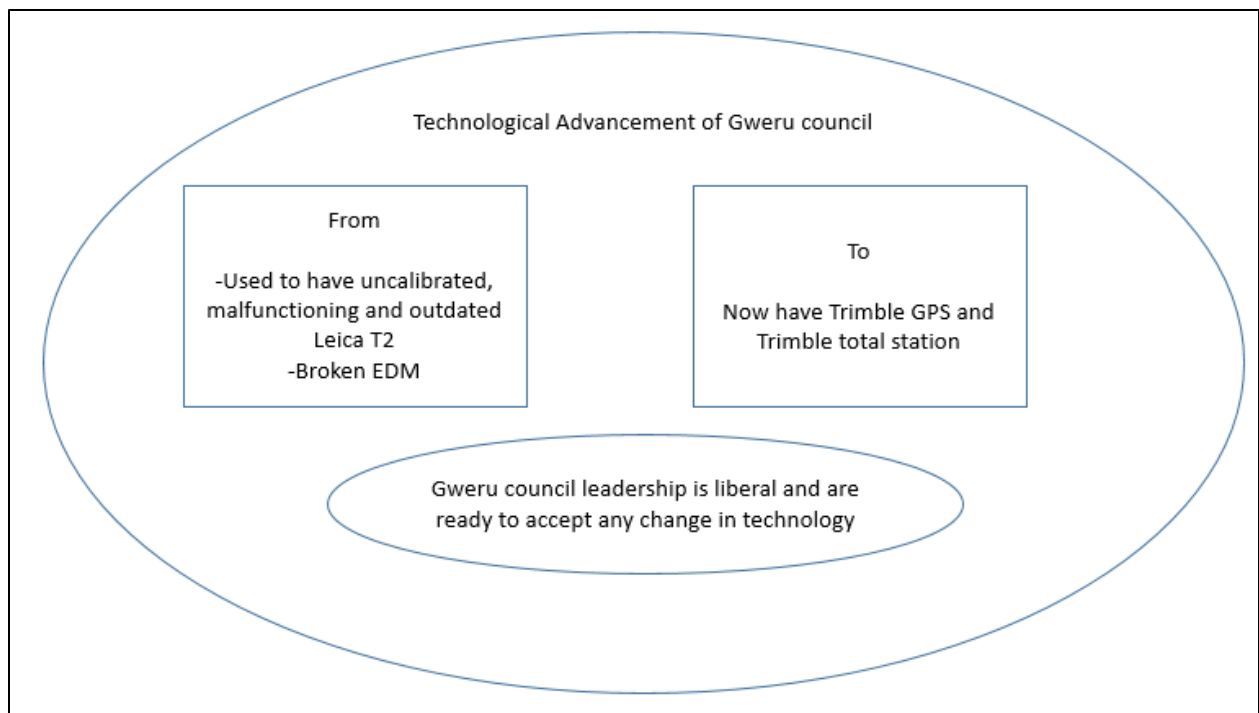8. Reasons for the needy of an external land surveyor.

3.5.4 Clustering and diagramming

The following diagram is showing the category interaction. It also shows the stakeholders who are interacting to serve the clients who are the customers.
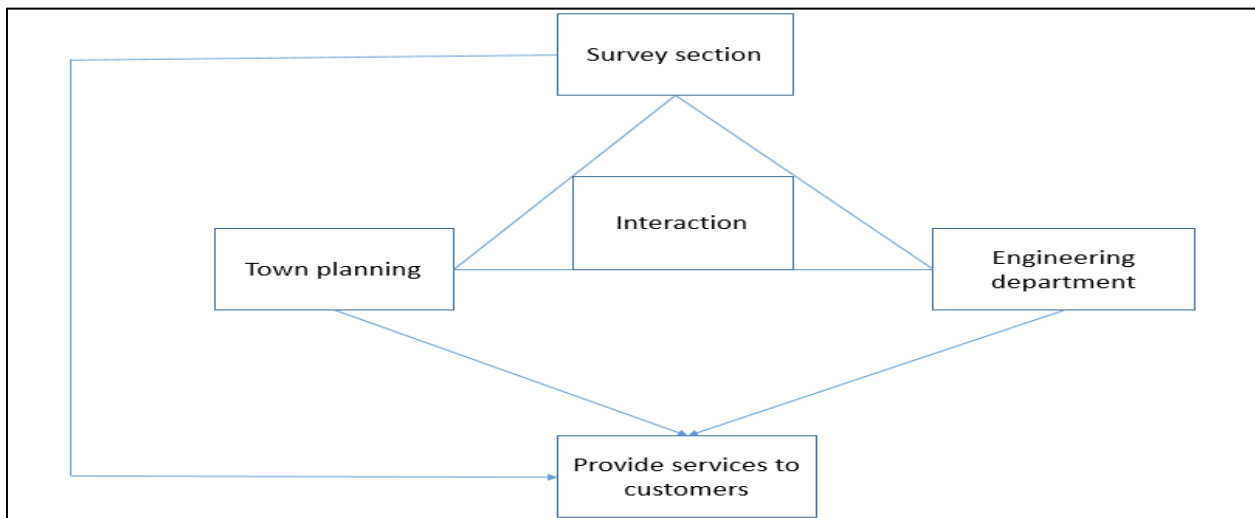
Figure 7 Interaction of Cadastral section and other Professionals

Figure 8 technological advancement of Gweru Council

The cluster is showing the category technological advancement of Gweru council. It clearly shows the transition from the old instruments to new instruments. The type of instruments is also shown. It is also showing that Gweru council has accepted new era which technology can usher to enhance its cadastral processes.

3.6.1 Results of analysis of data from 5th interview

3.6.2 Initial coding results

Text from transcript	Line by line coding
Interviewer *What is the criteria for budgeting and implementing the budget?* *What are the frequently prioritized issues with regard to funding?*	*Criteria used by the cadastral section in budgeting. Criteria would mean mechanisms. Frequently prioritized issues would mean which issues are given more importance over others.*
Does the department depend on the crowd pool?	*Crowd pool is money obtained from the customers when they pay for services*

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	rendered to them by the survey department.
Who determines that the department needs the finances?	*who determines that a department needs finances, means that at council there is a high authority which is in control of the budget and which has a major say as far as finances are concerned*
At what level are the finances released? *Who administers the budget for the department?*	*The high authority in charge of finances reaches a point where it releases finances but the issue is that the department must support there need of finance to convince the high authority.*
Participant response *We do not run an independent budget. Like l said in our previous interview that our budget is departmental, so we do not have sectional budget.*	*The survey section do not run independent budget* *Don't have sectionalized budget. The budget is done as the whole department.*
It just goes with the nature of our work. Maybe the people who require sectional budgets are people who do water purification. The water engineer require the sectional budget, with the survey we do not need a budget, once we have the equipment and the vehicle we are good to go.	*Because of the nature of our work* *The water engineer would be the one to need sectional budgets* *We are good to go if we have equipment* *And a vehicle.*
No, no our function is not only external if you look at it from a business point of view, now the council can actually bid for some tenders if they so wish to	*No, our function is not only external but internal* *Council can bid for tenders*

do so. Most of the work is internal, we create layouts, want to subdivide the land, to eventually sale as an organization. Most of the work we do is actually for this organization. We are here on a consulting bases to make sure we consult, we make our input guides us.	*Internal work include creating layouts and subdivisions. Internal work is done for sale* *Work we do is for the organization* *We consult*
The function of the whole organization of the city of Gweru is not run independent. *The way it is, our budget is not specific. When it comes to salaries, we are all employees as a section we do not budget for salaries. When it comes to fuel that we need in our daily bases is budgeted by the transport department. With us it's just a matter of driving to the tanks and getting fuel we are not subtracting from a fixed budget. So when it comes to budget its holistic, it's not departmental or sectionalized, it's for the whole organization. The budget is done by the director of finance.*	*The council is not run independently* *Budget not specific* *Do not budget for salaries* *Don't budget for fuel the transport department does* *We just receive the services from transport department* *The budget is not sectionalized, or departmental but is holistic* *Director of finance handles budget*

Table 6 Results from initial coding of the fifth interview

3.6.3 Focused coding results

The above line by line codes were raised to focused codes. The above lines of text were synthesized into several focused codes: 'holistic budgeting', 'the survey need equipment and vehicle to operate', 'we do internal work for the organization', 'we consult', 'council is not run independently', 'cadastral section sometimes just receive services without budgeting for them', 'director of finance handles the budget.'

3.6.4 Categories form the coding of 5th interview

1. Holistic budgeting
2. Necessities for the operation of survey section
3. Survey section does not depend on crowd pool
4. Survey section receive services which it does not budget for
5. Director controls the budget

3.7.1 Results from the analysis of data from the 6th interview

3.7.2 Initial coding results

Interview 6	*Initial coding*
Interviewer *What are the estimation criteria used by the city council to come up with the survey fees?*	*Estimation criteria would mean mechanisms or methods employed by city council to charge survey fees*
Which expertise or department are involved in screening the subcontractors? *What are the key factors that constrain the choice of the subcontractors?*	*Expertise would mean experienced personnel which are able to select the best subcontractor. The expertise should have adequate knowledge of the subcontractors involved.*
How is the chosen subcontractor paid after the survey is completed? *Which methods are used to pay the subcontractors?* *What are the basic qualifications required for a survey post in the city council?*	*This is just asking all the procedure which leads the survey section to say now we are now paying the subcontractor and also the methods which they are going to use to pay the*

	subcontractor. *Then also asking what the basic qualifications are needed to recruit council land surveyor who would be able to carry out cadastral processes at council.*
Does the council have a registered surveyor?	*This is just asking if the council has a registered land surveyor. This would mean surveyor who would be able to undertake an cadastral process without the supervision of another surveyor.*
Which of the activities are done by the city council without the registered land surveyor?	*This is just asking activities which the council is able to do without a registered land surveyor.*
Are there any alternatives that are levelled against the usual delay of the surveyor general's processes by the city council?	*Alternatives leveled against delays by surveyor general would mean other solutions which can be implemented in case there is a delay from Surveyor General department.*
When is the general plan ready for use in the city council?	*This is just asking when exactly does the council use the general plan*
What possible challenges do you face in the verification process of the external surveyor's work?	*This is asking the possible problems which can be encountered by the survey section in verifying work done by the external land surveyor.*
Participant response *Criteria now would mean something which would be competitive. We can actually say okay fine how much fuel are we using, how many people are going to the field, are we going to use pegs, that would then influence the tariff. We determine the tariff. If it's in*	*Criteria should be competitive* *Calculate the costs of carrying out a survey to determine the tariff* *Tariff differs with the area*

high density it's supposed to be so much and if it is in low density it's supposed to be so much.	
Selecting subcontractors' depends on the survey section and the town clerk. We communicate of the need of a subcontractor and they have to request from us the specifications. This is because we have people who just completed school and maybe who would own their own equipment. Now can we say that people can carry out a title survey? That is why we would be useful, we give them our input that you need to get quotations from like this and this. We do give the type of qualifications for example if someone is registered with the Procurement Regulatory Authority of Zimbabwe. We cannot request even if the surveyor is qualified and has got a company but not registered, we would not allow that person into quotations.	*Selection of subcontractors is done by survey section and the town clerk* *Survey section communicates with the clerk about the specifications* *Survey section tells the clerk type of qualifications required*
After the registered land surveyor has completed, he has to surrender the deliverables. He has to show us the beacons on the ground, show us the record. Once the survey is done, now payment is done, but depends on the arrangement we have. If the quotation was above the threshold for a tender, that person would have to specify in the tender the criteria he would wish to be paid. If the quotation was below the threshold we say it's COD (cash on delivery). The person has to deliver finished products that is the diagrams, then we now talk of payment	*The land surveyor should submits deliverables after completion. The surveyor has to show us beacons on the ground and the survey record* *The payment of work done depends on the quotation. If it's above threshold, the surveyor specifies in the tender how he would want to be paid.* *If below threshold, surveyor would be paid on delivery.*

A degree in land surveying from a recognized institutions. According to the advert l was taken under, at least two years' experience, relevant work experience, driver's license and someone who is able to carry out the duties.	*Qualifications needed to apply for a post at council*
The council has no registered and surveyor. I'm registered under the council for land surveyors of Zimbabwe. The perception that is always there is that if there is an advert wanting someone who is registered in the council of land surveyor of Zimbabwe, then you could find someone who is a registered land surveyor in training does not apply for that post. The advert would not have said a registered professional land surveyor with the council of and surveyor. Registered as a professional land surveyor, land surveyor in training, technician you are still registered with the council of land surveyors of Zimbabwe. So if you would say does the council have someone who is registered as a land surveyor, we would say no. but if you say does the council have someone who is registered with the council of land surveyors of Zimbabwe, l would say yes lm registered.	*Council has no registered land surveyor* *I'm registered with the council of land surveyors of Zimbabwe* *Explaining the need for anyone who is registered with the council of land surveyors of Zimbabwe to carefully scrutinize the advert for a job* *This would enable them to apply where possible* *The council do not have a registered land surveyor but have got a land surveyor who is registered with the council of land surveyors of Zimbabwe*
Tachy surveys, all engineering surveys, I am very capable of carrying out them. Even cadastral processes, l am also capable of carrying out them but they would require the supervision of a registered land surveyor. But we could carry out non-title surveys.	*We do tachy surveys and an engineering surveys* *I'm capable of carrying out even cadastral processes but require supervision by registered land surveyor* *Can carry out non-title surveys*

There are no cases we can say that the surveyor general has delayed us. l cannot pinpoint an scenario like that maybe we would encounter that in future.	*No delays from surveyor general* *Maybe in future we can encounter*
As soon as it is approved.	*The general plan is used as soon as it is approved*
l cannot say we face any challenges. We do communicate with them so that we do not face any challenges rather we are the ones who pay them a little bit later than agreed. And sometimes l have to chip payment for them and l have to push so as they could get paid.	*Communicate with land surveyors to avoid challenges* *Council delays their payment* *l would have to work extra hard so that the registered surveyor is paid*

Table 7 results from the initial coding of the sixth interview

3.7.3 Focused coding results

The above line by line codes were raised to focused codes. The above lines of text were synthesized into several focused codes: 'criteria for determination of survey fees should be competitive', 'costs of carrying out the survey determines the tariff', 'tariffs differs with area', 'selection of subcontractors is done by survey section and the town clerk', 'survey section communicates with clerk about the specifications', 'survey section tells the clerk type of qualifications required', 'land surveyor submits deliverables to the cadastral section', 'payment of work depends on quotation's threshold', 'council land surveyor is not a registered land surveyor although a registered as land surveyor in training with the council of land surveyors of Zimbabwe', 'tasks done by council Land surveyor', 'no delays by surveyor general department', 'council land surveyor would have to work extra hard to secure registered land surveyor's payment.'

3.7.4 Categories from the coding process of the 6th interview

1. Determination of survey fees
2. Sub contraction process
3. Recruitment at Gweru city council
4. Reasons for needing an external land surveyor
5. Capabilities of Council land surveyor without external land surveyor

6. Complications with the sub contraction process

3.7.5 Clustering and diagramming

The first cluster shows the category council land surveyor. It is showing the particulars of the land surveyor and his capabilities. That is the relationship which is being shown by this cluster. The second cluster shows the category sub contraction process. It is also showing the stakeholders involved in the sub contraction process. It is also showing the need for stakeholders to communicate effectively. The third cluster is showing the category recruitment at Gweru city council. It shows what is needed for a surveyor to be recruited at the Gweru council.
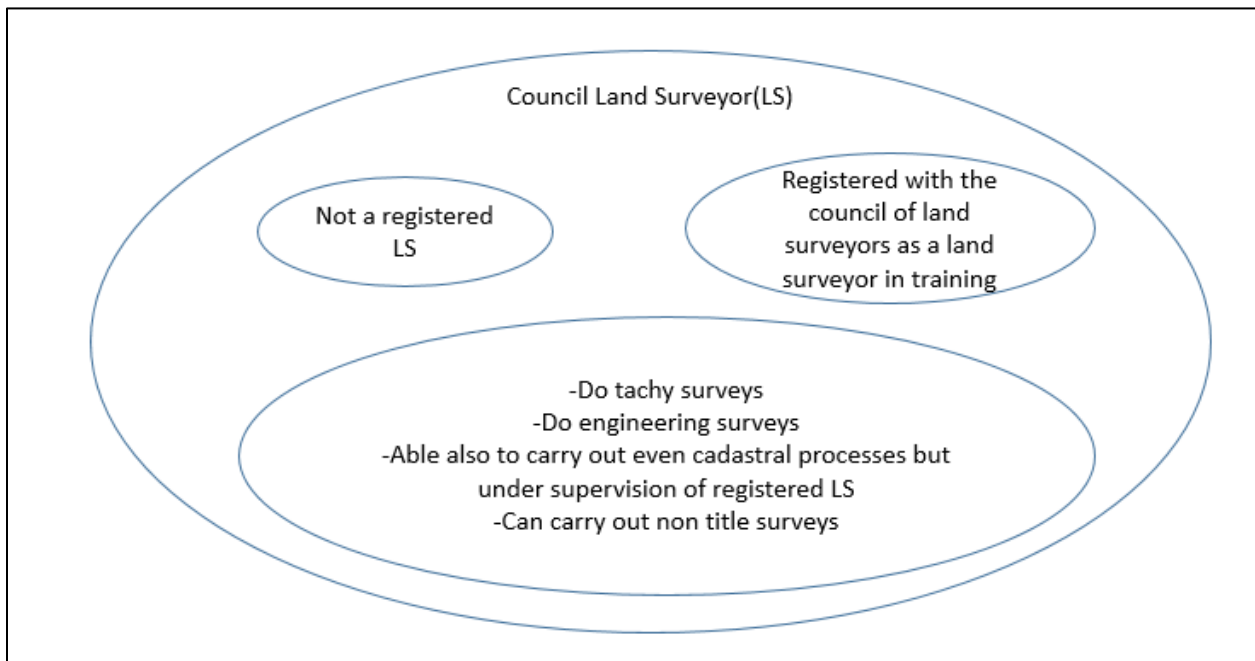
Figure 9 council land surveyor
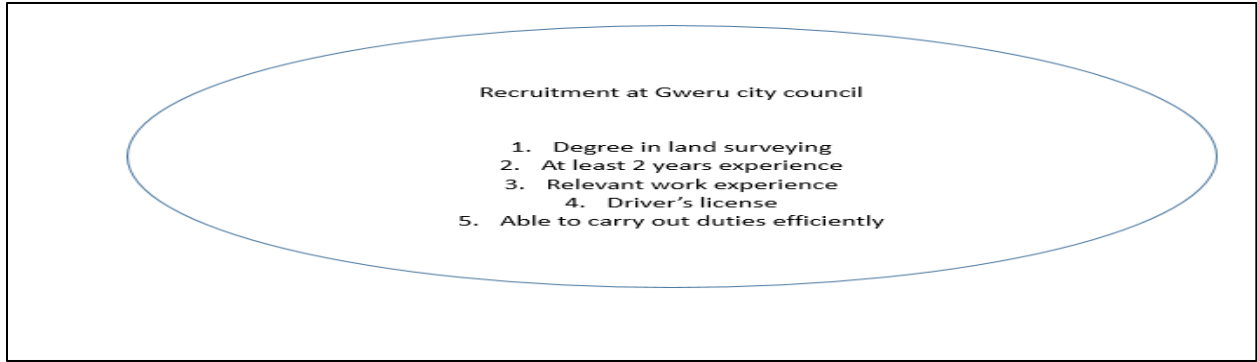
Figure 10 Recruitment at Gweru Council
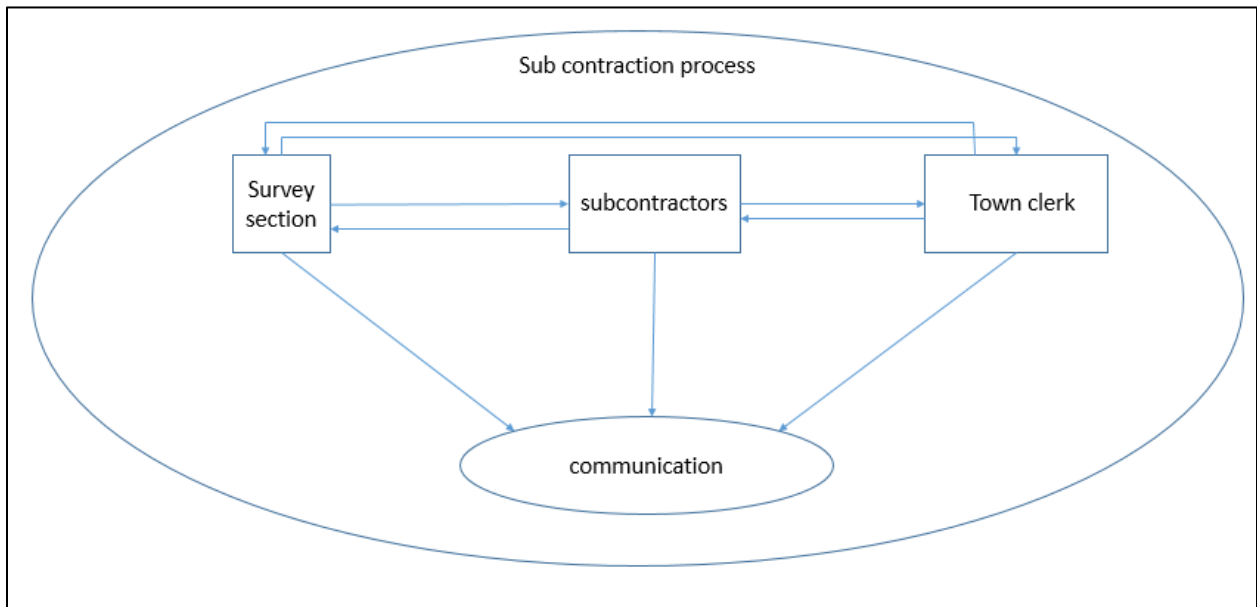
Figure 11 Sub contraction process

3.8.1 Results from analysis of data from 7th interview

3.8.2 Initial coding results

Text from transcription	Line by line coding
Interviewer	
What are the major challenges encountered with the stakeholders who are involved in raising concerns against the subdivision plan?	*This is asking what issues can stakeholders raise against the subdivision plan*

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Are there any legal tools to monitor the process?	*This is asking if the subdivision process is done legally*
How are the concerns or objections addressed by the city council of Gweru?	*This is just asking procedures which are used to settle the objections to subdivision plan*
Are there scenarios in which the subdivision plans are rejected?	*Scenarios which lead to rejection of subdivision plans would means situations where it is impossible to have a subdivision plan*
What are the main objections that lead to the rejection of the subdivision plans?	*The question is just asking the main reasons behind rejection of subdivision plans*
What kind of land data does each subdivision show?	*This asking the contents of subdivision plan*
How are the objections examined or checked by the city council?	*This is asking how the council deals with objections raised about the subdivision by the stakeholders*
Are there any formal physical workshops or models of interaction existing between the expertise of the surveyor general, deeds registry, registered land surveyors with the city council of Gweru?	*Models of interaction for stakeholders, would mean platforms where they can meet to discuss problems, achievements and even launch new developments*
If these models exist, what do they usually involve? If not, how does the workforce of the city council interact with its key stakeholders?	*If there are an platforms of interaction, what constitutes them* *The question is also asking how the city council workforce interact with other stakeholders outside the council*
Are there some form of learning models to transmit knowledge about cadastral activities from one organization to another apart from the act?	*L earning models to transmit knowledge would mean platforms to exchange information*

Are there legal interpreters and advisors of the acts within the city council of Gweru?	*This is asking the availability of experienced personnel at council who are able to interpret and understand acts*
Participant response *Sometimes they would not agree to it. Sometimes their objections for example if you look at acts the regional town and country planning act would tell you to advertise for any subdivision plan or consolidation of land. So when we invite for objections, we get objections.*	*Would not agree* *If we invite objections when advertising, we get them*
Yes everything is legal, everything is in the act. The act is the "bible" for all subdivisions or consolidations.	*Everything abides by the act*
They have to be addressed, we cannot say if someone objects, we just continue. No. the objection is actually referred to the court. If the court say there is possibility of arbitration, then it should be done. It is dealt with according to the law.	*We don't continue if there are objections* *Objections are referred to the court* *If court hints the need for arbitration, would be done*
In case where it is not feasible, where the subdivision is not feasible or practical or doable. You would find out that if someone would want to subdivide his property. If the property is below 4000 square meters, if that person does not have an plan or solution for sewer reticulation. How then can those stands be serviced. Remember what we are trying to do, in as much we are dealing or we do town planning we also do development control	*In case where the subdivision is not feasible* *Situation indicating how it would be not feasible* *For stands to be subdivided, the stands should be accessed by roads, should have water and sewer reticulation*

which requires that one should develop and provide all the water, sewer reticulation and roads. If these cannot be availed to a particular stand, then we would reject it.	
l would assume that you talking about attributes of land. Square meters of each proposed resultant stand, dimensions, geometrical appearance in terms of the shape, orientation in terms of the north pointer, adjacent properties.	*Contents of a subdivision plan*
None come to mind, but are there platforms we are allowed to interact. We would meet at professional organizations like SIZ (survey institute of Zimbabwe). We have no models.	*No physical workshops or models but we meet at SIZ*
We interact by the act. There's what we expect others to do. The Surveyor General requires subdivision, a survey instruction letter or in the case of a council land requires permit which has been approved by council. If one does not follow regulations either the regional and town planning act, surveyor's act and the survey act, you would not get away with it. You would find the surveyor general saying you cannot lodge without this and that, also the deeds registry would do the same. So the act is the basis of our interaction.	*The acts are the basis of our interaction* *The acts linkup all stakeholders, the Surveyor General, City Council, and Deeds Registry*
Transmitting new theoretical knowledge is difficult. In surveying in terms of theoretical knowledge, you can reach saturation, but application of that knowledge. So one would say. Look guys l have	*Transfer of theoretical knowledge reaches saturation point* *But we share the practical aspect of how to do other things.*

found an easier way of doing this then we would appreciate. Even with new technology, the old theoretical information still works but the application differs.	*Although, there is new technology old surveying concepts are used what differs is only the application*

*Table 8 results from the initial coding of the seventh interview*

3.8.3 Focused coding results

The above line by line codes were raised to focused codes. The above lines of text were synthesized into several focused codes: 'objections to the subdivision processes, 'subdivision process abides by the acts', 'objections are referred to the court', 'court ruling would be done', 'reject subdivision if it's not feasible', 'no physical workshops', 'acts are the basis of our interaction', 'acts link up all the stakeholders,' 'transfer of theoretical knowledge reaches saturation point', 'we share practical knowledge.'

3.8.4 Categories from the coding process of the 7th interview

1. Reasons for objections of subdivision plan

2. Dealing with objections of subdivision plan or consolidation plan

3. Subdivision or consolidation process is acts abiding

4. Feasibility of subdivision plan

5. Contents of a subdivision plan

6. Models of interaction

7. Sharing of knowledge

3.8.5 clustering and diagramming
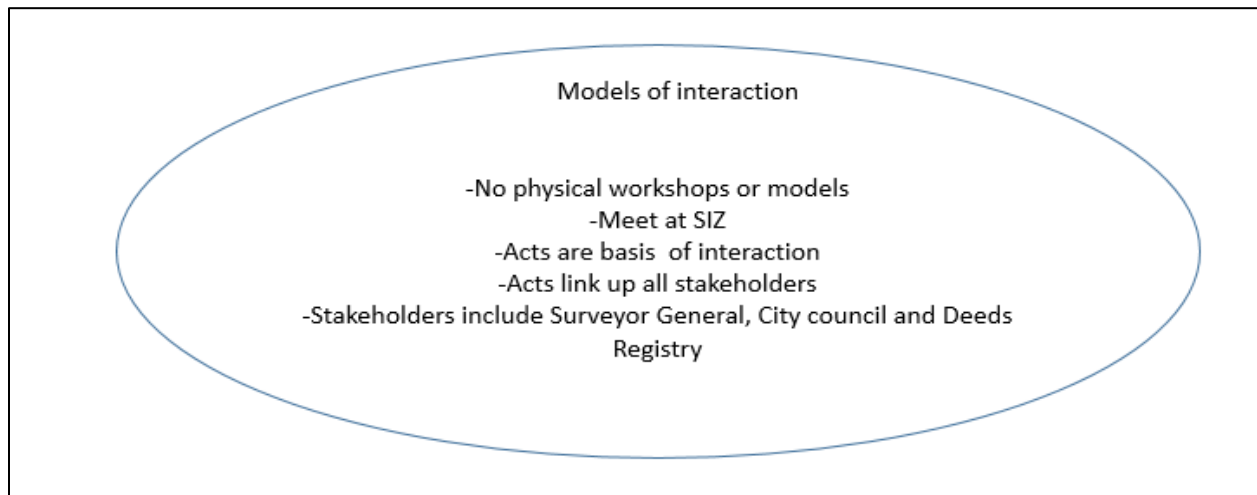
Figure 12 Models of Interaction

The first cluster is showing the category models of interaction. The second cluster below shows the category contents of the subdivision plan
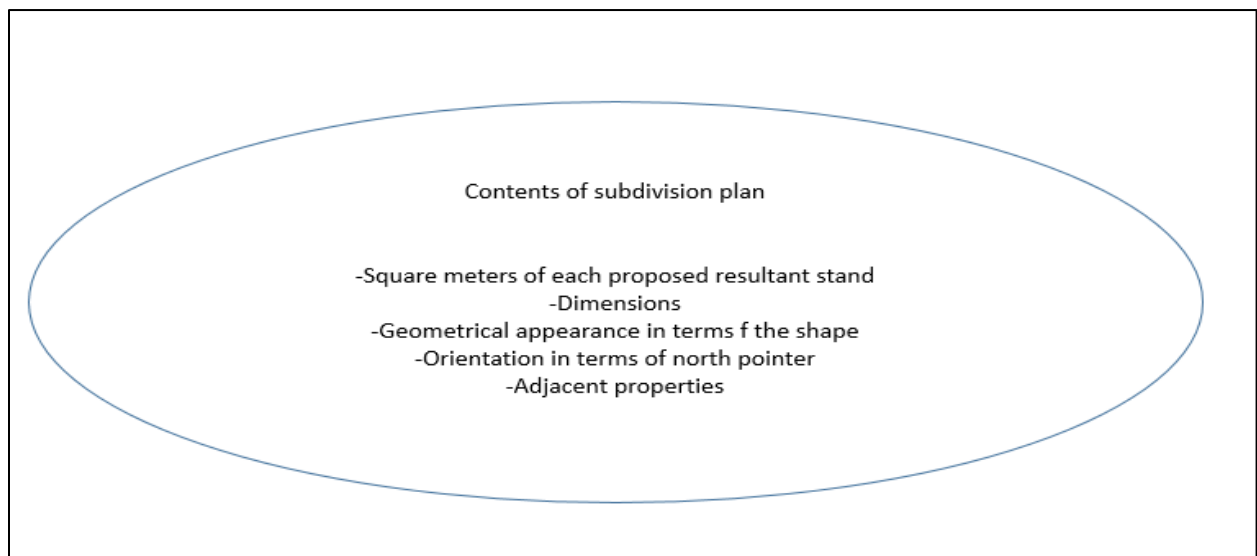
Figure 13 Contents of Subdivision planner

3.9 Results from observations made at the Gweru city council

3.9.1 Results from the initial coding of the observations made by the researcher at Council

Observations	Initial coding
- The process commences with hardcopy general plans - The council have both approved and unapproved general plans - The students use the approved and unapproved general plans in the creation of a digital cadastre - The general plans do not have dimensions. This causes delays since the students resorted to start entering coordinates into the Microsoft excel from the coordinate list. - They then import the ascii file of the coordinates into the infomate software package - The infomate software package is not an open source software - in case where the general plans is not visible or is torn apart, the students would have to halt until the GPs have been acquired from the surveyor general - The students work in pairs. A pair of technical expects would be responsible of converting GP data to soft copy GP data. - Eventually, different pairs passes their own slot of jobs for integration by	The process starts with the availability of hardcopy general plans. Use of both approved and unapproved general plans. Delay caused by general plans which do not have dimensions. Having experienced the use of infomate software, the researcher came to think why the council has chosen the software. The researcher noted some advantages which he think might have prompted them to use infomate The researcher noted advantages of the infomate software package over other software's like SURPAC which they would have used The interface of the infomate software is user friendly than that of SURPAC software. There are clearly defined and distinguished cadastral tools and engineering tools unlike in SURPAC where the student should be peculiar with how the tools could be used. For example if you want to do areas and consistencies in infomate software you just click a survey tool which do areas and consistencies rather than in SURPAC which require a student to undergo a series of steps. The importing of data as ascii file into the

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another pair of technical expert

- This last pair hand over them to the land surveyor who would crosscheck their work and highlight if there are errors which need to be rectified.
- These pair of technical pairs experts are well trained
- Especially, the ones who do the final integration have gained work experience of the project since they started their work related learning a little bit earlier than those pair of students who starts the process
- Crosschecking is also done by the students manually by comparing softcopy GP and hardcopy GP
- The challenge encountered using the infomate software is that if the student mistakenly delete an attribute in the attribute table, the student should have to start again.
- The surveyor highlighted that they are facing challenges in acquiring data from the surveyor general department
- The surveyor was told that they could not let any of his student into their premises in the next 6 months
- The problem of the land surveyor is that the students he has are going to be with him for just 10 months
- Thus, the creation of the digital

infomate software is also much simpler than in SURPAC which requires a series of steps.

The other advantage of infomate over the SURPAC software is that the former allows a student to save the output in many formats and since maybe there would be a need to handover the data to the GIS section at council, there is a need to save as shape files which is done in infomate but not done in SURPAC.

Infomate software allows a student to add other attributes as the project may require in addition to the existing attributes.

For example in this project the students added stand number, township, the name of the surveyor etc.

In infomate, when doing certain processes you can actually see what you are doing on the screen rather than in SURPAC where you have to go to view the diagrams, general plans etc.

Pairs of technical teams who are divided to do various procedures in process of creating the digital cadastre

Training of the technical pairs to be able to undertake the creation of digital cadastre

The pair of technical pairs crosschecked their work that is to check if there are any errors

The land surveyor do the final crosschecking of the jobs done by the technical pairs.

In case where the general plans is not visible

cadastre would be delayed - The only alternative the surveyor said he had is only to buy whatever he needs from the surveyor general - I can also say that there is huge pressure amounting on the city council to convert its way of operation from the manual to digital processes.	or is torn apart, the students would have to halt until the GPs have been acquired from the surveyor Council land surveyor is facing challenges to acquire data and also for his technical students to learn processes happening at the surveyor general department. From this, l would say there are institutional wars The surveyor general is protecting their mission by keeping the public majority to themselves This is because if the city council of Gweru have been granted permission into the surveyor general, then at last after acquiring what they need and successfully creating their digital cadastre, the customers who used to go to the surveyor general would then save transport money and go to the council and even the council itself would then have no obligation to visit the surveyor general again Thus the department of surveyor general would have reduced revenue

Figure 14 Results from the initial coding of the observations

3.9.2 Results from focused coding of the observations

The above incident codes were raised to focused codes. The focused codes are, 'pair of trained technical teams divided to undertake the creation of the digital cadastre', 'availability of approved and not approved general plans', 'delayed processes due to dimensionless general plans', 'acknowledged advantages by the researcher of why Gweru Council chose infomate software', 'crosschecking of their own work by the pairs of technical teams for errors',

'crosschecking of the work of the pairs of technical teams by the council land surveyor', 'challenges faced by council to acquire data and knowledge from the department of Surveyor General', 'alternatives by the council land surveyor to the challenges in the creation of digital cadastre'.

3.9.3 Categories from the coding of observations

1. Availability of approved and unapproved general plans starts digital cadastre creation
2. Dimensionless general plans causes delay
3. The choice of infomate software package over other softwares
4. Crosschecking of processes of creating digital cadastre by a pair of technical teams and the land surveyor
5. Challenges in digital cadastre creation

3.9.4 Results of practical procedures experienced by the researcher in the creation of the digital cadastre

3.9.4.1 Result from each step undertaken

Step1. Using excel we capture all the coordinates of all the points that are on the general plan. The coordinates are obtained from the coordinate list of that general plan.

Step 2. Open infomate software and import the coordinates of the general plan.

Step 3. Using the survey tools in the software join all the points in accordance to the structure of the general plan.
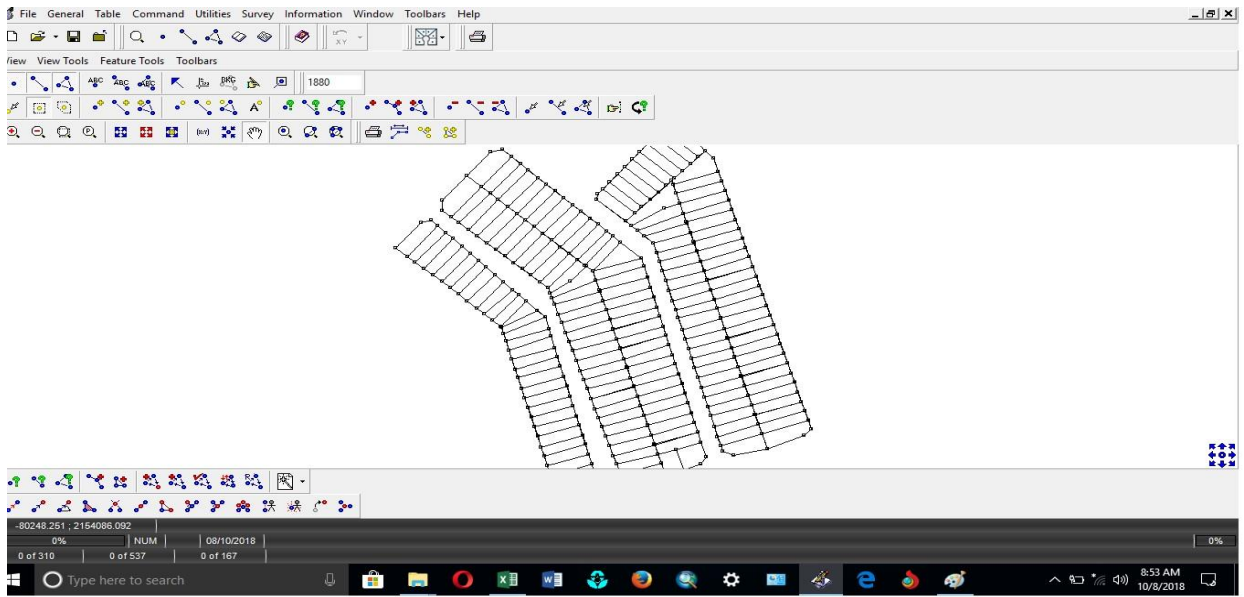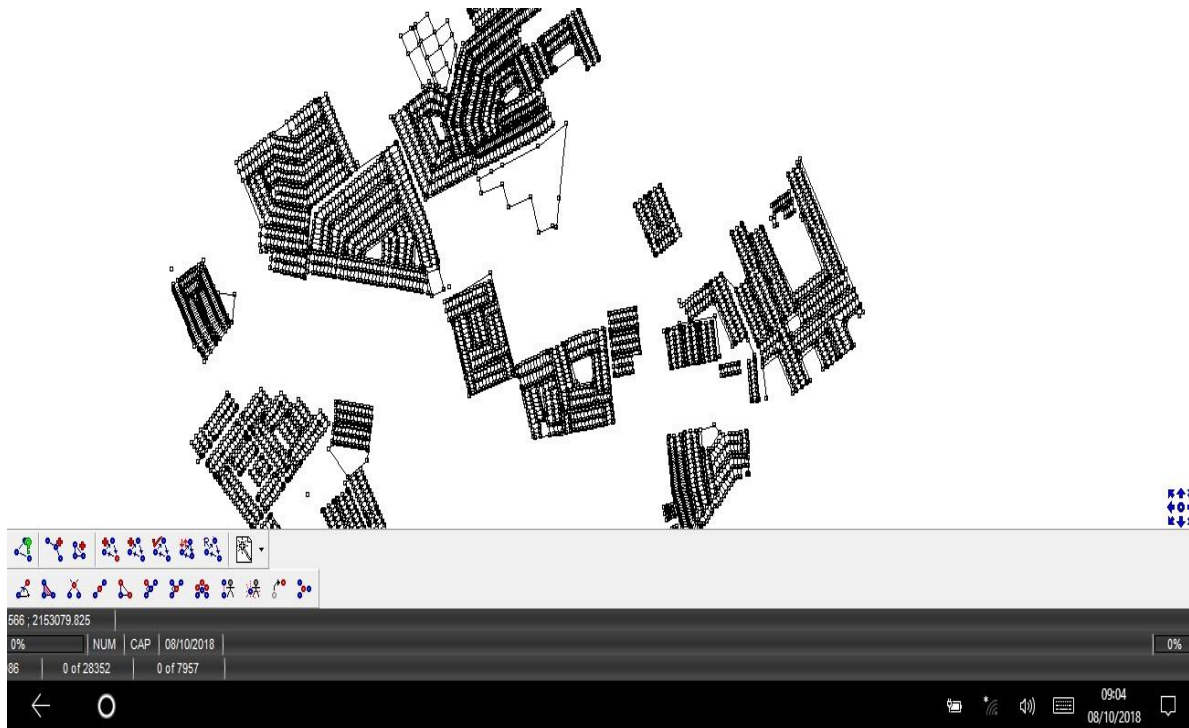

Step 4. Defining consistence of each stand
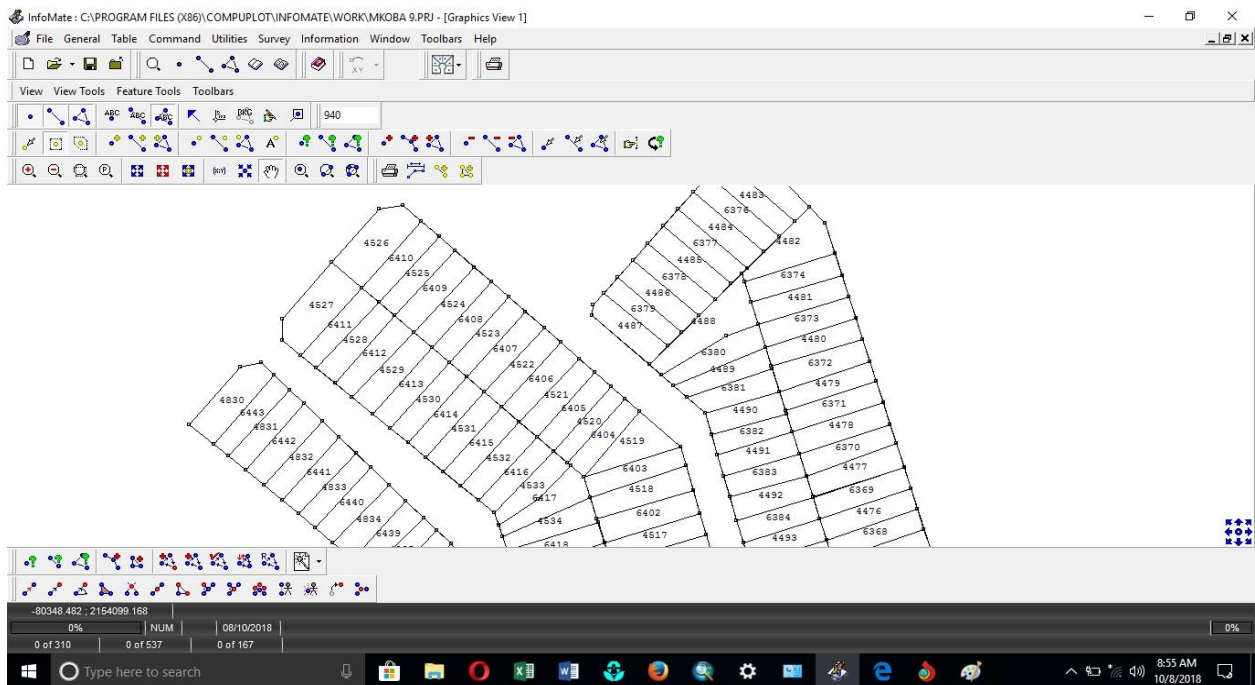
Step 5. Creating attribute tables

Step 6. Save the project as a EXP file

Step 7 compiled general plans/ compilation of Mkoba Township

3.10 Emerging of the core category from the overall categories from the coding process

3.10.1 Categories from the coding process of interviews and observations

Categories from the coding process	
Interview1 1. Cadastral section 2. Cadastral processes undertaken by cadastral section 3. Interaction of professionals to undertake cadastral processes	Interview 2 1. Awareness of required accuracy by professionals 2. Existence of predefined quality checks 3. Examination of cadastral processes 4. Acts governs the quality of cadastral process 5. Supervision of registered land surveyor by cadastral section

	6. Time as dimension of performance measurement
	7. Cost as dimension of performance measurement
	8. Customer satisfaction as dimension of performance measurement
Interview 3	**Interview 4**
1. Cadastral section has no backlog or requests	1. Reasons for late acquisition of equipment
2. Processes for creation of subdivision plan for public land is localized at council	2. Continued operations of survey section in absence of land surveyor
3. Interaction of professionals in facilitating a subdivision process	3. Effects of shortages of equipment
4. Quality checks for beacon relocation	4. Technological advancement of equipment
5. Ensuring of quality by cadastral section by processes they do	5. Experienced survey section personnel available
6. Detailed types of cadastral processes carried by cadastral section	6. Association of survey section personnel with personnel from other department
7. Quality improvement of cadastral processes	7. Leadership supports technological advancement
8. Hindrances in quality improvement of cadastral processes	8. Reasons for the needy of an external land surveyor.
Interview 5	**Interview 6**
1. Holistic budgeting	1. Determination of survey fees
2. Necessities for the operation of survey section	2. Sub contraction process
	3. Recruitment at Gweru city council
3. Survey section does not depend on crowd pool	4. Reasons for needing an external land surveyor

4. Survey section receive services which it does not budget for 5. Director controls the budget	5. Capabilities of Council land surveyor without external land surveyor 6. Complications with the sub contraction process

Interview 7
  1. Reasons for objections of subdivision plan
  2. Dealing with objections of subdivision plan or consolidation plan
  3. Subdivision or consolidation process is acts abiding
  4. Feasibility of subdivision plan
  5. Contents of a subdivision plan
  6. Models of interaction
  7. Sharing of knowledge
	Observation
	  1. Availability of approved and unapproved general plans starts digital cadastre creation
	  2. Dimensionless general plans causes delay
	  3. The choice of infomate software package over other softwares
	  4. Crosschecking of processes of creating digital cadastre by a pair of technical teams and the land surveyor
	  5. Challenges in digital cadastre creation

CORE CATEGORY : CADASTRAL PROCESSES	

Table 9 Categories from the coding process

3.10.2 Reasons for selecting Cadastral processes as the core category which truly reflects the data

The cadastral section is the one which carries the cadastral processes whether they are different types of them. Professionals interact together to undertake cadastral processes. In the second interview, the awareness of the required accuracy by professionals is that of cadastral processes. Predefined quality checks are for cadastral processes. The examination is done to check the quality of cadastral processes. Acts governs how the professionals should do to increase the quality of cadastral processes. Effective costing of cadastral processes, timely carrying out of cadastral processes will lead to enhanced performance of cadastral processes and satisfaction of customers as they would have received their products without delay. In the third interview, most categories are portraying types of cadastral processes and how quality is ensured for them. The

category of quality improvement is for the cadastral processes. Professionals interact to carry out cadastral processes. In the fourth interview the late acquisition of equipment affected the carrying out of cadastral processes. The operations which were continued by the survey section in the absence of council land surveyor was that of cadastral processes. all the technological advancements and the support by leadership in technological advancement was to ensure that cadastral processes are done at another dimension better than before and also to enhance performance. In the fifth interview, in order for survey section to carry out cadastral processes they are certain things like equipment they need and there not the ones who budget for them, they just receive the services from others. When holistic budgeting is done, budget of cadastral processes are taken into consideration. In the 6th interview, determination of survey fees is part of a cadastral processes. External land surveyor is needed to carry out the council's certain cadastral processes like subdivision. The council land surveyor carry out other cadastral processes. The 7th interview, the issue of the subdivision process is being portrayed by the categories. Knowledge which is shared by professional at the models of interaction is that of cadastral processes mostly. Categories from observations is showing sub processes for the creation of the digital cadastre which would help to improve the quality of cadastral processes. So it is crystal clear from information above that cadastral processes can truly reflect the data

 3.11 results of analysis of constant comparison of categories

 3.11.1 Analysis of the constant comparison of categories of interview one and two

The carrying out of cadastral processes should be a one stop shop at the cadastral section, but constant comparisons of categories from interview one and two reflects that some of the cadastral activities and processes are undertaken by other professionals like engineers, planners and registered external land surveyor although most of them are carried out by the cadastral section. Thus the performance of the cadastral processes depends largely on the cadastral section and its interaction with other professionals. The professionals knows the required accuracy in the undertaking of a cadastral section as it is clearly stated in the acts which governs them. Thus the accuracy of cadastral processes rests upon the professionals' ability to mimic what exactly is in the acts. The fact that there are no stipulated timeframes but full trust rests with the professionals to deliver within the shortest possible time means also that the quality of a cadastral process is in the hands of professionals. Delay by a professional responsible for a certain cadastral process would result in the tempering of the quality of the cadastral product from that cadastral process.

Hypothesis one: Quality of the cadastral processes depends on the ability of professionals to mimic preset quality checks in the acts.

Hypothesis two: quality of a cadastral process in absence of timeframes depends on the ability of a professional to perform a cadastral process in the shortest possible time

3.11.2 Analysis of constant comparison of categories of interview two, three and four

The constant comparison of the categories in the interview two, three and four highlights that some customers whose requests were not attended were not pleased by the cadastral processes of city of Gweru since cadastral section operating without a land surveyor grew a habit of choosing jobs they were capable of doing with the available uncalibrated, broken and outdated equipment. This increased the workload of the cadastral section thus tempering on the quality of the cadastral processes. This also means that the carrying out of cadastral processes would not take shortest possible time as would have been expected. It is also showing a great transition when the Gweru council employed a land surveyor who was able to convince the council to acquire new equipment which enabled the cadastral section to do any work requested without choosing. The ushering in of new equipment helps the council to do the work which was left fallow and there are still working on the workload. This would bring positive benefits of customer satisfaction and instill quality in the cadastral processes. This would mean that the professional, land surveyor, would be able to deliver in the shortest possible time as witnessed by the absence of backlog of requests in the cadastral section.

3.11.3 Analysis of constant comparison of categories of interview three, four and observations

Constant comparisons from categories of interview three, four and observations shows that the council is confident that its experienced survey section personnel and their trained pair of technical students are capable of ensuring quality by the processes they do like the quality checks for the beacon relocation and the crosschecking of the processes for the creation of the digital cadastre. Despite the desire by the cadastral section department to achieve quality in its cadastral process, it can be deduced that they are using some of the unapproved general plans. This is a hindrance in achieving quality. The performance of cadastral activities could not be efficient and effective since they are also using dimensionless general plans which causes delay in the carrying out of cadastral process. However, the Gweru council is a step ahead in the process of improving performance of its cadastral processes as it had commenced the digital

cadastre creation. This would facilitate a one stop shop for customers doing data searches thus enhancing customer satisfaction. The Gweru council would be converting from a manual operation to a digital operation if they would successfully complete its creation. Although it is capital intensive as the council has employed students for its creation, but it is proving to be a future investment as it presents potential benefits like it can be used by the estate agents for land evaluation. The cadastral section can also use it to regularize or destroy illegal structures. In the long term it would be seen that it was really cost effective to create the digital cadastre. It can also be deduced that the Gweru council is facing challenge to visit Surveyor General Department as they are denied entrance. They are being denied chances for its pair of technical students to learn other processes being done by the surveyor General department. In the surveying profession benchmarking is really crucial in improving performance of cadastral systems. By mere scrutiny and analysis, it can be deduced that there is an institutional war between the two organizations maybe the Surveyor general wants to remain with the majority of the customers that is maybe why it is unwilling to let the Gweru council in. thus unless, the Gweru council buy whatever they need from the surveyor general, they would be derailed of their progress of digital cadastre creation. This affects the performance of Gweru municipality cadastral processes. It can also be deduced that technological advancement of equipment by Gweru council was the main drive for them being able to ensure quality in their cadastral processes. Credit to the Gweru land surveyor who convinced the Gweru council, and also the leadership which accepted change. It would have been fruitless to carry out a cadastral process with a defective T2 or broken theodolite which is also uncalibrated. So it can be deduced that technological advancement was at the center of the improvement of performance of Gweru council cadastral processes.

Hypothesis three: performance of cadastral processes is directly proportional to the experience and innovation of the land surveyor and the willingness of an organization to embrace change.

3.11.4 Analysis of constant comparison of categories of interview three, five, six and seven

Constant comparisons of categories from interview three, five, six and seven shows that the director is in charge of holistic budgeting of all the activities at Gweru council. This means that the director should have an effective budget which would cater for the students who are engaging in quality improvement processes like the creation of a digital cadastre. In cases where the council needs to do title surveys, the director should be able to provide finance to facilitate the

sub contraction process. Failing to do so would slow down a cadastral process. The director has also a solution to avoid the complications between the subcontracted external land surveyors if there is already money budgeted to pay the external land surveyor upon completion of the survey. It can also be deduced that there should be models of interaction at the council to allow its staff to interact and also share information amongst them. This should be the responsibility of a director to budget for that.

Chapter 4: Coalescence of the findings by the researcher about Gweru council cadastral processes and the findings of other contexts

Kurwakumire (2013) noted that

- Gweru municipality is running on manual systems in as far as town planning and cadastral transactions are concerned.
- The manual systems present inefficiencies, lengthy transaction times, poor planning and low response rates to emergencies and incidents.
- Citizens are not able to participate actively in spatial planning and in the town planning process due to lack of adequate access to planning information.
- sharing of information within the municipality is difficult as different departments often want to utilize the same hard copy maps at the same time

The current study by the researcher noted that although city of Gweru is still running on manual systems as far as town planning and cadastral transactions are concerned, there are developments which are taken to operate on digital systems. The Gweru council has started the digital cadastre creation. This would enable the Gweru council to have proper planning for instance to regularize or destroy illegal structures and also to avoid the occurrence of diseases like typhoid due to lack of information for planning. Gweru council response time would be short in cases of data searches, there would be no need to refer to the hardcopy as every detail would be on the digital cadastre.in cases of customers who want to buy a property from the council, they would not have to wait for the council estate agents to visit the ground physically but would be now getting every piece of information for evaluation from the digital cadastre if it is successfully completed.

The information from literature reflects that there is paucity of information as far as detailed operations of cadastral processes of Gweru council. From above Kurwakumire (2013) just pointed out on surface that Gweru municipality operates on manual systems, but did not extract information of what it is it really that Gweru council does manually. By observing and analyses of the categories of this research it is clear that the researcher went as far as extracting the information about the Gweru cadastral operations and is now in a position to say that what Kurwakumire (2013) said is true but Gweru council has now started performance improvement

activities of its cadastral processes and is engaging in processes to traverse from manual based systems to digital systems although it is still an ongoing process.

Chimhamhiwa (2010) pointed out that in the metropolitan Municipality of Harare, subdivision proposals are often drafted by private Planners and then lodged with the Municipality's Town Planning division (for plan examination and approval) then handed over to a Cadastral Surveyor (for survey), then to the Surveyor General, a Conveyancer and finally the Registry of Deeds (p.30). These linear processes is what is assumed to be carried out by most municipalities. In his cost and benefit analysis Chimhamhiwa (2015) noted that the ratio of cost to benefit of the municipalities is 180.71 pertaining the subdivision process. The researcher found that Chimhamhiwa (2010) is following a linear model which is what maybe also prescribed in the acts but which is not what is currently happening at the Gweru municipality. The researcher found out that at Gweru council, the subdivision start with the engineering department which carries out a topographical survey of the area to be subdivided and gives the survey section a topographical map which act as a base map and then the survey section give it to the planners who then design the stands and give it back to the survey section which then subcontract an external land survey to do the subdivision who in turn gives back the contents of the survey record for example a diagram or a general plan. It can be seen that Chimhamhiwa (2010) general overview of the subdivision process did not consider different hierarchy a municipality might have in the carrying out of its processes. The researcher went as far as employing a grounded theory tool to investigate considering hierarchy what really happens as far as the subdivision process is concerned at the Gweru council. Chimhamhiwa (2015) did a holistic cost to benefit analysis of the subdivision process, but as depicted above by the researcher that what he thinks about the steps in the process of subdivision is just a linear model but not a true representation of what it is on the ground as steps given by the researcher about his findings at the Gweru municipality. Thus the ratio of the cost to benefit of the subdivision process might increase if all stages have to be considered.

It is true what the participant at the Gweru municipality said about the professionals being guided by the acts in the carrying out of their acts although it is unknown about the degree of allegiance to the acts as errors in the carrying out of the processes is found. The participant said that in the case of a subdivision process or consolidation process, there is subdivision of Gweru

council land or state land and also the customer's land. He said that in case that the land belong to the customer he or she has to apply for permit for subdivision process to occur. This is in line with the Regional town and country planning act (chapter 29:12). Paragraph (a) and paragraph (c) of subsection (1) of section 39 of the Regional town and country planning act states no person shall subdivide any property or consolidate two or more properties into one property without permit.

Chimhamhiwa (2002) mentioned that three core dimensions of time, cost and quality have been identified and are already being measured and monitored frequently in various formats in almost all organizations. In addition to the above core dimensions, Chimhamhiwa (2010) introduced technological innovation, society and customer satisfaction as other performance measurement dimensions(Chimhamhiwa, 2010).
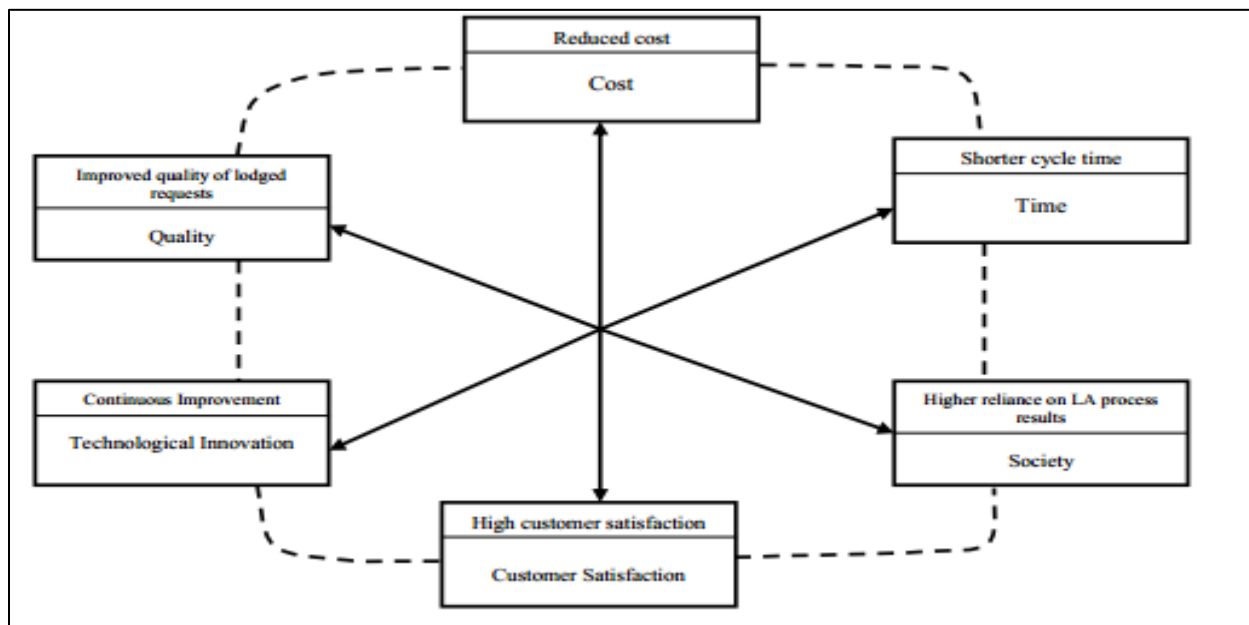

Figure 15 Cross organisation business process measurement framework- Adapted (Chimhamhiwa, 2010).

The researcher found out that at Gweru council, as far as quality is concerned, professionals already know what accuracy is to be expected thus quality checks are governed. Examination of cadastral processes is done to crosscheck if cadastral processes are done following the acts. If in line with the acts, the cadastral processes are passed free of errors, if not they are returned back for correction. Thus the quality of the cadastral processes is governed by the acts. The researcher

deduced a hypothesis one pertaining to this which is in chapter 4.11.1. In order to ensure quality, the Gweru council cadastral section supervise the subcontracted land surveyor in order for them to be able to testify that what is surveyed is what is on the ground.

The Gweru council cadastral section do not have stipulated timeframes but trust the professionals to deliver in the shortest possible time. Pertaining to this the researcher deduced hypothesis two on chapter 4.11.1. This hypothesis is appropriate where the professionals work to the best of their ability to execute their tasks timely. If they do not, there would be effects on the quality of the cadastral processes.

Gweru council's priority is to offer services to the society. The council tries to offer minimum charges as possible to customers. This enhances customer satisfaction. The fact that the cadastral section has no backlog of requests this means that it is far ahead as far as ensuring quality of its processes. Short cycle time, enhance customer satisfaction is witnessed in creation of subdivision plans for public lands since it is localized within the council. Lodging of the subdivision plan is done to the physical planner. The physical planner notifies the cadastral section if there are errors for example forgetting to open a manhole to determine the direction of flow. This ensures quality. The fact that at Gweru council. Most subdivision plans were passed free of errors means that there is enhanced quality. By giving an honesty confirmation of the state of survey to an institution who may have requested it (for example estate agents) in the verification process, Gweru council instil quality in the cadastral processes since they would have made it transparent to everyone involved.

Gweru council cadastral section offer instant response to customers who requests them to perform their tasks if they do not have field work. This makes the customers served happy. This would be different to the customers who would the cadastral section occupied with other tasks. Researcher found out that Gweru council cadastral section is unable address all requests due to staff shortages. Acquisition of equipment by the Gweru council is an indication of technological innovation. The newly acquired Trimble GPS and Trimble Total station enabled them to perform other tasks which they were now unable to do with defective Leica T2 and theodolite. This made customers happy and satisfied. This instilled quality in their cadastral processes. The Gweru council are enhancing quality in the creation of the digital cadastre by the processes they do. They trained a pair of technical teams who are divided to do various procedures in the digital

cadastre creation. These trained pair of technical teams crosscheck their work for errors. Then finally the Gweru council land surveyor do the final crosschecking of the jobs done by the pair of trained technical teams.

The researcher is in a position to say that the Gweru council has made important steps towards improvement of their cadastral processes as witnessed by the above discussion of the findings made by the researcher about the Gweru council cadastral processes. The researcher found out that the Gweru council is not sure about measuring the quality of its cadastral processes but they ensure the quality of their cadastral processes by the processes they do.

Chapter 5: Conclusions and Recommendations

5.1 Introduction

The researcher employed a constructivist grounded theory methodology as a tool to discover what processes the Gweru council is doing and how it is improving its cadastral processes and activities. Grounded theory methodology has got its intelligent mechanisms which allowed the researcher to mine rich data of Gweru cadastral processes by doing a combination of extensive interviews and by doing observations. The constructivist grounded theory methodology is flexible enough as it allowed simultaneous data collection and data analysis. The data analysis of the first interview allowed the researcher to deduce more questions to ask in the next interview. The researcher did this until the seventh interview where he reached saturation. He managed to deduce a core category amongst all the categories obtained from the data coding. Memoing, clustering and diagramming were essential to help the researcher to deduce the categories. He then did constant comparisons of the categories and discovered useful interrelationships between them. He then coalesced his findings about the Gweru cadastral processes and the findings from the other contexts.

5.2 Brief discussion on how the consecutively generative research questions answered the research objectives

Objective1: To investigate the contribution of cadastral activities and processes to the efficiency and effectiveness of Gweru Municipal planning activities

Objective2: To identify the most suitable knowledge construction methodology

Objective3: To develop grounded theory for cadastral processes of Gweru Municipality

Objective4: To compare the grounded theory of Gweru City Council with the findings gazette about other City Council in the domain of land governance.

To answer Objective one, on the figure1 (consecutively generated research questions) on chapter1, there are specific questions like on interview 5 which deals with budgeting. The participant responded on how and who is responsible for budgeting, it can be seen that the budgeting is only done annually and holistically. Thus the effective planning by the Gweru municipality would depend on how effective and efficient the budget was. Also questions

pertaining to the rejection of the subdivision plan on the interview seven help the council to only plan for only areas where it is possible to subdivide.

The objective two was fully answered in the chapter three when the researcher looked at the three classes of grounded three and then found out that for this study a constructivist knowledge construction methodology is the most fitting methodology to discover the theory on the Gweru cadastral processes.

The objective three was answered just after the researcher had the constructivist knowledge construction methodology when the research followed mechanisms of this methodology for instance simultaneous data collection and data analysis. To collect data which then contributed to the Gweru council theory, the researcher carried intensive interviews. The researcher started with one question as is clearly indicated on the figure 1 (consecutively generative research questions). All the theory was obtained as the participant responded to the interviewer's questions as highlighted in chapter four.

The objective four was answered when the researcher compared the findings about the Gweru cadastral processes which he found by asking the consecutively generative cadastral processes and the findings from other context as highlighted in chapter4.

5.3 Research recommendations

1. Gweru council cadastral section should have stipulated timeframes: Gweru council would not be able to measure the performance of its cadastral processes if it does not have stipulated timeframes because of lack of a certain benchmark to compare their activities with. Stipulated timeframes helps to see the negative and positive deviation from the stipulated timeframe and then able to say the task has been completed on time or not.
2. Gweru council should perform end to end performance measurement of its cadastral processes
3. Gweru council should decentralize authority in terms of budgeting
4. To enhance quality, Gweru council should only use approved general plans
5. Gweru council should benchmark their quality improvement of cadastral processes with the best cadastral processes being done by municipalities from other countries
6. Gweru council should commence S-built surveys if their land surveyor proposes them to do so as they would be the first to carry out them in the Southern Africa.

5.4 Future Research

This research filled the gap of the paucity of knowledge about the Gweru cadastral processes and its activities by employing an intelligent tool called grounded theory to discover this theory. The detailed cadastral processes highlighted by this research should not be generalized for all the municipalities of Zimbabwe since the deviations of the cadastral processes from the normal linear cadastral processes differs as per municipality. This triggers new research area where one would do a research on either one of the municipalities in Zimbabwe to discover how exactly it is carrying out its cadastral processes.

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