

CHAPTER 3: Study Design and Methodology

The chapter explores the methodology of this study, that is, the way in that knowledge is discovered in a systematic way. It provides a specific and practical overview of the methods used to undertake this book project. It begins by identifying the underlying philosophical position of the researcher, and then details the research strategy to be used. The specific sampling methods utilised in the research are discussed, alongside ethical considerations.

The purpose of the study was to investigate on the survival strategies employed by state universities in Zimbabwe specifically, enrolment expansion at Midlands State University. In so doing, it assists the university in gaining an in-depth understanding of how enrolment expansion affect university performance and quality of education. There would then be scope for the development of new strategies that supports the growth and quality of education at the university.

The research procedures are the steps followed by the researcher in an endeavour to find answers to the research questions and also in an attempt to solve the research problem research should be viewed as a circular (Leedy, 2010). This view is derived from the observation that research facts (data) that are pertinent to the solution of the research problem give rise to the problem that is potentially fact-laden. As such, the research methodology becomes the procedure for implementing the scientific methods, in the study of reality within the research cycle. Research methodology and design are bound by two basic principles namely: (i) to provide answers to the research questions and (ii), to measure the experimental and extraneous so that the error variance can be controlled (Mouton, 2014). This therefore implies that the research design sets the stage upon that the relationships among variables can be established. This therefore means that the research design is there to guide the researcher on the observations to make, how to make them and how to analyse the quantitative representations of the observations.

The research design spells out the road map to data collection, data analysis and the presentation of the findings (Mouton, 2014). This study adopted a systematic enquiry to research to enquire the research problem, and the research enquiry was structured in the following format:

- To statistically manipulate data so that meaningful relations could be established;
- So that conclusions can be drawn from the emerging relationships and or their absence thereof;
- So that the results could motivate a new thinking or understanding that could lead to the conclusions;
- Indications for areas of further enquiry could be derived (Kerlinger and Lee, 2009).

This, therefore, makes the research design the most important aspect of the entire research process. This is because it lays the foundation for making the possible conclusions from the data (Oppenheim, 2015). The design also lays the path for the research process, thus, making the research problem researchable amenable to research in such a way that it will generate answers specific to the research questions and research problem (Oppenheim, 2015).

This study adopted a quantitative research design that was cross-sectional. This is also called a non-experimental design. This form of a design is characterised by a systematic and empirical methods of enquiry. The researcher under this form of a design does not have any control over the dependence and the independent variables. This is mainly because the manifestations would have already occurred. At times it could be that they cannot be manipulated (Kerlinger & Lee, 2009). In this form of a design, inferences about relations between variables are made. However, it is imperative to mention that such inferences are made without the direct interventions of the in independent and dependent variables (Kerlinger & Lee, 2009). This design is best suited for testing the empirical validity of the “if x and then y” type of statement.

Therefore, this study adopted a survey method to collect data from the sampled respondents. The study preferred a research method so that it would be able to gather data from Midlands State University in a systematic fashion. When it comes to the selection of respondents, the study adopted a simple random sampling. The sampled respondents were mainly students from Midlands State University.

Ontology and epistemology are the building blocks of research philosophy and provides a research paradigm, it is a way of thinking about the world (Guba & Lincoln, 2013). This study was built on the positivism philosophy as it is associated with the quantitative approaches to the research and it emphasises on numerical analysis and objectivity while it produces reliable and it makes replication of results possible.

The researcher's approach was from the ontological point of view employing deductive approach for the study since there was a clear hypothesis derived from the literature. Smith (2010) views ontology as the realities of different phenomenon. Quantitative methods are those methods that utilise statistical analyses to prove or disprove a hypothesis (Saunders *et al.*, 2012). As this study is measuring the extent at that enrolment expansion as a survival strategy affects quality and performance at state university, statistical analysis is appropriate and more suitable. This study used the quantitative research methods, utilising deductive approach to explain the effects of enrolment expansion on state universities.

Data collection basically refers to the process of gathering data for the purposes of measuring the targeted variables in a well-coordinated fashion (Saunders *et al.*, 2012). The gathered information is what is then used to answer the stated research questions and research problem. In this study, the researcher used the survey method to gain insight into the problem at hand. The survey was built on identified factors and issues that point to the variables spelt out.

The primary data collection technique explored the originality of data by collecting information significant to the study. Primary data were

obtained from respondents who graduated and those who were still studying at Midlands State University. Lancaster (2012) posits that primary data refers to data that is collected for the first time during the research process, and it involves the use of instruments such as questionnaires, interviews or observations. For this study the data were collected using a questionnaire, that took the form of a 5 point Likert scale. Secondary data were obtained from MSU annual reports, MSU strategic plans, monographs, text books, the internet and other materials such as journals found useful to the study. This kind of data collection method was also important to the study especially in the literature review and chapter five of this study.

The population from that the sample was drawn comprised of graduates and students from Midlands State University in Zimbabwe. The categories of students that constituted the population understudy included undergraduate final year students, Masters and Doctor of Philosophy students. The graduating classes were chosen because the students have experienced the impact, effects, extent and performance of enrolment expansion and how it has affected them both in the academic and industrial spheres that are a critical element in measuring the effects of enrolment expansion. Both undergraduate and post graduate students have both academic and industrial experiences as they are employed or were from industrial attachment. The study population was 8000 students from Gweru, Zvishavane, Mutare and Harare campuses.

Generally, there are two types of sampling namely probability and non-probability from that a researcher can choose a desired sample. This study adopted probability sampling technique because this type of sampling is associated with the quantitative research design adopted for this study. Probability sampling designs, are characterised by random selection of respondents. In this technique research participants are selected by following rigorous established scientific rules and procedures, and every member of the population has an equal chance of being chosen (Saunders *et al.*, 2012). Probability sampling was found appropriate for the study as it would enable research findings to be generalised to other state universities.

To avoid un-guided generalisation, the researcher chose to sample as suggested by Amin (2011), who suggested that sampling is important in selecting elements from a population in such a way that the sample elements selected represent the population. In this study a total of 397 students constituted the sample drawn from a total of 8000 students from the five campuses of the Midlands State University outlined in the preceding section of the study. A sample size calculator, a computer application software was used to compute the sample size at 95% confidence level and 5% confidence interval. The Sample Size Calculator is Creative Research System survey software. It can determine the size of respondents needed to respond to a survey that reflect from the target population. Below is the how the sample size was computed.

Table 3.1: Determination of Sample Size (Sample Size Calculator) (www.surveysystem.com/sscalc.htm)

Confidence Level	95%
Confidence Interval	5%
Population	8000
Sample size needed	397

Questionnaires were chosen because of their ability to reduce any bias and the collection of authentic data important for data analysis. However, one of the limitation to this study was that since the study was self-administered, the researcher noted inconsistencies in answering and returning of the questionnaires. The questionnaire utilised Likert scales on all statements stating the extent of agreement or disagreement from 1-5 and other aspects that needed ranking. Appearance and layout of the questionnaire is of great importance in any survey especially where the

questionnaire is to be completed by the respondents independently (Cooper a Schindler, 2013).

The Multifactor Enrolment Expansion Dimension Questionnaire (MEEDQ) was developed with three sections; the impact of enrolment expansion strategy on quality, the effects of enrolment expansion on facilities and resources, and the extent that enrolment expansion affect the skills of graduates. Enrolment expansion dimension was measured with a five point likert scale rated as follows: 1-strongly disagree, 2-disagree, 3-neutral, 4-agree and 5-strongly disagree. The dimensions were found to be reliable and acceptable for this study with Cronbach's Alpha values of $r > 0.7$ (Kline, 2013).

The university performance was adopted and measured performance using a 5-point likert scale rated as follows: 1-strongly disagree, 2-disagree, 3-moderately agree, 4-agree and 5- strongly disagree. In the current study a reliability of 0.808 was recorded for university performance. A Crobach's Alpha of this magnitude was considered excellent for this study (Kline, 2013).

A pilot study was done to judge the suitability of the instrument in addressing the research objectives and study hypothesis. The researcher developed and pilot tested a survey questionnaire on 25 trial participants of the fourth-year students from the MSU based in Harare. Of importance was to establish from these respondents if they judged that the questions were adequate in addressing the research hypothesis and needs. Information obtained from the respondents led to the dropping out of certain questions that were considered irrelevant and also led to the revision of the wording of certain questions so that they were easily understood.

Questionnaires were hand delivered to the targeted participants and before they participated the researcher shed light on the survival strategy of enrolment expansion at universities and citing the importance of the research to the participants. Reliability and validity constitute an integral

component of the research process since they are pivotal in establishing the reliability and dependability of the research findings.

To ensure the reliability in this study the pilot study's responses from the 25 respondents were tested for internal consistency using Cronbach's Alpha. This resulted in some questions being considered as irrelevant, inconsistencies and consequently being dropped out, leading to the revision of the questionnaire. All items measuring the impact of enrolment expansion strategy on quality and university performance were consistent with a reliability coefficient of $r > 0.7$, so changes were made. Some inconsistencies were noted on items measuring the effects of enrolment expansion on facilities and resources, and the extent enrolment expansion affect graduate skills whose reliability coefficients were $r < 0.7$. Using Item-Total Statistics resolved the inconsistencies by deleting question regarding adequacy of examination venues and skills imparted been of paramount importance in future. Deleting these questions raised the internal consistency from 0.641 and 0.457 to and 0.705 and 0.772 respectively. Tables 3. and 3. indicates the deleted items.

Correlation matrix was run before the actual data collection to check for perfect multi-collinearity and no relationship between variables. No such relationships existed suggesting that variables point in one direction.

Table 3.2 Reliability of impact of enrolment expansion strategy on quality

Cronbach's Alpha		N of Items		
.641		8		
Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
sbq1	21.80	10.691	.463	.570
sbq2	22.32	9.535	.603	.518
sbq3	22.16	11.318	.632	.549
sbq4	22.70	13.412	.100	.665
sbq5	21.93	13.525	.117	.657
sbq6	23.64	10.478	.430	.580
sbq7	22.96	11.184	.499	.567
sbq8	21.99	14.581	-.088	.705

Table 3.3 Reliability of extent of enrolment expansion strategy affects the skills of graduates

Reliability Statistics				
Cronbach's Alpha				No. of Items
.457				5
Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
sbq21	13.58	5.132	.197	.438
sbq22	12.03	5.948	.137	.465
sbq23	11.72	4.636	.423	.272
sbq24	12.88	2.944	.600	.006
sbq25	10.44	7.237	-.149	.772

There are basically two forms of measuring validity and these are content validity and face validity. In this study therefore the research instrument was measured on whether it measured the variables that it intended to measure. This was done using management gurus who assessed whether the Likert items were well phrased. To ensure validity, the questionnaire was derived from previously used researches and validated items derived from the literature. Nevertheless a pilot test was still conducted to ensure that the participants fully understood the questionnaire and accurately completed it to the best of their ability. Some items were removed from the original instrument and the some questions had to be re-arranged and re-worded in simple grammar that the participants could comprehend without the assistance of the researcher.

Statistical Package for Social Scientists (SPSS version 25) was used a data analysis tool. A data dictionary of the questionnaire was first designed in the variable view. The design process entailed allocating nominal responses on the five point Likert scale with numeric equivalents as the SPSS processor can only handle numbers. Raw data were then captured into a data view, then cleaned and subsequently analysed. Data cleaning ensured errors due to both human and systematic were reduced thus improving the validity of the findings.

Data analysis was done based on participant's data in two perspectives: Descriptive data and inferential data analysis. According to Amin (2014)

descriptive statistics aids researchers with the techniques of analysing numerical data and presenting it either in tabular form or graphically. The graphical form entails using pie-charts, bar graphs and histograms. In this study pie-charts and bar graphs were used.

One-Sample T-Test was employed to test the impact, effect, extent and level of performance that was as a result of enrolment expansion in state universities. One-sample t-test compares the mean score from the field data and the mean score assumed to be the population mean, in this case Test Value=3 (neutral). One-Sample t-test was utilized only after nominal data were aggregated from categorical to numerical representation that could be handled by numerical methods. In this regards the Transform command was employed to compute the means scores the enrolment dimensions and performance dimensions. Use of parametric tests requires data be ratio or interval.

Ethics generally spell out our responsibility to research participants ought to percolate in the complete scholarly practice (Laws *et al.*, 2013). Ethics define what moral research procedure involves, what is legitimate to do or not (Neuman, 2011). In essence, ethical considerations are, besides our comprehension of prior knowledge of informed consent, privacy and confidentiality as spelt out in professional codes of ethics, contingent upon the situations that confront the researcher in the field and prompt swift decisions.

The student confirmation letter from the Graduate School of Management, that communicated the academic purpose of my research, enabled me to start formal interactions with MSU. The academic registry of MSU authorised this booker to carry out the study. As a requirement, participants must get to understand the nature and purpose of the research without any undue influence, prior to participation (Burns, 2010). Upon initial contact with every potential respondent, the researcher introduced themselves, outlined the purpose of the study, why the particular participant was selected, how the research was to be executed, the rights of participants to privacy and confidentiality, voluntary participation, right to withdraw any time.

The ethical considerations procedures were followed within this study to keep abreast with the required ethical conduct of researchers. This is done to ensure that the research participants were not subjected to harm and also to ensure that their anonymity was maintained. The ethical conduct of researchers has become under the scrutiny because over the years they are a bunch of researchers who conducted their studies in an ethical manner and this predisposed research participants to harm and violation of their rights. Hence, the ethical considerations were followed in this study.

The explanatory research design was chosen for this study because of its ability to explain the relationships between variables under the study. The researcher adopted the positivism philosophy because it is economical in collecting large amounts of data whilst it allows comparing variables and deducing the cause and effect relationship. The chapter also outlined the data collection procedures that were followed to elicit the responses from the sampled respondents. The primary data were collected using a questionnaire that was in the form of a 5 point Likert scale. When it comes to the collection of the secondary data the study heavily relied on peer reviewed journals, published books and the strategic plan of MSU. The internet was also consulted for secondary data collection purposes. In chapter four the results of the data analysis will be presented.